

CUTTING SOLUTIONS BY CERATIZIT

# GESAMTPROGRAMM
# CUTTING TOOLS
2016

DE

CUTTING SOLUTIONS BY
CERATIZIT

# CUTTING TOOLS

## GESAMTPROGRAMM


PM 11R 2.25D

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# Willkommen bei CERATIZIT

## Unsere Leidenschaft Ist Ihre Lösung!

Seit über 90 Jahren schaffen wir für Sie einzigartige und konsequent innovative Hartstofflösungen für Zerspanung, Verschleißschutz sowie Holz- und Gesteinsbearbeitung. Egal ob hochspezialisierte Zerspanungswerkzeuge, Wendeschneidplatten oder Stäbe und Formteile aus Hartstoffen, mit insgesamt vier Kompetenzmarken ist die CERATIZIT GROUP Ihr Partner für anspruchsvollste und auf Ihre Bedürfnisse zugeschnittene Hartstofflösungen, welche die Wirtschaftlichkeit, Beständigkeit und Leistungsfähigkeit Ihrer Produktion garantieren. Immer leistungsfähigere Maschinen, Anlagen und Bearbeitungsmethoden schaffen dabei ständig neue Herausforderungen für unsere Entwicklungsingenieure. Mehr als 5.900 Mitarbeiter arbeiten weltweit schon heute an der Lösung von übermorgen.

## Hartstoff für Ihren Erfolg

Hartstoffe im Allgemeinen und Hartmetalle im Besonderen kommen überall zum Einsatz, wo Werkzeuge oder Bauteile hoher Verschleißbeanspruchung ausgesetzt sind. Sie verbessern die Qualität der Werkzeuge und Teile, verlängern ihre Lebensdauer und gewährleisten sichere Prozesse. Hoher Druck und Temperatur, die Verwendung abrasiver oder aggressiver Werkstoffe sowie die Bearbeitung harter Materialien sind nur einige Beispiele verschleißverursachender Kriterien, denen unsere Hartstoffe und Hartmetalle widerstehen.

## Cutting Solutions by CERATIZIT – Ihr kreativer Partner für den kompetenten Dialog

Cutting Solutions by CERATIZIT ist eine der vier Kompetenzmarken der CERATIZIT GROUP. Wir bieten Ihnen unter diesem Qualitätslabel ein umfassendes Sortiment von Premium-Standardprodukten für die Zerspanung: Profitieren Sie von Wendeschneidplatten und Vollhartmetall-Werkzeugen mit höchster Präzision und bester Performance für das Drehen, Fräsen, Bohren und Stechen. Als kreativer Partner entwickeln wir im Dialog mit Ihnen branchenspezifische und individuelle Lösungen, mit denen Sie Ihre Produktivität, etwa im Automobilsektor, Maschinenbau sowie der Energie- und Transportbranche, optimieren. Vertrauen Sie auf Services, die Ihnen echten Mehrwert garantieren, und Qualität vom Rohstoff bis zur einsatzfertigen Werkzeuglösung.



# Das Fundament: unsere Unternehmenswerte

Jeder einzelne Mitarbeiter der CERATIZIT GROUP stützt sich bei seinen täglichen Aufgaben auf das solide Fundament unserer Unternehmenswerte:



### 1 Der Standpunkt und der Fokus unserer Geschäftspartner zählen

Anstatt mit Kunden über Produkte zu reden, bieten wir unseren Geschäftspartnern echte Lösungen.

### 2 Innovatives und flexibles Denken zählt

Wir fordern modernste Technologien heraus und entwickeln intelligente Lösungen. Rasches Denken und entschlossenes Handeln sichern uns den entscheidenden Vorteil.

### 3 Kommunikation zählt

Vertrauen und Respekt ermöglichen eine offene Kommunikation. Wir zeigen wer wir sind und was wir fühlen. Wir halten unsere Versprechen. Wir sind offen für konstruktive Kritik und nehmen sie auch an.

### 4 Personalentwicklung zählt

Wir investieren kontinuierlich in Personal und bieten hervorragende interne Entwicklungsmöglichkeiten. Wir ziehen Talente rund um die Welt an und schaffen ein Umfeld, das langfristiges persönliches Wachstum fördert.

### 5 Professionalität zählt

Wir streben nach Professionalität, in allem was wir tun. Unsere Leistungen führen immer zu überdurchschnittlichen Resultaten und Wachstum.

### 6 Unsere Umwelt zählt

Umweltschutz ist jedem unserer Beschäftigten ein Anliegen – zu Hause und am Arbeitsplatz. Als Unternehmen garantieren wir, dass wir ein „rücksichtsvoller Nachbar“ sind.

# Das Hartmetall-Erfolgsrezept

Die CERATIZIT GROUP besitzt die metallurgische Kompetenz, um die gesamte Prozesskette der Hartmetallfertigung kontrollieren zu können: Von Rohstoffgewinnung über Pulveraufbereitung bis zu Formgebung, Sintern und Finalisieren können wir jederzeit an den richtigen Stellschrauben drehen und die Werkstoffeigenschaften an Ihre individuellen Anforderungen angleichen.

## Verbundwerkstoff mit wertvollen Eigenschaften

Hartmetalle sind Verbundwerkstoffe aus einem Hartstoff und einem relativ weichem Bindemetall, wie zum Beispiel Kobalt. Die Gebrauchseigenschaften von Hartmetall sind durch Härte, Biegebruchfestigkeit und Bruchzähigkeit bestimmt. Wichtige Stellgrößen für die Optimierung der Eigenschaften im Hinblick auf die Anwendung sind hierbei der Anteil des Bindemetalls Kobalt und die Korngröße der Hartstoffphase. Die Wolframkarbidkörner sind durchschnittlich einen halben bis zu mehrere Mikrometer (µm) groß. Das Kobalt füllt die Zwischenräume. Um einerseits extreme Zähigkeitsanforderungen zu erfüllen, kann der Kobaltgehalt bis zu 30 % betragen. Andererseits wird der Kobaltgehalt auf wenige Prozent und die Korngröße in den ultrafeinen Bereich (z. B.: 0,3 µm) reduziert, um höchste Verschleißbeständigkeit zu gewährleisten.

CERATIZIT stellt weit über hundert Hartmetallsorten speziell für den Zerspanungs- und Verschleißbereich her und bietet damit für jede Ihrer Anwendungen eine maßgeschneiderte Lösung.



# Hartmetall-Herstellung

W-Ti-Ta-Oxide

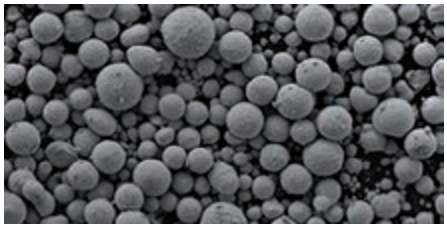


Reduzieren

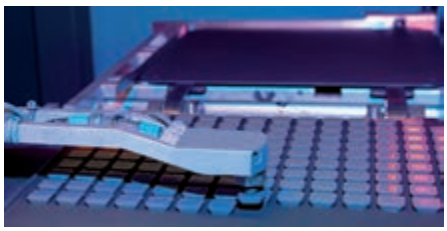
Karburieren, Mischen, Mahlen



Granulieren



Pressen



Vorsintern



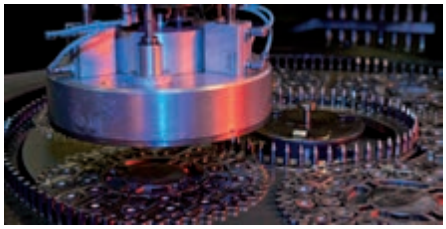
Formen



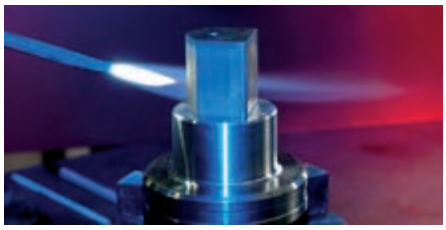
Fertigsintern



Finalisieren



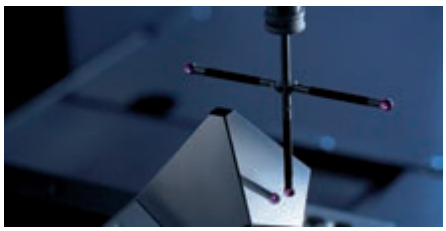
Werkzeugbau, mechanisches Bearbeiten



Beschichten



Prüfen



Testen (Tooling Academy)



Verpacken




Versenden



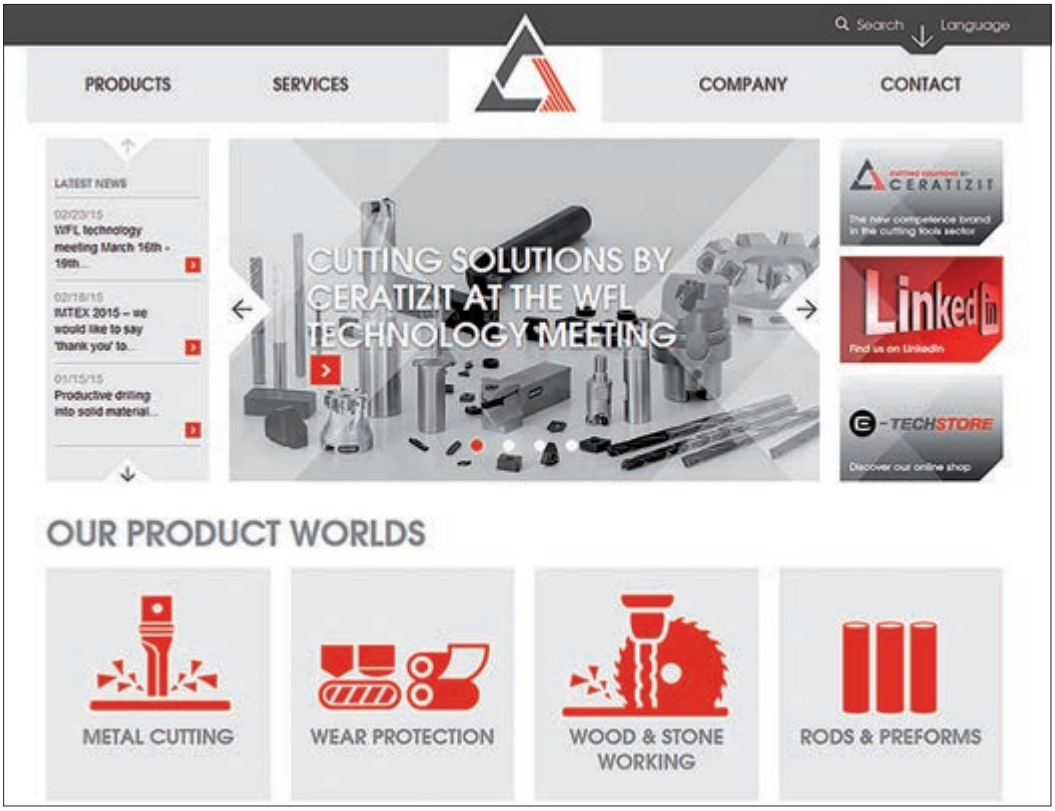
# Online-Service

Natürlich sind wir auch online für Sie da - rund um die Uhr! Auf der neuen CERATIZIT-Webseite finden Sie nicht nur alle Details zu unseren innovativen Produkten, sondern können diese auch gleich bestellen.

Dafür stellen wir Ihnen unseren neuen und verbesserten E-TECHSTORE bereit. Mit der Lösung CONFIGURATE-Service können Sie sogar Ihr maßgeschneidertes Semi-Standardwerkzeug beauftragen.

## Die neue CERATIZIT-Webseite

Der Online-Auftritt von CERATIZIT besticht durch zeitgemäßes Design und mehr Benutzerfreundlichkeit. Ab sofort ist die Webseite auch mobil besonders leicht und intuitiv nutzbar.




## CERATIZIT-Produktwelten

In den verschiedenen Produktwelten haben Sie Zugriff auf über 80 Produkt-Detailseiten aus den Bereichen Zerspanung, Stäbe & Formteile, Verschleißschutz sowie Holz- & Gesteinsbearbeitung. Entdecken Sie Produktvideos, Anwendungsbeispiele und Erfolgsgeschichten.



# Anwendungstechnik

Profitieren Sie von unserer jahrzehntelangen Erfahrung und den einzigartigen Kenntnissen über das Verhalten der Werkstoffe in der Anwendung. Unsere Experten betrachten Ihren Anwendungsprozess im Detail und stimmen das Produktprogramm genauestens darauf ab.





## Leistungspaket

- Empfehlung von Einsatzdaten und Werkzeugen bei Produktauslegung
- Technische Unterstützung per E-Mail und Telefon
- Technische Unterstützung für alle Standard- und Segmentprodukte von Kunden und Händlern vor Ort
- Ausarbeitung von Bearbeitungsvorschlägen
- Beurteilung von Minderleistungen
- Durchführung von Markterprobungen
- Unterstützung und Präsenz auf Messen
- Technische Schulung von Kunden, Händlern und Außendienst

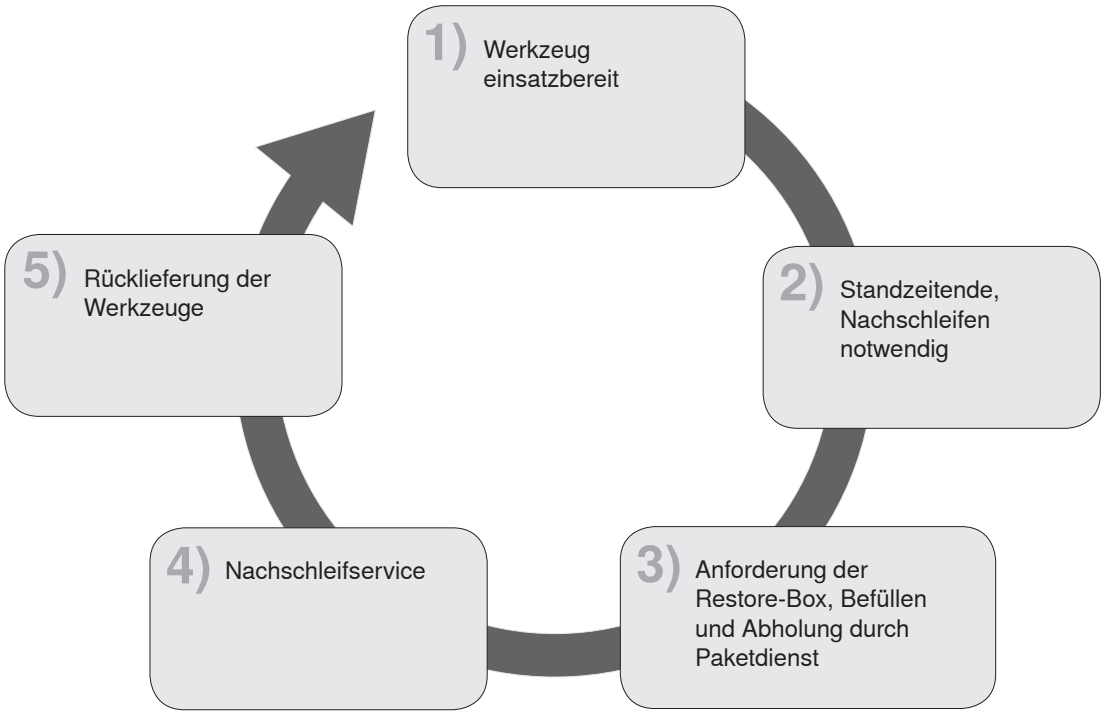


# RESTORE

## Nachschleifservice für Standard-, Semi- und Sonderwerkzeuge

Vertrauen Sie auf die weltweit bekannte und einheitlich hohe Produktqualität von CERATIZIT und den zuverlässigen, optimal auf Sie und Ihre Produkte abgestimmten Service. Dazu gehört selbstverständlich auch das Nachschleifen von Vollhartmetall-Werkzeugen - denn trotz höchster Qualität und Standzeiten erreicht jedes Werkzeug früher oder später die Verschleißgrenze.
Selbstverständlich sind auch die Preise unseres restore-Service fair kalkuliert und transparent - beim CERATIZIT-Standardprogramm von Serviceumfang und Werkzeuggruppe abhängig, ungeachtet des Anlieferzustandes Ihres Werkzeugs.






## Performance fast wie ein Neuwerkzeug

Sie erhalten Ihre bearbeiteten Werkzeuge mit Original-Geometrien zurück. Die Werkzeuge werden auf den Original-Maschinen mit den Original-Programmen geschliffen und ggf. in den Original-Beschichtungsanlagen beschichtet. Sie erreichen nahezu 100 % der Standzeit und Zerspanungsleistung eines Neuwerkzeugs.

## Ihre Vorteile

- Hohe Prozesssicherheit, da gleiche Einsatzparameter wie bei Neuwerkzeugen
- Deutlich reduzierte Produktions- und Werkzeugkosten
- Geringerer Werkzeugvorrat durch schnellen Service

## Und so funktioniert's:

- Schreiben Sie eine E-Mail an restore@ceratizit.com oder wenden Sie sich direkt an Ihren Außendienstmitarbeiter bzw. die nächste CERATIZIT-Niederlassung.
- Sie erhalten auf Wunsch unsere speziell entwickelte Restore-Service-Box für den sicheren Versand Ihrer Werkzeuge, inklusive Nachschleif-Lieferschein für eine unkomplizierte Abwicklung des Auftrags.
- Nach Befüllen der restore-Service-Box genügt ein kurzer Anruf oder eine E-Mail an restore@ceratizit.com.
- Bis zum nächsten Arbeitstag holt der beauftragte Paketdienst die Box bei Ihnen ab. Die Kosten des Transports übernehmen selbstverständlich wir.
- Nach Ankunft Ihrer Werkzeuge werden sie in unserem Nachschleifzentrum geprüft, ob bzw. inwieweit sie nachgearbeitet werden können. Sollte ein Nachschleifen nicht mehr möglich sein, erhalten Sie das Werkzeug unbearbeitet zurück.
- Ihre Werkzeuge werden in Herstellerqualität geschliffen und ggf. beschichtet. Selbstverständlich unterliegen die aufbereiteten Werkzeuge unseren strengen Qualitätskontrollen durch erfahrene Fachkräfte, bevor sie wieder in den Versand gelangen. Auf Wunsch erhalten Sie gerne das entsprechende Prüfprotokoll.








Nach Fertigstellung erhalten Sie Ihre Werkzeuge einsatzfertig in der original CERATIZIT-Verpackung zurück. Die Lieferzeit beträgt standardmäßig 15 Arbeitstage. Die Rücklieferung erfolgt zu den vereinbarten Konditionen.

Sie haben Fragen – sprechen Sie uns an!
E-Mail: **restore@ceratizit.com**

# E-TECHSTORE

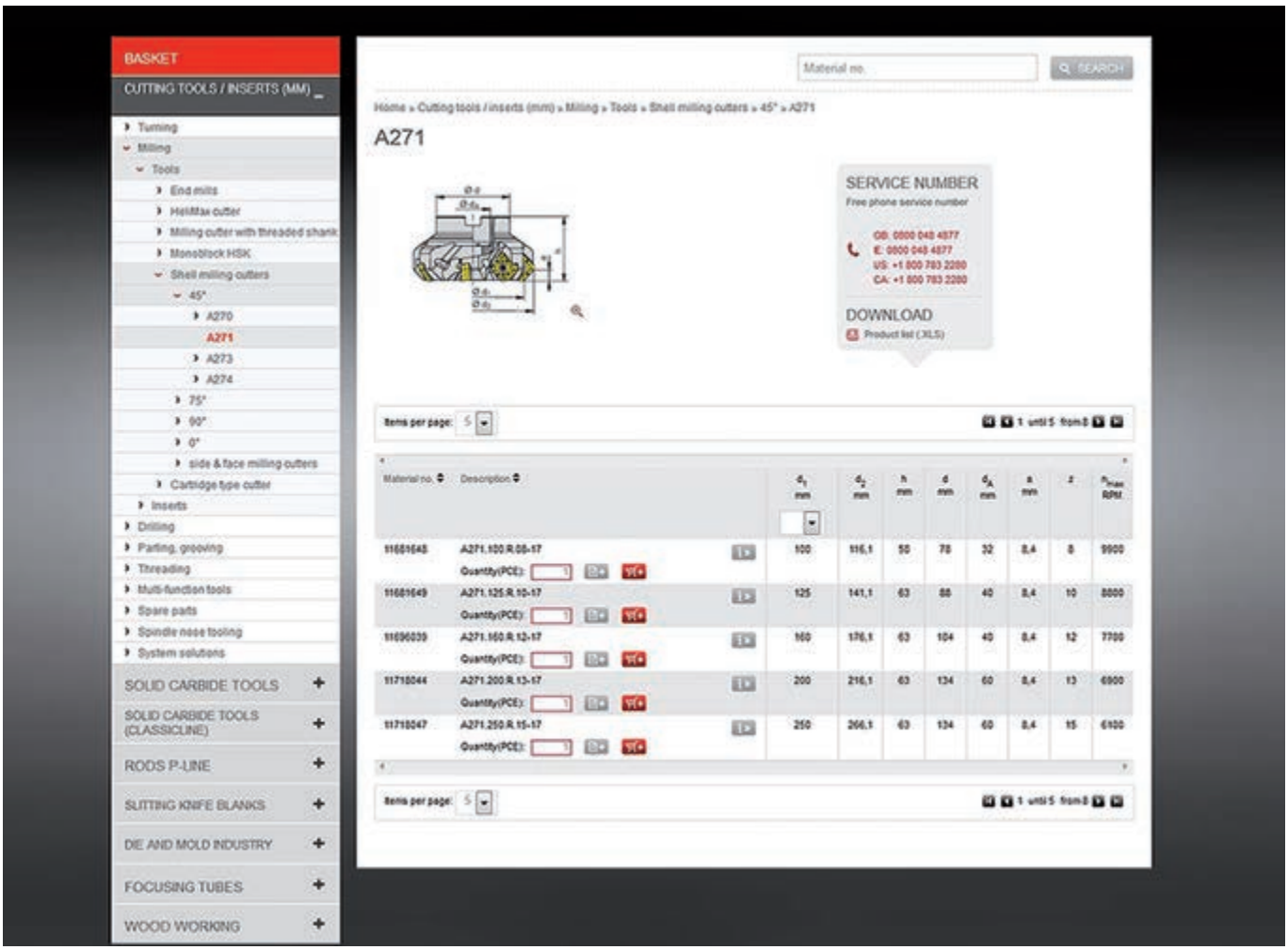
Unser Online-Shop bietet Ihnen über 25.000 Standard- und Sonderprodukte: Wendeschneidplatten- und Vollhartmetall-Werkzeuge für die Zerspanung, Produkte für die Holz- & Gesteinsbearbeitung, Hartmetallstäbe, Kreissägenrohlinge, Schnitt- und Stanzwerkzeuge und Fokussierrohre.

Bestellen Sie rund um die Uhr und lassen Sie sich alle Verfügbarkeiten in Echtzeit anzeigen.



## Alles auf einen Blick

Sehen Sie alle wichtigen Produktinformationen auf einen Blick, inklusive STEP-Files und Übersicht aller kundenspezifischen On- und Offline-Transaktionen mit CERATIZIT. Über die „Track & Trace"-Funktion können Sie jederzeit den aktuellen Status Ihrer Bestellung abrufen. Bei Bedarf haben Sie die Möglichkeit, Ihren persönlichen Ansprechpartner einfach und direkt zu kontaktieren.

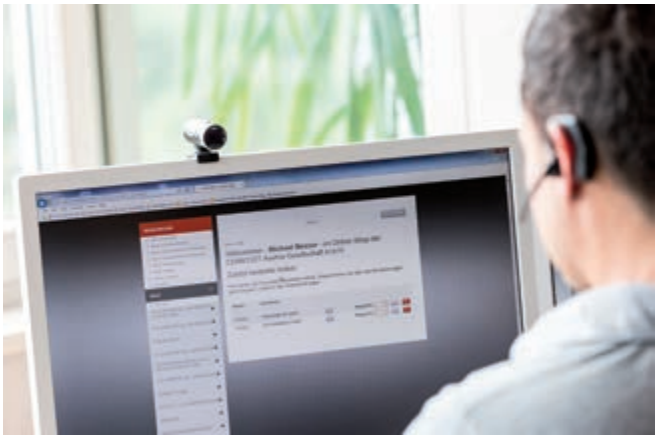


## Einfachere Handhabung

Dank benutzerfreundlichen Designs und intelligenter Navigation finden Sie schnell und einfach alle benötigten Produktinformationen.

Wir haben den Bestellvorgang vereinfacht, Wiederholbestellungen sind jetzt ebenfalls möglich. Zudem haben wir den Shop für die Nutzung mit Tablet-PCs und Smartphones optimiert.

Im neuen Profilbereich können Sie Ihre persönlichen Daten verwalten.



# Anbindung an Ihr System

Sie möchten beispielsweise Ihr ERP-System an unseren Shop anbinden? Kein Problem! Unser E-Commerce Team steht Ihnen gerne zur Verfügung. Unsere IT unterstützt alle gängigen Anbindungsformate (EDI, XML, OCI, etc.).
Sprechen Sie uns einfach an! Unser Techniker analysiert gemeinsam mit Ihnen die Voraussetzungen und berät Sie bei der Wahl der richtigen Technologie.





Sie haben Fragen – sprechen Sie uns an!
E-Mail: **esolutions@ceratizit.com**

# OEM-Service

Erhalten Sie nicht nur exzellente Zerspanungswerkzeuge, sondern auch maßgeschneiderte Gesamtkonzepte und Werkzeugpakete für die optimale Bearbeitung von ganzen Werkstücken auf Ihrer Maschine.



## Ihr Leistungspaket

Hinter jedem Projekt steht ein großes Team mit unterschiedlichen Spezialisierungen und Expertise-Feldern: Ob Projektleiter, Außen- und Innendienst, Anwendungstechnik, Konstruktion, Produktion oder Logistik - Sie profitieren von dem gesamten Leistungsumfang eines multinationalen Unternehmens mit weltweitem Servicenetzwerk:

- Definition von Bearbeitungsschritten mit Werkzeugen
- Festlegung von Schnittdaten und Berechnung der Bearbeitungszeiten
- Berechnung der Bearbeitungskosten pro Stück
- Prognose der Werkzeugkosten pro Stück
- Leistungsberechnung (Schnittkraft, Spindelleistung, Drehmoment)
- Probebearbeitung in der CERATIZIT-Tooling-Academy
- Werkzeugmontage und Voreinstellung
- Betreuung bei Maschinenvorabnahme und -endabnahme
- Ausführliche Projektdokumentation

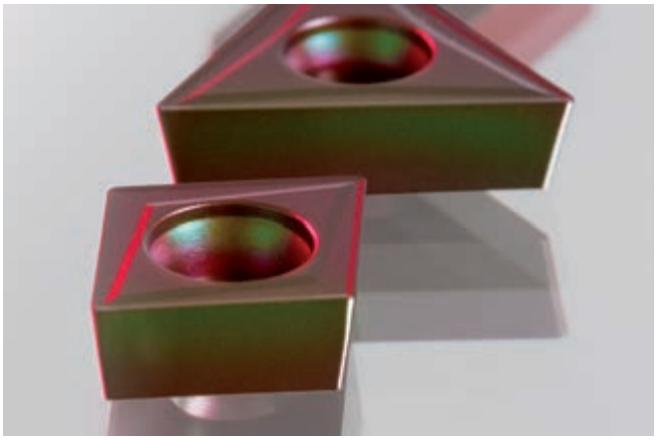
## Alles aus einer Hand – weltweit für Sie da

Ein eigenes OEM-Team koordiniert jedes Projekt zentral von unserem Kompetenzzentrum für Cutting Solutions by CERATIZIT in Reutte, Österreich aus. So können wir Ihnen höchste Professionalität, Zuverlässigkeit, sowie die auf Ihre Bedürfnisse individuell abgestimmte Lösung garantieren. Selbstverständlich unterstützen wir Sie auch kompetent bei der Umsetzung des erstellten Konzepts direkt bei Ihnen vor Ort - und das auf der ganzen Welt!



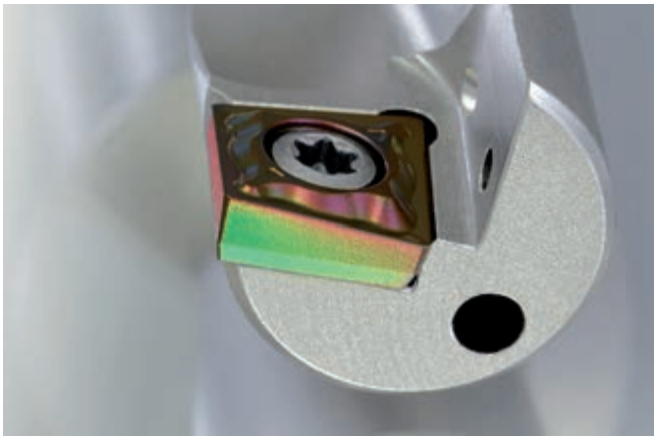
## Variables Werkzeugangebot

Neben der Analyse und Optimierung von Bearbeitungsprozessen schlagen wir Ihnen natürlich auch passende Werkzeugpakete mit CERATIZIT-Werkzeugen inklusive Werkzeugaufnahmen, Zubehör und Ersatzteilen vor.



## Schneidstoffe

Je nach Anwendung empfehlen wir den geeigneten Schneidstoff inklusive passender Beschichtung: Ob Hartmetall, Cermets, Schneidkeramik, PKD oder CBN - die gesamte Prozesskette zur Herstellung der Produkte findet im eigenen Unternehmen statt; so können wir Ihnen eine erstklassige Qualität garantieren.



## Standardwerkzeuge

Bei uns finden Sie eine große Auswahl an Wendeschneidplatten- und Vollhartmetall-Werkzeugen für Zerspanungsanwendungen, einschließlich Multifunktionswerkzeugen. Überzeugen Sie sich selbst von der Leistungsfähigkeit und Zuverlässigkeit unserer Produkte.

## Spezifische Branchenlösungen

Ein großer Teil unserer Werkzeuge und Wendeschneidplatten wird äußerst erfolgreich in den Branchen Aerospace, Energietechnik, Automotive, Schwerzerspanung oder Erdölförderung eingesetzt. Profitieren Sie von unserer langjährigen Fokussierung und unserem umfassenden Know-how in diesen Segmenten der spanenden Bearbeitung.



Sie haben Fragen – sprechen Sie uns an!
E-Mail: **info@ceratizit.com**

# CONFIGURATE

## Ihr maßgeschneidertes Werkzeug

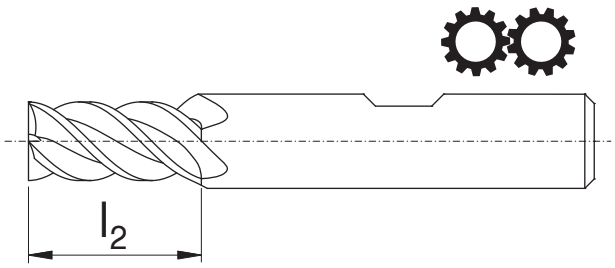
Mit der Online-Lösung CONFIGURATE ist es möglich, mit wenigen Mausklicks ein maßgeschneidertes Semi-Standard-werkzeug zu konfigurieren.

Mit dem neuen CONFIGURATE-Tool bieten wir Ihnen eine einfache und schnelle Bestell-Abwicklung von kundenindivi-duellen Vollhartmetall-Werkzeugen. Erstellen Sie in unserem E-TECHSTORE mit nur wenigen Mausklicks Ihr maßgeschnei-dertes Semi-Standardwerkzeug – und das sieben Tage die Woche, 24 Stunden am Tag!

## Ihre Vorteile

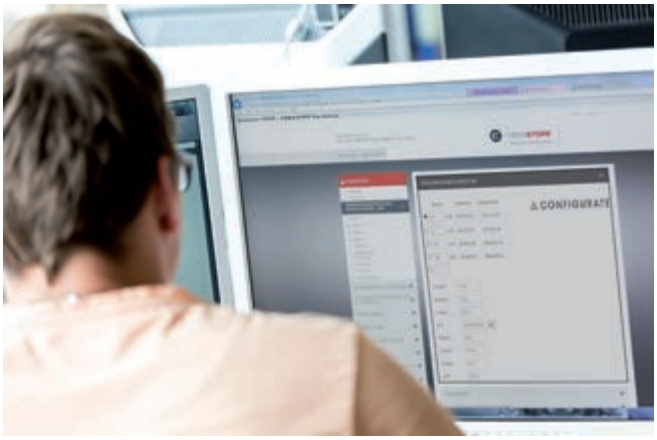
- Angebote/Bestellung individueller Werkzeuge – so schnell und einfach wie bei jedem Standardwerkzeug.
- Rund um die Uhr verfügbar: Bestellen Sie unabhängig von Geschäftszeiten dank vollautomatischer Abwicklung.
- Einfache Handhabung durch menügeführte Navigation: Gelangen Sie in wenigen Schritten zu Ihrem individuellen Werkzeug.
- Nutzen Sie das Tool auch mobil über Tablet-PCs und Smartphone.

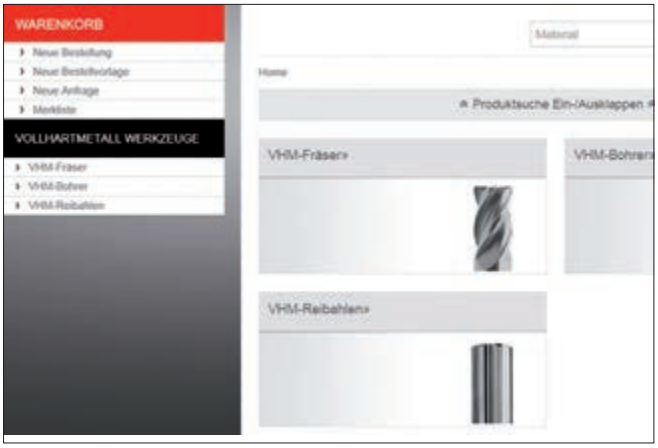
| | |
|---|---|
| **$d_1$ [mm]*** | 10,00 |
| **$d_3$ [mm]*** | 9,50 |
| **$l_1$ [mm]*** | 72,00 |
| **ST*** | DIN6535HB |
| **$l_2$ [mm]*** | 15,00 |
| **$l_3$ [mm]*** | 30,00 |
| **F [mm]*** | 0,20 |
| **a [mm]*** | 45,00 |

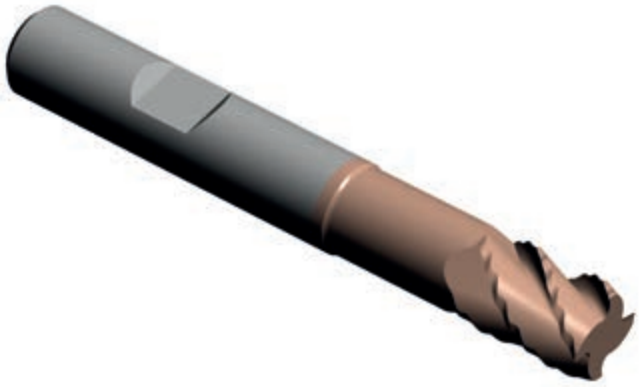


## Und so funktioniert's:

- Melden Sie sich wie gewohnt mit Ihren persönlichen Zugangsdaten unter e-techstore.com an.
- Wählen Sie ein Ausgangs-Produkt aus unserem breiten Standard-Programm an Vollhartmetall-Fräsern und -Bohrern.
- Legen Sie über die einfache Menüsteuerung Ihre individuellen Werkzeug-Abmessungen fest.
- Auf Knopfdruck werden Ihre Angaben auf Realisierbarkeit geprüft und Sie erhalten online Staffelpreise für die von Ihnen definierten Stückzahlen.
- Sie können sich ein maßstabsgetreues 3D-Modell des konfigurierten Werkzeuges ansehen.
- Bestellen Sie sofort Ihr Produkt oder erhalten Sie ein Angebot.
- In nur wenigen Minuten erhalten Sie von unserem System eine Auftragsbestätigung per E-Mail oder ein Preisangebot, inklusive Lieferzeit. Eine Angebotszeichnung, eine DXF-Datei sowie ein maßstabgetreues STEP-Volumenmodell zur Kollisionsbetrachtung bekommen Sie ebenso zugesandt.








Sie haben Fragen - sprechen Sie uns an!
E-Mail: **configurate@ceratizit.com**

# Tooling-Academy

Lernen auch Sie das Verhalten der Werkzeuge in Ihren Anwendungen bis ins Detail kennen – und zwar auf Maschinen, wie sie heute in jeder Fertigung im Einsatz sind. In unserer Tooling-Academy haben wir dafür Versuchs- und Schulungszentren mit modernsten Maschinen und neuester Analyse-Technik eingerichtet. In Zusammenarbeit mit Ihnen untersuchen wir die Bearbeitbarkeit der Werkstoffe und der Werkstücke. Auf Basis der Erkenntnisse von Simulationen und Praxistests leiten wir dann konkrete Werkzeugempfehlungen ab oder entwickeln spezifische Werkzeuglösungen für Sie.

Unsere erste Tooling-Academy haben wir in Reutte, Österreich – unserem Kompetenzzentrum für Zerspanung – eröffnet. Um auch in der Nähe unserer asiatischen Kunden zu sein, gibt es seit 2011 eine zweite Tooling-Academy in Tianjin, China.



## Moderne Ausstattung

Sieben Hightech-Dreh- und Fräsmaschinen stehen in der Tooling-Academy in Reutte für Tests bereit. Tianjin verfügt über drei Zerspanungsmaschinen.

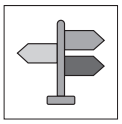
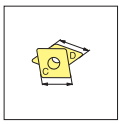
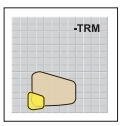
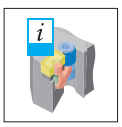
- 3- und 5-Achsen-Fräsmaschine
- HSC-Fräszentrum
- Bettfräsmaschine
- Schwerfräsmaschine
- Drehmaschine
- Dreh-Fräs-Zentrum
- Schwerdrehmaschine
- NC-Revolverdrehmaschine

Zudem setzen wir die neueste High-Speed-Kameratechnik ein, um Zerspanungsprozesse in extremer Zeitlupe zu betrachten. So erhalten wir detaillierte Informationen über den gesamten Zerspanungsprozess.

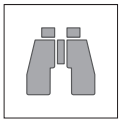
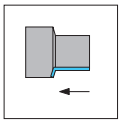
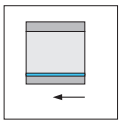


# Inhaltsverzeichnis

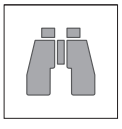
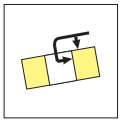
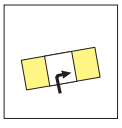

## Einführung

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|  | MasterGuide | A11 |
|  | Sortenübersicht / -beschreibung | A12-A23 |
|   | Spanleitstufen | A24-A38 |
|  | Klemmsysteme | A39-A40 |

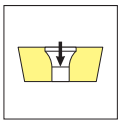
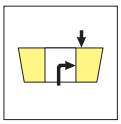
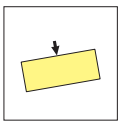
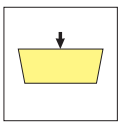
## Anwendung

| | | |
|---|---|---|
|  | Übersicht | A42 |
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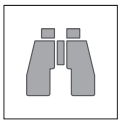
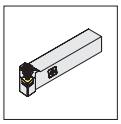
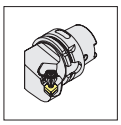
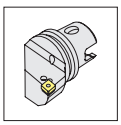
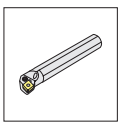
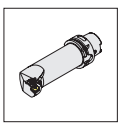
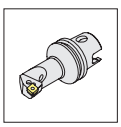
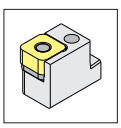
## Wendeplatten

| | | |
|---|---|---|
|  | Übersicht | A62 |
|  | MaxiLock D | A63-A81 |
|  | MaxiLock N | A63-A81 |

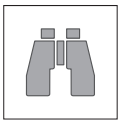
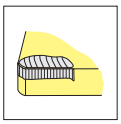
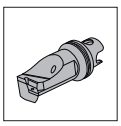
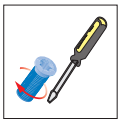
## Wendeplatten

| | | |
|---|---|---|
|  | MaxiLock S | A82-A95 |
|  | MaxiLock P | A96 |
|  | Simplex N | A97-A101 |
|  | Simplex P | A102-A105 |

## Werkzeuge

| | | |
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|  | Außenbearbeitung UTS | A201-A227 |
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|  | Innenbearbeitung UTS | A261-A269 |
|  | Radsatzbearbeitung | A270 |

## Technische Informationen


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|  | Oberflächen | A277-A280 |
|  | Werkzeugsysteme UTS / HSK | A281-A284 |
|  | Formelsammlung | A285 |
|  | Werkstoffinformationen | A286-A289 |
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# Der Leitfaden durch den Katalog

## Neuerungen im Kapitel Drehen

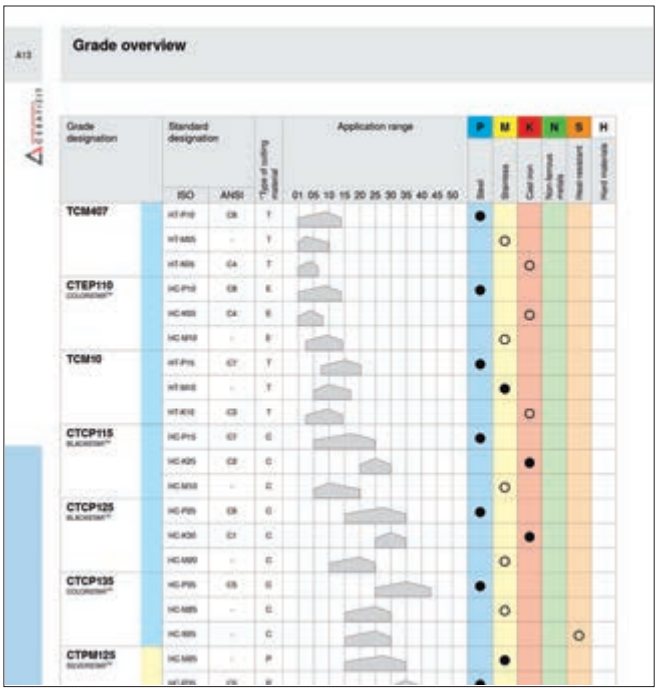
- Neu gestaltete Übersicht und Zuordnung der Schneidstoffe
- Detaillierte Beschreibung und Darstellung der Spanleitstufen

## In wenigen Schritten die richtige Auswahl treffen

1

### Auswahl des Schneidstoffes

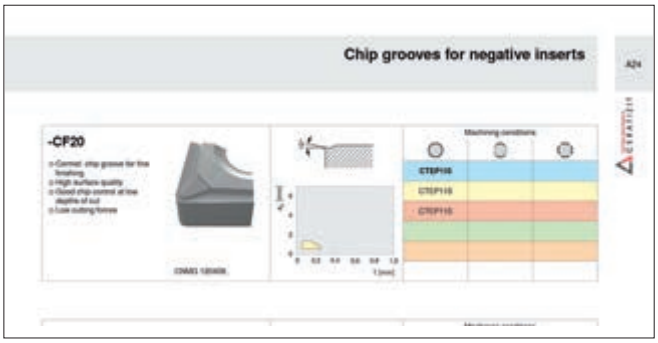
Die Auswahl erfolgt anhand des zu bearbeitenden Werkstoffes




2

### Auswahl der Spanleitstufe

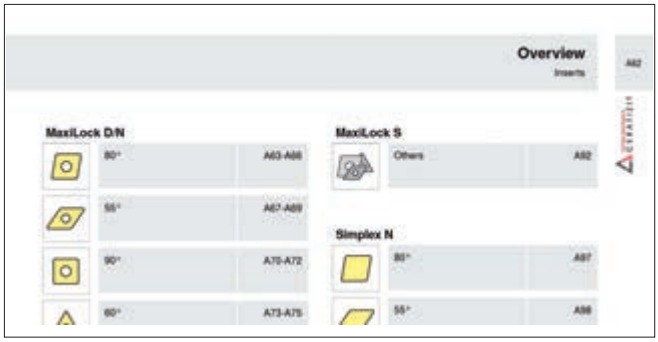
Die Auswahl erfolgt anhand der Bearbeitungsbedingungen und des zu bearbeitenden Werkstoffes




3

### Auswahl der Wendeplattentype

Überblick über die Werkzeugsysteme und Wendeplattenformen



5

## Auswahl der Wendeplatte

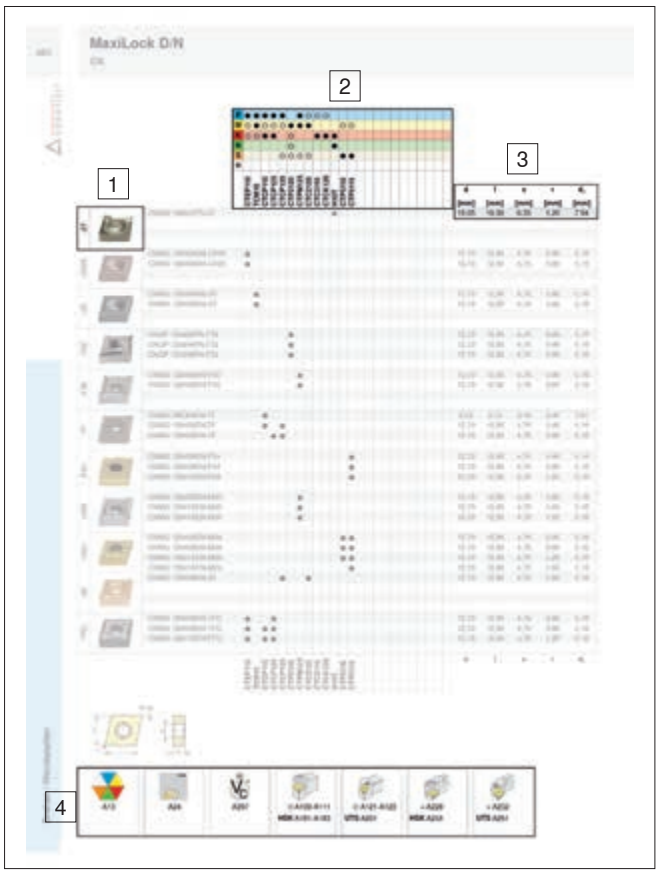
Diese Produktseite zeigt für die ausgewählte Wendeplattenform die verfügbaren Geometrien und Sorten

1 Spanleitstufen

2 Mögliche Schneidstoffe

3 Die Hauptabmessungen

4 Verweis zu weiterführenden Informationen




4

## Auswahl des Werkzeuges

Die Produktseite zeigt das Programm der Drehwerkzeuge mit den Hauptabmessungen sowie einen Hinweis auf die Wendeplattentypen

1 Mögliche Anwendungen

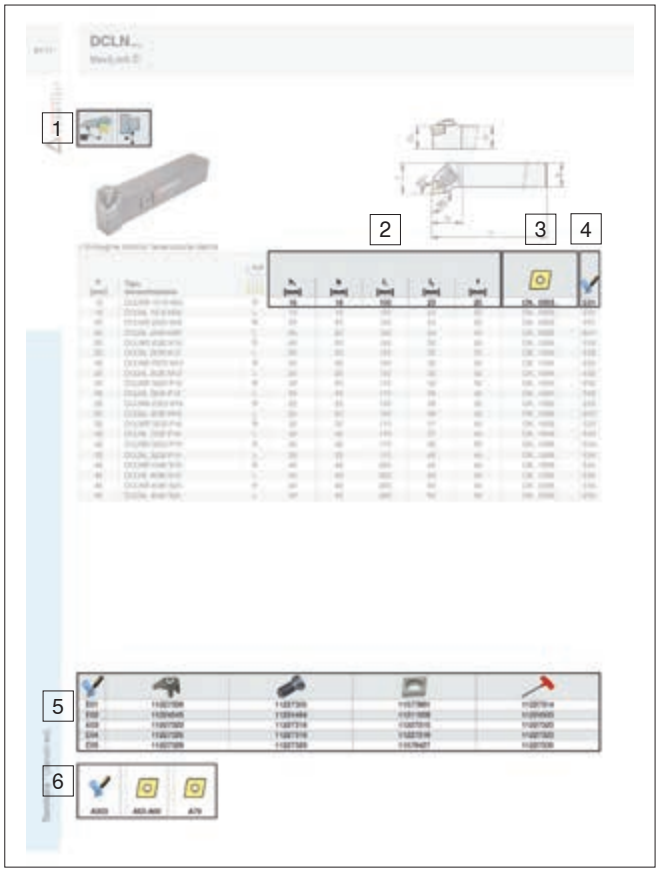
2 Die Hauptabmessungen

3 Verweis zu den Wendeplatten

4 Ersatzteile

5 Ersatzteilübersicht

6 Verweis zu weiterführenden Informationen



# Bezeichnungssystem CERATIZIT

Klemmhalter

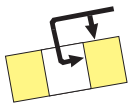
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | P | C | L | N | R | 20 | 20 | K | 12 | -T |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| UT50 | - | P | C | L | N | R | | | | -12 | |
| 0 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| HSK-T63 | - | D | C | L | N | R | | | | -12 | |
| 0 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

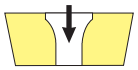
## 0 System / Größe

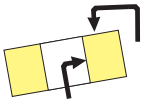
**UT = UTS**
nach ISO 26622
UT40 = UTS 40 mm
UT50 = UTS 50 mm
UT63 = UTS 63 mm

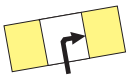
**HSK-T**
nach ISO 12164
HSK-T63 = 63mm
HSK-T100 = 100mm

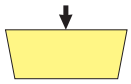
## 1 Klemmhalter

**D** 
Von oben und über Bohrung geklemmt

**S** 
Über Bohrung aufgeschraubt

**M** 
Von oben und über Bohrung geklemmt

**P** 
Über Bohrung geklemmt

**C** 
Von oben geklemmt

**X**
X Sonderausführung

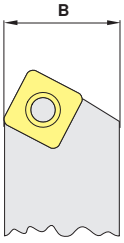
## 2 Plattenform

| | | | | | |
|---|---|---|---|---|---|
| Eckenwinkel Rhombus | | | | 35° | V |
| | | | | 55° | D |
| | | | | 75° | E |
| | | | | 80° | C |
| | | | | 86° | M |
| Eckenwinkel Rhomboid | | | | 55° | K |
| | | | | 82° | B |
| | | | | 85° | A |
| andere Formen | 90° | L | – | | R |
| | 108° | P | 90° | | S |
| | 120° | H | 60° | | T |
| | 135° | O | 80° | | W |

## 6 Schafthöhe




## 7 Schaftbreite



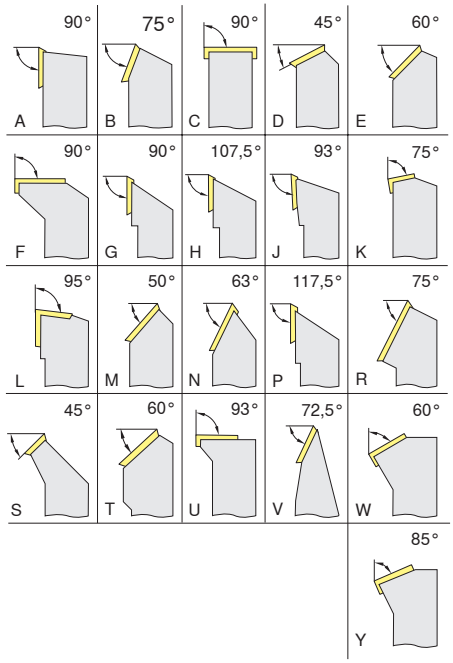

## 8 Werkzeuglänge

| $l_1$ mm | $l_1$ inch | | $l_1$ mm | $l_1$ inch | |
|---|---|---|---|---|---|
| 32 | 4.000 | A | 160 | 4.500 | N |
| 40 | 4.500 | B | 170 | 5.500 | P |
| 50 | 5.000 | C | 180 | – | Q |
| 60 | 6.000 | D | 200 | 6.000 | R |
| 70 | 7.000 | E | 250 | 7.000 | S |
| 80 | 8.000 | F | 300 | 8.000 | T |
| 90 | 5.500 | G | 350 | 5.500 | U |
| 100 | 5.625 | H | 400 | 3.500 | V |
| 110 | 5.300 | J | 450 | 3.500 | W |
| 125 | 14.000 | K | 500 | 3.750 | Y |
| 140 | 6.800 | L | Spezial | | X |
| 150 | 4.400 | M | | | |



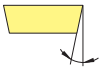
3

## Halterform




4

## Freiwinkel

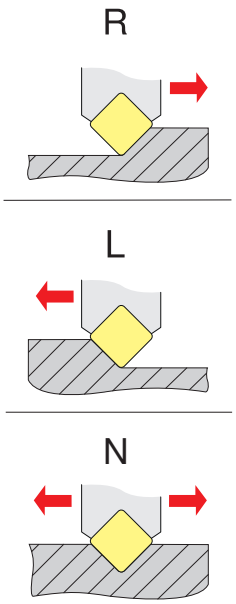


| | | | |
|---|---|---|---|
| 3° | **A** | 25° | **F** |
| 5° | **B** | 30° | **G** |
| 7° | **C** | 0° | **N** |
| 15° | **D** | 11° | **P** |
| 20° | **E** | *) | **O** |

*) Nicht in der Norm enthaltene Freiwinkel, bei denen besondere Angaben erforderlich sind

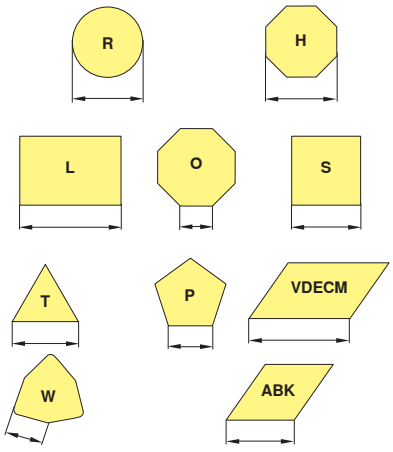
5

## Schneidrichtung




9

## Schneidenlänge




10

## Herstellerangabe

T = Kniehebel
Sonderlänge (mm)
Plattenstärke (abweichend Standard)
Sonderausführung (X..)
Maschinenhersteller (spezifisch)

# Bezeichnungssystem CERATIZIT

Bohrstangen

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | 25 | R | P | C | L | N | R | 12 | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| UT40- | | 25 | G | - P | C | L | N | R | - 12 | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| HSK-T63- | | 50 | Q | - D | C | L | N | R | - 12 | |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

0

## System / Größe

**UT = UTS**
nach ISO 26622
UT40 = UTS 40 mm
UT50 = UTS 50 mm
UT63 = UTS 63 mm

**HSK-T**
nach ISO 12164
HSK-T63 = 63mm
HSK-T100 = 100mm

1

## Schaftausführung

| | | | |
|---|---|---|---|
| **S** | Stahlschaft | **E** | wie C mit Kühlbohrung |
| **A** | Stahlschaft mit Kühlbohrung | **F** | wie C mit Dämpfung |
| **B** | Stahlschaft mit Dämpfung | **G** | wie C mit Kühlbohrung und Dämpfung |
| **D** | Stahlschaft mit Kühlbohrung und Dämpfung | **H** | Schwermetall |
| **C** | Hartmetall-Schaft mit Stahlkopf | **J** | Schwermetall mit Kühlbohrung |

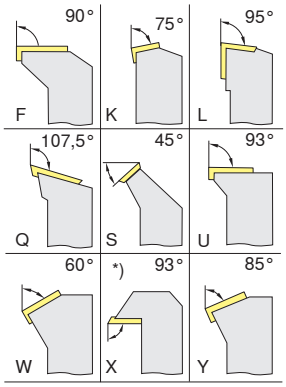
5

## Plattenform

| | | | | | |
|---|---|---|---|---|---|
| Eckenwinkel Rhombus | | | | 35° | **V** |
| | | | | 55° | **D** |
| | | | | 75° | **E** |
| | | | | 80° | **C** |
| | | | | 86° | **M** |
| Eckenwinkel Rhomboid | | | | 55° | **K** |
| | | | | 82° | **B** |
| | | | | 85° | **A** |
| 90° | **L** | | – | | **R** |
| 108° | **P** | | 90° | | **S** |
| 120° | **H** | | 60° | | **T** |
| 135° | **O** | | 80° | | **W** |

6

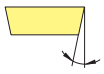
## Halterform




*) Werksnorm CERATIZIT

7

## Freiwinkel



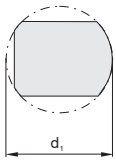
| | | | |
|---|---|---|---|
| 3° | **A** | 25° | **F** |
| 5° | **B** | 30° | **G** |
| 7° | **C** | 0° | **N** |
| 15° | **D** | 11° | **P** |
| 20° | **E** | * | **O** |

*) Nicht in der Norm enthaltene Freiwinkel, bei denen besondere Angaben erforderlich sind

2

## Schaftdurchmesser

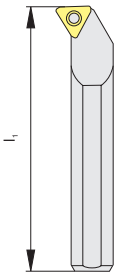
| $d_1$ mm | $d_1$ inch |
|---|---|
| 08 | Eine zweistellige Zahl welche den Bohrstangendurchmesser in 1/16-Zoll darstellt. |
| 10 | |
| 12 | |
| 16 | |
| 20 | |
| 25 | |
| 32 | |
| 40 | |
| 50 | |
| 60 | |




3

## Werkzeuglänge

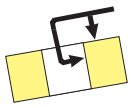
| $l_1$ mm | $l_1$ inch | |
|---|---|---|
| 80 | 3 | F |
| 100 | 3,5 | H |
| 110 | 4 | J |
| 125 | 4,5 | K |
| 140 | 5 | L |
| 150 | 5,5 | M |
| 160 | 6 | N |
| 170 | 6,5 | P |
| 180 | 6,75 | Q |
| 200 | 7 | R |
| 250 | 8 | S |
| 300 | 10 | T |
| 350 | 12 | U |
| 400 | 14 | V |
| 450 | 16 | W |
| 500 | 18 | Y |
| | 20 | |
| Spezial | | X |




4

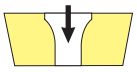
## Klemmung

**D**



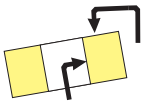
Von oben und über Bohrung geklemmt

**S**



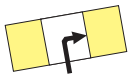
Über Bohrung aufgeschraubt

**M**



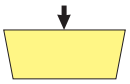
Von oben und über Bohrung geklemmt

**P**



Über Bohrung geklemmt

**C**



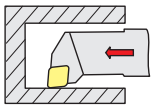
Von oben geklemmt

X Sonderausführung

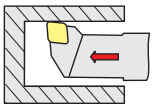
8

## Schneidrichtung

R

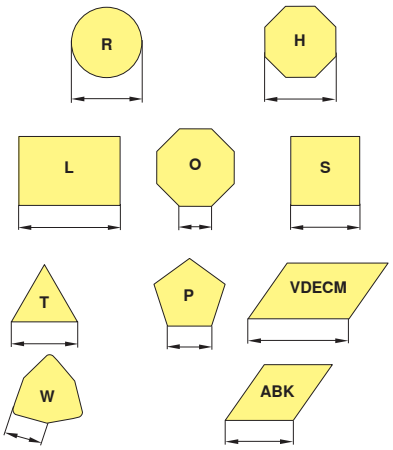


L



9

## Schneidenlänge




10

## Herstellerangabe

T = Kniehebel
Sonderlänge (mm)
Plattenstärke (abweichend Standard)
Sonderausführung (X..)
Maschinenhersteller (spezifisch)

# Bezeichnungssystem nach ISO 1832

Wendeplatten

**Wendeschneidplatte – metrisch**

| C | N | M | G | 12 | 04 | 08 | E | N | - | M50 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | 13 |

**Wendeschneidplatte – inch**

| C | N | M | G | 4 | 3 | 2 | E | N | - | M50 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | 13 |

**Wendeschneidplatte, CBN, Keramik – metrisch**

| C | N | G | A | 12 | 04 | 08 | S | N | - | 020D | _ | B | 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | 10 | | 11 | 12 |

**Wendeschneidplatte, CBN, Keramik – inch**

| C | N | G | A | 4 | 3 | 2 | S | N | - | 020D | _ | B | 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | 10 | | 11 | 12 |

1

## Plattenform

| | | |
|---|---|---|
| Rhombus | 35° | V |
| | 55° | D |
| | 75° | E |
| | 80° | C |
| | 86° | M |
| Rhomboid | 55° | K |
| | 82° | B |
| | 85° | A |
| andere Formen | 90° | L |
| | 108° | P |
| | 120° | H |
| | 135° | O |
| | – | R |
| | 90° | S |
| | 60° | T |
| | 80° | W |

2

## Freiwinkel

| | | | |
|---|---|---|---|
| 3° | A | 25° | F |
| 5° | B | 30° | G |
| 7° | C | 0° | N |
| 15° | D | 11° | P |
| 20° | E | | |

Nicht in der Norm enthaltene Freiwinkel, bei denen besondere Angaben erforderlich sind } O

3

## Toleranzen

| | d ± | | m ± | | s ± | |
|---|---|---|---|---|---|---|
| | [mm] | [inch] | [mm] | [inch] | [mm] | [inch] |
| A | 0,025 | .0010 | 0,005 | .0002 | 0,025 | .001 |
| F | 0,013 | .0005 | 0,005 | .0002 | 0,025 | .001 |
| C | 0,025 | .0010 | 0,013 | .0005 | 0,025 | .001 |
| H | 0,013 | .0005 | 0,013 | .0005 | 0,025 | .001 |
| E | 0,025 | .0010 | 0,025 | .0010 | 0,025 | .001 |
| G | 0,025 | .0010 | 0,025 | .0010 | 0,13 | .005 |
| J | 0,05-0,15* | .002-.006* | 0,005 | .0002 | 0,025 | .001 |
| K | 0,05-0,15* | .002-.006* | 0,013 | .0005 | 0,025 | .001 |
| L | 0,05-0,15* | .002-.006* | 0,025 | .0010 | 0,025 | .001 |
| M | 0,05-0,15* | .002-.006* | 0,05-0,20 | .003-.008* | 0,13 | .005 |
| N | 0,05-0,15* | .002-.006* | 0,05-0,20 | .003-.008* | 0,025 | .001 |
| U | 0,08-0,25* | .003-.010* | 0,13-0,38 | .005-.015* | 0,13 | .005 |

* Von der Plattengröße abhängig

6

## Plattenstärke

| Kennzahl | | | |
|---|---|---|---|
| [inch] | [mm] | [mm] | [inch] |
| 1/16 | 1,59 | 01 | 1 |
| 3/32 | 2,38 | 02 | |
| 1/8 | 3,18 | 03 | 2 |
| 5/32 | 3,97 | T3 | |
| 3/16 | 4,76 | 04 | 3 |
| 7/32 | 5,56 | 05 | |
| 1/4 | 6,35 | 06 | 4 |
| 5/16 | 7,94 | 07 | 5 |
| 3/8 | 9,52 | 09 | 6 |

7

## Eckenradius

| | | Kennzahl | | RN 00 RC MO |
|---|---|---|---|---|
| [mm] | [inch] | [mm] | [inch] | |
| ≤ 0,05 | .0015 | 00 | X0 | |
| 0,1 | .004 | 01 | 0 | |
| 0,2 | .008 | 02 | .5 | |
| 0,4 | 1/64 | 04 | 1 | |
| 0,8 | 1/32 | 08 | 2 | |
| 1,2 | 3/64 | 12 | 3 | |
| 1,6 | 1/16 | 16 | 4 | |
| 2,0 | 5/64 | 20 | 5 | |
| 2,4 | 3/32 | 24 | 6 | |
| 2,8 | 7/64 | 28 | 7 | |
| 3,2 | 1/8 | 32 | 8 | |

8

## Schneidkante

F – scharf

E – gerundet

T – gefast

S – gefast und gerundet

K – doppelt gefast

P – doppelt gefast und gerundet

9

## Schneid-richtung

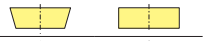
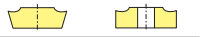
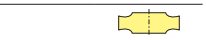
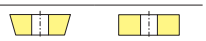
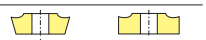
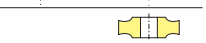
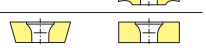
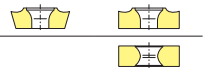
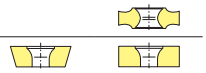
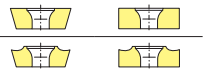
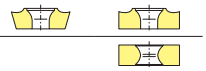
R

L

N

4

## Merkmal

| | |
|---|---|
| N |  |
| R |  |
| F |  |
| A |  |
| M, P |  |
| G, P |  |
| W |  |
| T |  |
| Q |  |
| U |  |
| B |  |
| H |  |
| C |  |
| J |  |
| X | Sonderausführung |

**[inch]**

Änderungen bei IK < als 1/4"

| IK >1/4" | IK <1/4" |
|---|---|
| N / R / F | E |
| A / M / G | D |
| X | X |

5

## Schneidenlänge

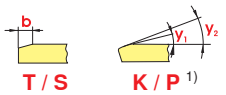
| Typ | ISO | ANSI | L [mm] | L [inch] | d [mm] | d [inch] |
|---|---|---|---|---|---|---|
| C | 06 | 2 | 6,4 | .250 | 6,35 | .250 |
| | 09 | 3 | 9,7 | .382 | 9,525 | .375 |
| | 12 | 4 | 12,9 | .508 | 12,70 | .500 |
| | 16 | 5 | 16,1 | .634 | 15,875 | .625 |
| | 19 | 6 | 19,3 | .760 | 19,05 | .750 |
| | 25 | 8 | 25,8 | 1.016 | 25,4 | 1.000 |
| | 32 | 12 | 32,24 | 1.269 | 31,75 | 1.250 |
| S | 06 | 2 | 6,35 | .250 | 6,35 | .250 |
| | 09 | 3 | 9,525 | .375 | 9,525 | .375 |
| | 12 | 4 | 12,7 | .500 | 12,7 | .500 |
| | 15 | 5 | 15,875 | .625 | 15,875 | .625 |
| | 19 | 6 | 19,05 | .750 | 19,05 | .750 |
| | 25 | 8 | 25,4 | 1.000 | 25,4 | 1.000 |
| | 31 | 10 | 31,75 | 1.250 | 31,75 | 1.250 |
| D | 07 | 2 | 7,7 | .303 | 6,35 | .250 |
| | 11 | 3 | 11,6 | .457 | 9,525 | .375 |
| | 15 | 4 | 15,5 | .610 | 12,70 | .500 |
| V | 11 | 2 | 11,1 | .437 | 6,35 | .250 |
| | 16 | 3 | 16,6 | .653 | 9,525 | .375 |
| | 22 | 4 | 22,10 | .870 | 12,70 | .500 |

| Typ | ISO | ANSI | L [mm] | L [inch] | d [mm] | d [inch] |
|---|---|---|---|---|---|---|
| T | 06 | 1.2 | 6,9 | .272 | 3,97 | .156 |
| | 09 | 1.8 | 9,6 | .378 | 5,56 | .219 |
| | 11 | 2 | 11,0 | .433 | 6,35 | .250 |
| | 16 | 3 | 16,5 | .650 | 9,525 | .375 |
| | 22 | 4 | 22,0 | .079 | 12,70 | .039 |
| | 27 | 5 | 27,5 | 1.083 | 15,875 | .625 |
| | 33 | 6 | 33,0 | 1.299 | 19,05 | .750 |
| W | 06 | 3 | 6,5 | .256 | 9,525 | .375 |
| | 08 | 4 | 8,7 | .331 | 12,70 | .039 |
| | 10 | 5 | 10,9 | .429 | 15,875 | .625 |
| R | 06 | 2 | 6,35 | .250 | 6,35 | .250 |
| | 08 | – | 8,0 | .315 | 8,0 | .315 |
| | 09 | 3 | 9,52 | .375 | 9,52 | .375 |
| | 10 | – | 10,0 | .394 | 10,0 | .394 |
| | 12 | – | 12,0 | .472 | 12,0 | .472 |
| | 12* | 4 | 12,7 | .488 | 12,70 | .488 |
| | 15 | 5 | 15,875 | .625 | 15,875 | .625 |
| | 16 | – | 16,0 | .630 | 16,0 | .630 |
| | 19 | 6 | 19,05 | .750 | 19,05 | .750 |
| | 25 | 8 | 25,0 | .984 | 25,0 | .984 |
| | 25* | – | 25,4 | 1.000 | 25,4 | 1.000 |
| | 31 | 10 | 31,75 | 1,250 | 31,75 | 1,250 |
| | 32 | – | 32,0 | 1.260 | 32,0 | 1.260 |

*) inch-Ausführung

10

## Fasenausführung




T / S K / P 1)

| | [mm] | [inch] | | |
|---|---|---|---|---|
| 015 | 0,15 | .006 | A | 05° |
| 020 | 0,20 | .008 | B | 10° |
| 025 | 0,25 | .010 | C | 15° |
| 050 | 0,50 | .020 | D | 20° |
| 075 | 0,75 | .030 | E | 25° |
| 100 | 1,00 | .040 | F | 30° |

1) Für doppelt gefaste Schneiden werden zwei Buchstaben vergeben

**z.B.**

BE = Fasenwinkel 1 = 10°
Fasenwinkel 2 = 25°

11

## Anzahl Schneiden

einseitig

| | |
|---|---|
| A |  |
| B |  |
| C |  |
| D |  |
| G |  |
| H |  |

gesamte Stärke

| | |
|---|---|
| T |  |
| U |  |
| V |  |
| W |  |
| X |  |
| Y |  |

beidseitig

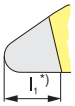
| | |
|---|---|
| K |  |
| L |  |
| M |  |
| N |  |
| P |  |
| Q |  |

ganze Spanfläche

| | |
|---|---|
| S |  |
| F |  |
| E |  |

12

## Segmentlänge

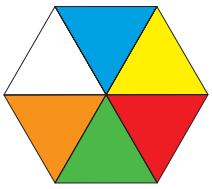



*) ca. Angabe in mm

13

## Stufenbezeichnung

Herstellerangabe siehe Seite A24



## Ebene Werkstoff

Der MasterGuide von CERATIZIT teilt die Werkstoffe nach VDI 3323 in sechs Hauptgruppen (P, M, K, N, S, H) ein. Jeder Gruppe ist eine zum Teil schon aus der ISO 513 bekannte Kennfarbe zugeordnet.

**P** **Stahl**

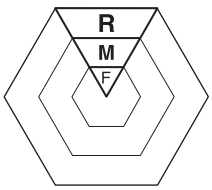
**M** **Rostfrei**

**K** **Eisenguss**

**N** **Nichteisenmetalle und Nichtmetalle**

**S** **hochwarmfeste Legierungen/Titan**

**H** **harte Werkstoffe**




## Ebene Bearbeitung

Jedes Kennfarbenfeld ist durch Linien in drei Ebenen eingeteilt. Diese kennzeichnen die jeweiligen Bearbeitungsarten:

**R = Grobzerspanung**

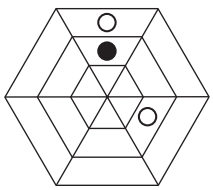


**M = Mittlere Zerspanung**



**F = Feinzerspanung**





## Ebene Anwendung

Den idealen Anwendungsbereich einer Wendeplatte kennzeichnet ein voller Kreis. Erweiterte Anwendungsbereiche sind durch ein leeres Kreissymbol gekennzeichnet. So schafft MasterGuide von CERATIZIT Übersicht bei Einkauf, Auswahl und Bearbeitung und reduziert Sorten- und Geometriebestände im Lager.

● **Hauptanwendung**
o **Erweiterte Anwendung**

# C T C P 1 2 5

1 2 3 4 5

## 1 Hersteller: CERATIZIT

## 2 Schneidstoffart

W Hartmetall unbeschichtet
C Hartmetall beschichtet CVD
P Hartmetall beschichtet PVD
T Cermet unbeschichtet
E Cermet beschichtet
N Siliziumnitrid unbeschichtet
M Siliziumnitrid beschichtet
S Mischkeramik
I Sialon
D PKD
B CBN
L CBN beschichtet
H PM-HSS

## 3 Primäre Eignung für Werkstoff Variante 1: Nummer

1 Stahl
2 rostfreier Stahl
3 Eisenguss
4 Leicht- und Buntmetalle/Nichtmetalle
5 Superlegierungen/Titan
6 harte Werkstoffe
7 Mehrbereichssorte ohne besonderen Werkstoffschwerpunkt

## Primäre Eignung für Werkstoff Variante 2: ISO-Buchstabe

P Stahl
M rostfreier Stahl
K Eisenguss
N Leicht- und Buntmetalle/Nichtmetalle
S Superlegierungen/Titan
H harte Werkstoffe
X Mehrbereichssorte ohne besonderen Werkstoffschwerpunkt

## 4 Primäre Eignung für Anwendung

1 Drehen
2 Fräsen
3 Stechen
4 Bohren
5 Gewindedrehen
6 Andere
7 Mehrbereichssorte ohne besonderen Anwendungsschwerpunkt

## 5 ISO 513 Anwendungsbereich

z.B.
05
10
15
25
35 ISO P35
.
.
.

# Sortenübersicht

| Sortenbezeichnung | Normbezeichnung ISO | Normbezeichnung ANSI | Schneidstoffart | Anwendungsbereich 01 05 10 15 20 25 30 35 40 45 50 | P Stahl | M Rostfrei | K Eisenguss | N NE-Metalle | S Hochwarmfest | H Harte Werkstoffe |
|---|---|---|---|---|---|---|---|---|---|---|
| **TCM407** | HT-P10 | C8 | T | | ● | | | | | |
| | HT-M05 | - | T | | | ○ | | | | |
| | HT-K05 | C4 | T | | | | ○ | | | |
| **CTEP110** COLORSTAR™ | HC-P10 | C8 | E | | ● | | | | | |
| | HC-K05 | C4 | E | | | | ○ | | | |
| | HC-M10 | - | E | | | ○ | | | | |
| **TCM10** | HT-P15 | C7 | T | | ● | | | | | |
| | HT-M10 | - | T | | | ● | | | | |
| | HT-K10 | C3 | T | | | | ○ | | | |
| **CTCP115** BLACKSTAR™ | HC-P15 | C7 | C | | ● | | | | | |
| | HC-K25 | C2 | C | | | | ● | | | |
| | HC-M10 | - | C | | | ○ | | | | |
| **CTCP125** BLACKSTAR™ | HC-P25 | C6 | C | | ● | | | | | |
| | HC-K30 | C1 | C | | | | ● | | | |
| | HC-M20 | - | C | | | ○ | | | | |
| **CTCP135** COLORSTAR™ | HC-P35 | C5 | C | | ● | | | | | |
| | HC-M25 | - | C | | | ○ | | | | |
| | HC-S25 | - | C | | | | | | ○ | |
| **CTPM125** SILVERSTAR™ | HC-M25 | - | P | | | ● | | | | |
| | HC-P35 | C5 | P | | ● | | | | | |
| | HC-S25 | - | P | | | | | | ○ | |
| **CTC2135** | HC-M30 | - | C | | | ● | | | | |
| | HC-P35 | C5 | C | | ○ | | | | | |
| | HC-S35 | - | C | | | | | | ○ | |

● Hauptanwendung

○ Erweiterte Anwendung

| Sortenbezeichnung | Normbezeichnung ISO | Normbezeichnung ANSI | Schneidstoffart | Anwendungsbereich 01 05 10 15 20 25 30 35 40 45 50 | P Stahl | M Rostfrei | K Eisenguss | N NE-Metalle | S Hochwarmfest | H Harte Werkstoffe |
|---|---|---|---|---|---|---|---|---|---|---|
| **CTI3105** | CN-K05 | C3 | I | | | | ● | | | |
| | CN-S05 | - | I | | | | | | ○ | |
| **CTN3105** | CN-K05 | C4 | N | | | | ● | | | |
| **CTS3105** | CM-K05 | C4 | S | | | | ● | | | |
| | CM-H05 | C4 | S | | | | | | | ● |
| **CTBK102** | BH-K10 | C3 | B | | | | ● | | | |
| | BH-H25 | C2 | B | | | | | | | ● |
| **CTBK104** | BH-K10 | C3 | B | | | | ● | | | |
| | BH-H25 | C2 | B | | | | | | | ● |
| **CTM3110** | CC-K10 | C3 | M | | | | ● | | | |
| **CTN3110** | CN-K10 | C3 | N | | | | ● | | | |
| **CTC3110** | HC-K10 | C3 | C | | | | ● | | | |
| | HC-P10 | C8 | C | | ○ | | | | | |
| **CTCK120** BLACKSTAR™ | HC-K20 | C2 | C | | | | ● | | | |
| | HC-P10 | C8 | C | | ○ | | | | | |
| **CTD4110** | DP-N05 | C4 | D | | | | | ● | | |
| **H210T** | HW-N10 | C3 | W | | | | | ● | | |
| | HW-S10 | - | W | | | | | | ● | |
| | HW-K10 | C3 | W | | | | ○ | | | |
| **AMZ** | HC-N10 | C3 | P | | | | | ● | | |
| | HC-P10 | C8 | P | | ○ | | | | | |
| | HC-K10 | C3 | P | | | | ○ | | | |
| **H10T** | HW-N15 | C3 | W | | | | | ● | | |
| | HW-K15 | C3 | W | | | | ● | | | |

01 05 10 15 20 25 30 35 40 45 50

● Hauptanwendung

○ Erweiterte Anwendung

# Sortenübersicht

| Sortenbezeichnung | Normbezeichnung ISO | Normbezeichnung ANSI | Schneidstoffart | Anwendungsbereich 01 05 10 15 20 25 30 35 40 45 50 | P Stahl | M Rostfrei | K Eisenguss | N NE-Metalle | S Hochwarmfest | H Harte Werkstoffe |
|---|---|---|---|---|---|---|---|---|---|---|
| **H216T** | HW-N15 | C3 | W | | | | | ● | | |
| | HW-K15 | C3 | W | | | | ● | | | |
| **CTP5110** | HC-S15 | - | P | | | | | | ● | |
| | HC-M15 | - | P | | | ○ | | | | |
| **CTP5115** | HC-S15 | - | P | | | | | | ● | |
| | HC-M15 | - | P | | | ○ | | | | |
| **CTL6115** | BC-H15 | C3 | L | | | | | | | ● |

● Hauptanwendung

○ Erweiterte Anwendung

## Hartmetall

**HW** Unbeschichtetes Hartmetall, vorwiegend aus Wolframcarbid (WC)
**HT**[1)] Unbeschichtetes Hartmetall, vorwiegend aus Titancarbid (TiC) oder Titannitrid (TiN) oder aus beiden
**HC** Hartmetalle wie oben, jedoch beschichtet

## Schneidkeramik

**CA** Oxidkeramik, vorwiegend aus Aluminiumoxid ($Al_2O_3$)
**CM** Mischkeramik, auf der Basis von Aluminiumoxid ($Al_2O_3$), jedoch auch mit anderen Bestandteilen als Oxide
**CN** Nitridkeramik, vorwiegend aus Siliziumnitrid ($Si_3N_4$)
**CC** Schneidkeramik wie oben, jedoch beschichtet

## Diamant

**DP**[2)] Polykristalliner Diamant

## Bornitrid

**BL**[2)] Polykristallines kubisches Bornitrid, mit niedrigem CBN-Anteil (40% - 65%)
**BH**[2)] Polykristallines kubisches Bornitrid, mit hohem CBN-Anteil (70% - 95%)
**BC**[2)] Polykristallines kubisches Bornitrid, beschichtet

[1)] Diese Hartmetalle werden auch „Cermet“ genannt.

[2)] Polykristalliner Diamant und polykristallines Bornitrid werden auch „hochharte Schneidstoffe“ genannt

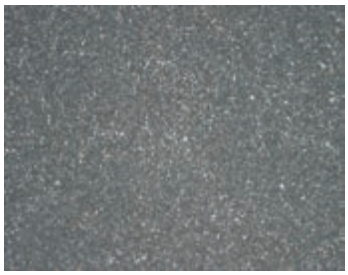
# Sortenbeschreibung



## TCM407

HT-P10 | HT-M05 | HT-K05

● ○ ○



**Spezifikation:**
Zusammensetzung: Co/Ni 8,0%; WC 16,0%; TaNbC 10,0%; TiCN Rest | Härte: $HV_{30}$ 1780

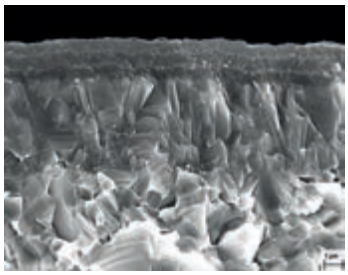
**Einsatzempfehlung:**
Die unbeschichtete Cermet-Sorte zum Feinstschlichten von Stahlwerkstoffen.

## CTEP110

COLORSTAR™

HC-P10 | HC-K05 | HC-M10

● ○ ○



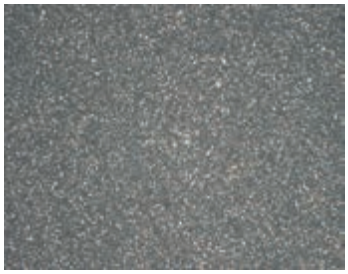
**Spezifikation:**
Zusammensetzung: Co/Ni 12,2%; WC 15,0% ; TaNbC 10,0% ; TiCN Rest | Korngröße: fein | Härte: $HV_{30}$ 1620 | Schichtsystem: CVD TiCN-$Al_2O_3$ Multilayer

**Einsatzempfehlung:**
Die Cermet-Sorte mit Zähigkeitsreserven für die Schlichtbearbeitung bei hohen Schnittgeschwindigkeiten.

## TCM10

HT-P15 | HT-M10 | HT-K10

● ● ○



**Spezifikation:**
Zusammensetzung: Cermet Co/Ni 12,2%; WC 15,0%; TaNbC 10,0%; TiCN Rest | Härte: $HV_{30}$ 1620

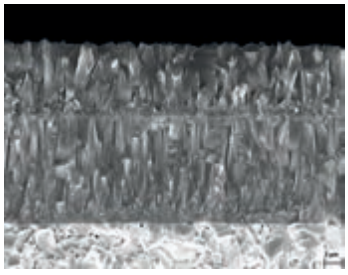
**Einsatzempfehlung:**
Die unbeschichtete Cermet-Sorte zum Schlichten von gehärtetem Stahl.

## CTCP115

BLACKSTAR™

HC-P15 | HC-K25 | HC-M10

● ● ○



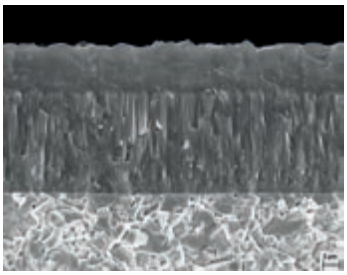
**Spezifikation:**
Zusammensetzung: Co 5,8%; Mischkarbide 6,4%; WC Rest | Korngröße: 1 - 2 $\mu$m | Härte: $HV_{30}$ 1550 | Schichtsystem: CVD TiCN-$Al_2O_3$

**Einsatzempfehlung:**
Die verschleißfeste Hochleistungssorte für die Stahlzerspanung.

## CTCP125
BLACKSTAR™

HC-P25 | HC-K30 | HC-M20

● ● ○



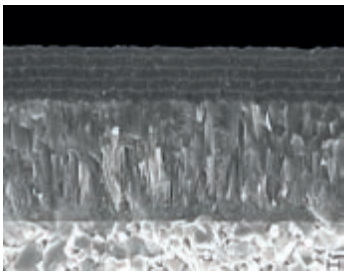
**Spezifikation:**
Zusammensetzung: Co 7,0%; Mischkarbide 8,0%; WC Rest | Korngröße: 1 - 2 µm | Härte: $HV_{30}$ 1450 | Schichtsystem: CVD TiCN-$Al_2O_3$

**Einsatzempfehlung:**
Die erste Wahl für die universelle Bearbeitung von Stählen.

## CTCP135
COLORSTAR™

HC-P35 | HC-M25 | HC-S25

● ○ ○



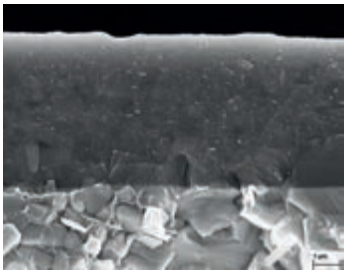
**Spezifikation:**
Zusammensetzung: Co 9,6%; Mischkarbide 6,7%; WC Rest | Korngröße: 1 - 2 µm | Härte: $HV_{30}$ 1460 | Schichtsystem: CVD TiCN-$Al_2O3$ Multilayer

**Einsatzempfehlung:**
Die zähe Alternative für stark unterbrochene Schnittbedingungen.

## CTPM125
SILVERSTAR™

HC-M25 | HC-P35 | HC-S25

● ● ○



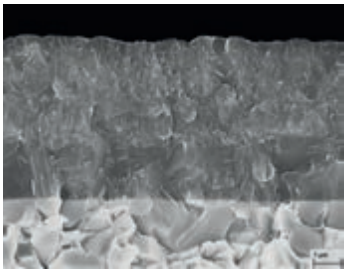
**Spezifikation:**
Zusammensetzung: Co 9,6%; Mischkarbide 7,8%; Andere 0,4%; WC Rest | Korngröße: 1 - 2 µm | Härte: $HV_{30}$ 1460 | Schichtsystem: PVD TiAlTaN

**Einsatzempfehlung:**
Die erste Wahl für die Bearbeitung von austenitischen Stählen.

## CTC2135

HC-M30 | HC-P35 | HC-S35

● ○ ○



**Spezifikation:**
Zusammensetzung: Co 9,6%; Mischkarbide 7,4%; WC Rest | Korngröße: 1 - 2 µm | Härte: $HV_{30}$ 1400 | Schichtsystem: CVD TiCN-TiNB Multilayer

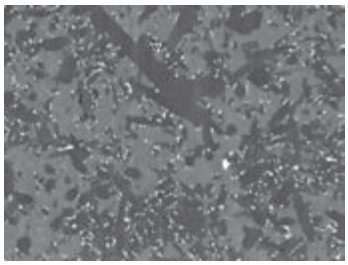
**Einsatzempfehlung:**
Die Drehsorte für allgemeine rostfrei Anwendungen.

# Sortenbeschreibung

## CTI3105

CN-K05 | CN-S05

● ○



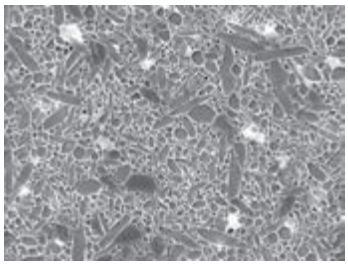
**Spezifikation:**
Zusammensetzung: α, β - Sialon | Härte: $HV_{10}$ 1900

**Einsatzempfehlung:**
Das härteste Sialon am Markt - Hochleistungssorte zur Guss- und Ni-Basis - Bearbeitung.

## CTN3105

CN-K05

●



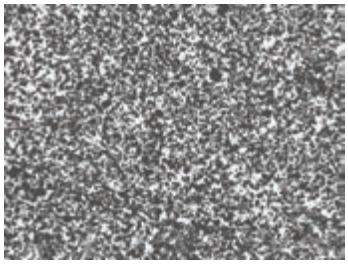
**Spezifikation:**
Zusammensetzung: β - $Si_3N_4$ | Korngröße: fein | Härte: $HV_{10}$ 1620

**Einsatzempfehlung:**
Universelle Siliziumnitrid-Sorte zur Gussbearbeitung.

## CTS3105

CM-K05 | CM-H05

● ●



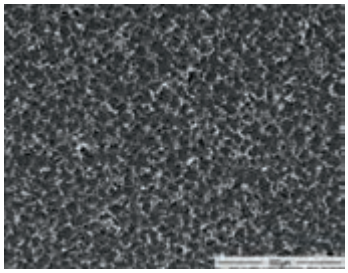
**Spezifikation:**
Zusammensetzung: $Al_2O_3$; TiC | Korngröße: > 1 µm | Härte: $HV_{30}$ 2100

**Einsatzempfehlung:**
Diese Mischkeramiksorte eignet sich zum Hartfeindrehen von Stahl und das Drehen von Stahl und Guss bzw. Hartgusswalzen.

## CTBK102

BH-K10 | BH-H25

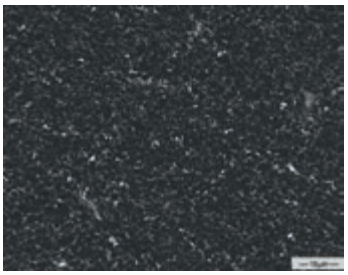
● ●



**Spezifikation:**
Zusammensetzung: Kubisches Bornitrid (CBN) | 90 Vol.% + Bindephase metallisch

**Einsatzempfehlung:**
Die erste Wahl für die Gussbearbeitung mit Voll-CBN.

| CTBK104 | BH-K10 \| BH-H25 | ● ● |
|---|---|---|



**Spezifikation:**
Zusammensetzung: Kubisches Bornitrid (CBN) | 90 Vol.% + Bindephase metallisch

**Einsatzempfehlung:**
Erste Wahl für Guss und Sinterstähle beim Schlichten.

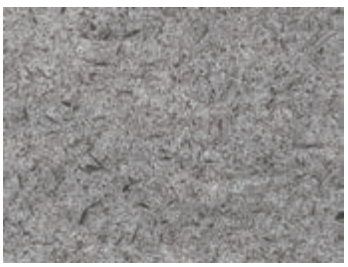
| CTM3110 | CC-K10 | ● |
|---|---|---|



**Spezifikation:**
Zusammensetzung: $Si_3N_4$ | Korngröße: > 2 $\mu$m | Härte: $HV_{30}$ 1550 | Schichtsystem: CVD Ti (C,N) + TiN; > 2$\mu$m

**Einsatzempfehlung:**
Beschichtetes Siliziumnitrid für Chrom legierte Güsse.

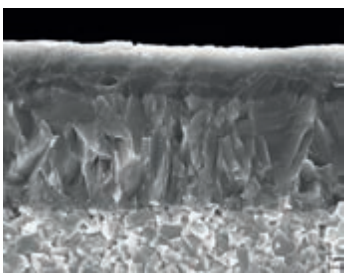
| CTN3110 | CN-K10 | ● |
|---|---|---|



**Spezifikation:**
Zusammensetzung: $Si_3N_4$ | Korngröße: > 2 $\mu$m | Härte: $HV_{10}$ 1500

**Einsatzempfehlung:**
Siliziumnitrid Sorte zum Schruppen von Gusswerkstoffen bei ungünstigen Schnittbedingungen z.B. in der Walzenbearbeitung.

| CTC3110 | HC-K10 \| HC-P10 | ● ○ |
|---|---|---|



**Spezifikation:**
Zusammensetzung: Co 6.0%; TaC 2.0%; WC Rest | Korngröße: 1 $\mu$m | Härte: $HV_{30}$ 1650 | Schichtsystem: CVD TiCN-$Al_2O_3$ Multilayer

**Einsatzempfehlung:**
Die Sorte für die Bearbeitung von Gusswerkstoffen bei hohen Schnittgeschwindigkeiten.

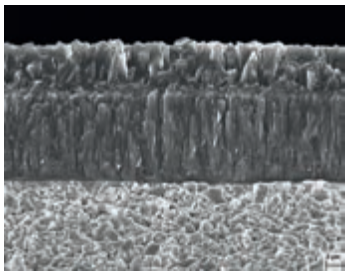
# Sortenbeschreibung



## CTCK120
BLACKSTAR™

HC-K20 | HC-P10

● ○



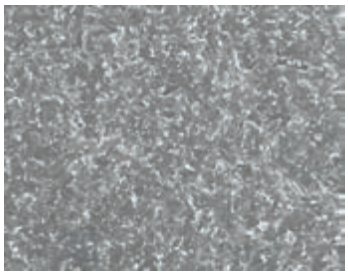
**Spezifikation:**
Zusammensetzung: Co 6,0%; TaC 2,0%; WC Rest | Korngröße: 1 µm | Härte: $HV_{30}$ 1630 | Schichtsystem: CVD TiCN-$Al_2O_3$

**Einsatzempfehlung:**
Die erste Wahl für die Bearbeitung von Gusswerkstoffen bei hohen Schnittgeschwindigkeiten und Zähigkeitsanforderungen.

## CTD4110

DP-N05

●



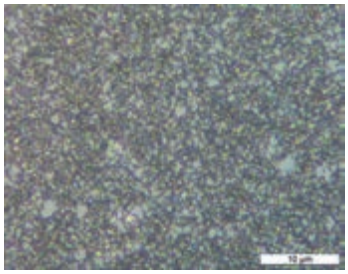
**Spezifikation:**
Zusammensetzung: Polykristalliner Diamant (PKD) | Korngröße: ~ 5 µm

**Einsatzempfehlung:**
Polykristaline Diamant-Sorte für die Bearbeitung von NE Metallen und nicht-metallischen Werkstoffen.

## H210T

HW-N10 | HW-S10 | HW-K10

● ● ○



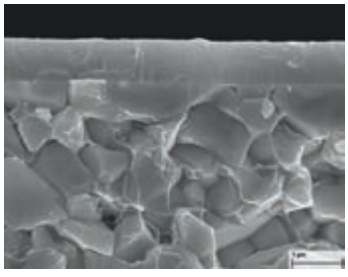
**Spezifikation:**
Zusammensetzung: Co 6,0%; WC Rest | Korngröße: 0,8 µm | Härte: $HV_{30}$ 1850

**Einsatzempfehlung:**
Die verschleißfeste, unbeschichtete Hartmetallsorte für die Bearbeitung von Aluminium und anderen Nichteisenmetallen.

## AMZ

HC-N10 | HC-P10 | HC-K10

● ○ ○



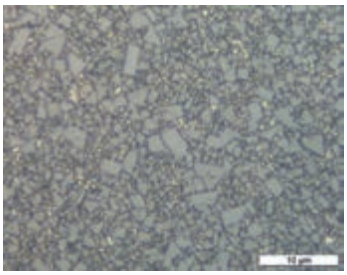
**Spezifikation:**
Zusammensetzung: Co 6%; WC Rest | Korngröße: 1 µm | Härte: $HV_{30}$ 1630 | Schichtsystem: PVD TiAlN

**Einsatzempfehlung:**
Die beschichtete Hartmetallsorte für die Aluminiumzerspanung.

## H10T

HW-N15 | HW-K15

● ●



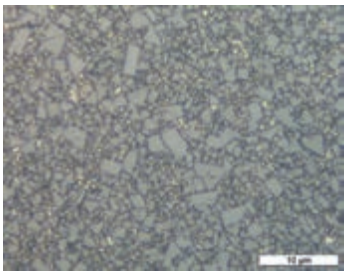
**Spezifikation:**
Zusammensetzung: Co 6,0%; WC Rest | Korngröße: 1 µm | Härte: $HV_{30}$ 1630

**Einsatzempfehlung:**
Die unbeschichtete Hartmetallsorte für die Bearbeitung von Aluminium und anderen Nichteisenmetallen.

## H216T

HW-N15 | HW-K15

● ●



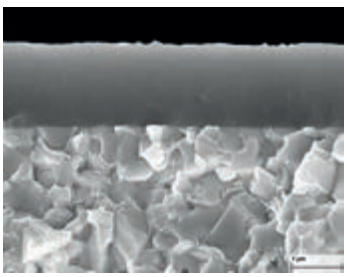
**Spezifikation:**
Zusammensetzung: Co 6,0%; WC Rest | Korngröße: 1 µm | Härte: $HV_{30}$ 1630

**Einsatzempfehlung:**
Die unbeschichtete Hartmetallsorte für die Bearbeitung von Aluminium und anderen Nichteisenmetallen.

## CTP5110

HC-S15 | HC-M15

● ○



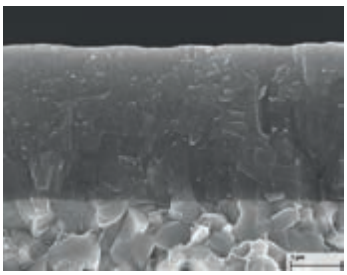
**Spezifikation:**
Zusammensetzung: Co 6,0%; WC Rest | Korngröße: 0,8 µm | Härte: $HV_{30}$ 1820 | Schichtsystem: PVD TiAlN

**Einsatzempfehlung:**
Die Alternative für die Bearbeitung von hochwarmfesten Werkstoffen.

## CTP5115

HC-S15 | HC-M15

● ○



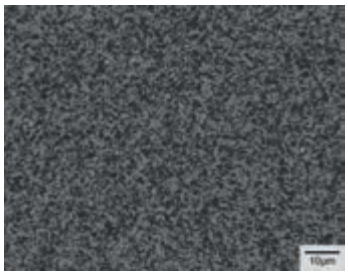
**Spezifikation:**
Zusammensetzung: Co 6,0%; WC Rest | Korngröße: 0,8 µm | Härte: $HV_{30}$ 1820 | Schichtsystem: PVD TiAlN-TiN

**Einsatzempfehlung:**
Die erste Wahl für die Bearbeitung von hochwarmfesten Werkstoffen.

# Sortenbeschreibung



| CTL6115 | BC-H15 | ● |
|---|---|---|



**Spezifikation:**
Zusammensetzung: Kubisches Bornitrid (CBN) | 50 Vol.% + Bindephase keramisch | Schichtsystem: PVD TiAlN

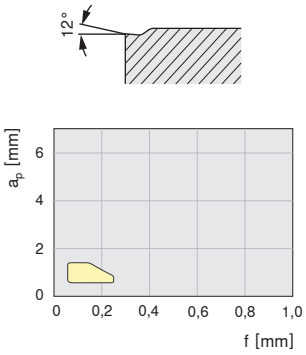
**Einsatzempfehlung:**
Erste Wahl für einsatzgehärtete Stähle im kontinuierlichen bis hin zum leicht unterbrochenen Schnitt.

## -CF20

- Cermet: feine Schlichtstufe
- Hohe Oberflächengüte
- Gute Spankontrolle bei geringen Spantiefen
- Niedrige Schnittkräfte



CNMG 120408..

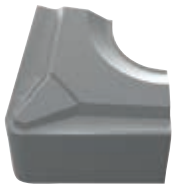



Bearbeitungsbedingungen

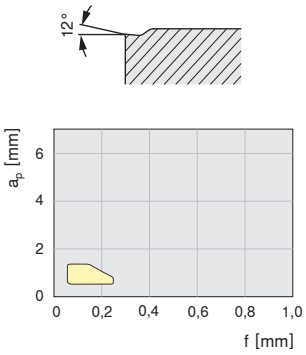
| | | |
|---|---|---|
| **CTEP110** | | |
| CTEP110 | | |
| CTEP110 | | |
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## -CF

- Cermet: feine Schlichtstufe
- Hohe Oberflächengüte
- Gute Spankontrolle bei geringen Spantiefen
- Niedrige Schnittkräfte



CNMG 120408..

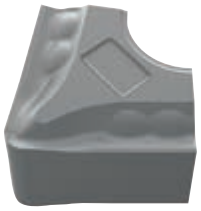



Bearbeitungsbedingungen

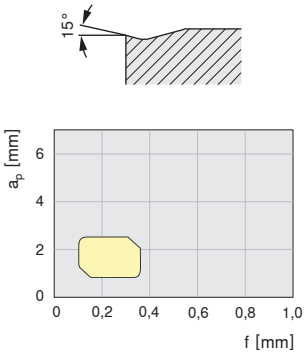
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|---|---|---|
| **TCM10** | | |
| TCM10 | | |
| TCM10 | | |
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## -F30

- Schlichten von rostfreien Stählen
- Kontinuierlicher Schnitt
- Hohe Oberflächengüte
- Gute Spankontrolle



CNMG 120408..




Bearbeitungsbedingungen

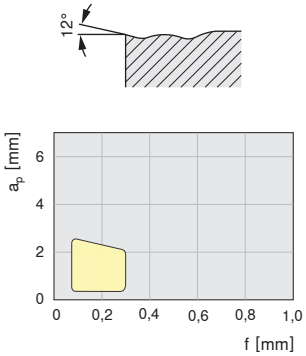
| | | |
|---|---|---|
| CTPM125 | CTPM125 | |
| **CTPM125** | **CTPM125** | |
| | | |
| | | |
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| | | |

## -TF

- Feinste Stahlstufe
- Schlichten / Konturdrehen
- Gute Spankontrolle
- Hohe Oberflächengüte
- Niedrige Schnittkräfte



CNMG 120408..




Bearbeitungsbedingungen

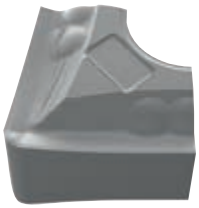
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| **CTCP115** | **CTCP125** | **CTCP135** |
| **CTCP125** | **CTCP135** | **CTCP135** |
| CTCP125 | CTCP125 | CTCP125 |
| | | |
| CTCP125 | CTCP135 | |
| | | |

# Spanleitstufen für negative Wendeplatten

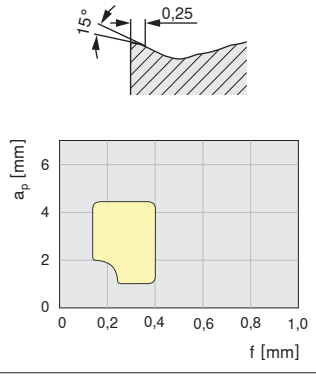


## -M30

- Erste Wahl für Rostfreibearbeitung
- Gute Spankontrolle
- Geringe Gratbildung
- Niedrige Schnittkräfte
- Geringe Aufbauschneidenbildung
- Auf labilen Maschinen einsetzbar



CNMG 120408..

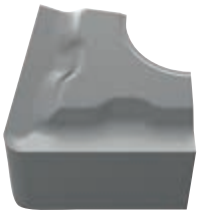



Bearbeitungsbedingungen

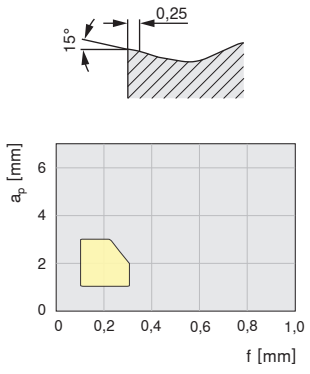
| | | |
|---|---|---|
| CTPM125 | CTPM125 | CTPM125 |
| **CTPM125** | **CTPM125** | **CTPM125** |
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| | CTPM125 | |
| | | |

## -M34

- Erste Wahl für Superlegierungen
- Leicht schneidende Geometrie
- Geringe Aufbauschneidenbildung
- Geringe Schnittkräfte



CNMG 120408..




Bearbeitungsbedingungen

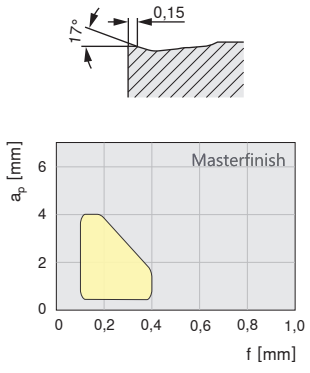
| | | |
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| | | |
| **CTP5110** CTP5115 | **CTP5115** | |
| | | |
| | | |
| **CTP5110** CTP5115 | CTP5110 **CTP5115** | |
| | | |

## -TFQ

- Masterfinish Geometrie
- Schlichten bis mittlere Bearbeitung
- Sehr hohe Vorschübe
- Hohe Oberflächengüte



CNMG 120408..




Bearbeitungsbedingungen

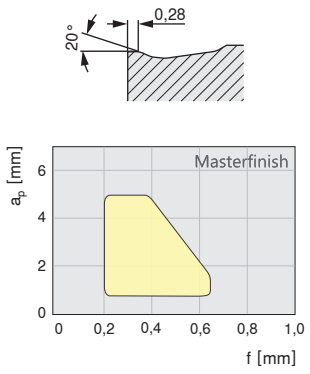
| | | |
|---|---|---|
| **CTCP115** **CTEP110** | **CTCP125** | |
| CTEP110 | CTCP125 | |
| CTEP110 | | |
| | | |
| | | |
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## -TMQ

- Masterfinish Geometrie
- Leichte bis mittlere Schruppbearbeitung
- Sehr hohe Vorschübe
- Hohe Oberflächengüte



CNMG 120408..

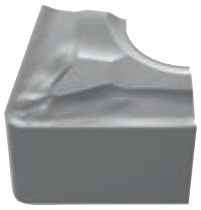



Bearbeitungsbedingungen

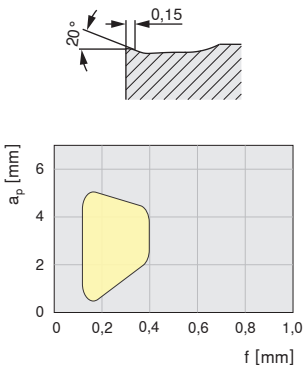
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|---|---|---|
| **CTCP115** | **CTCP125** | |
| CTCP115 | CTCP125 | |
| CTCP115 | CTCP125 | |
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## -TMF

- Schlichten bis mittlere Bearbeitung
- Langspanende und weiche Stähle
- Gute Spankontrolle
- Kopierdrehen



CNMG 120408..




Bearbeitungsbedingungen

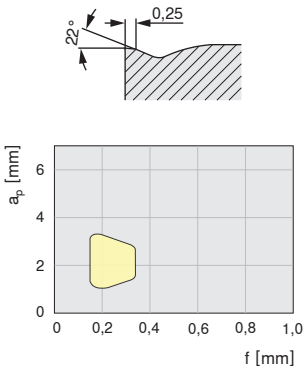
| | | |
|---|---|---|
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| **CTCP125** | **CTCP135** | **CTCP135** |
| | **CTCK120** | |
| | | |
| CTCP135 | | |

## -TM

- Mittlere Bearbeitung
- Universelle Spanleitstufe



CNMG 120408..




Bearbeitungsbedingungen

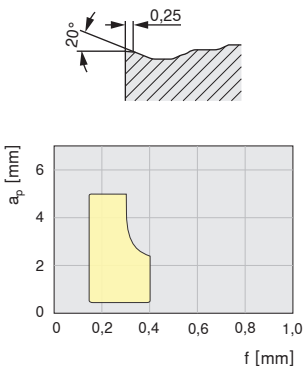
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|---|---|---|
| **CTCP115** | **CTCP125** | **CTCP135** |
| **CTCP125** | **CTCP135** | **CTC2135** |
| | **CTCK120** | |
| | | |
| CTC2135 | CTC2135 | |

## -M50

- Mittlere Bearbeitung
- 1ste Wahl bei der Stahlbearbeitung
- Universell einsetzbar



CNMG 120408..




Bearbeitungsbedingungen

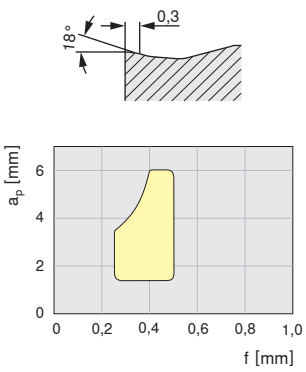
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|---|---|---|
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| CTCP115 | CTCP135 | CTCP135 |
| | **CTCP125** | **CTCP125** |
| | | |
| | | |

## -M60

- Leichte bis mittlere Schruppbearbeitung
- Stabile Schneidkante
- Unterbrochener Schnitt
- Schmiedehaut und Kruste



CNMG 120408..




Bearbeitungsbedingungen

| | | |
|---|---|---|
| CTPM125 | CTPM125 | CTPM125 |
| **CTPM125** | **CTPM125** | **CTPM125** |
| | | |
| | | |
| | CTPM125 | CTPM125 |

# Spanleitstufen für negative Wendeplatten

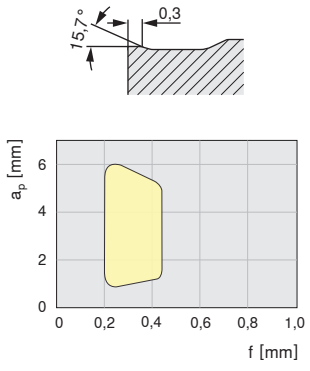


## -M70

- Leichte bis mittlere Schruppbearbeitung
- Gusskruste und Schmiedehaut
- Stabile Schneidkante
- Unterbrochener Schnitt
- Roh- und Schmiedeteile



CNMG 120408..

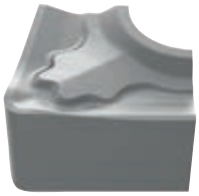



Bearbeitungsbedingungen

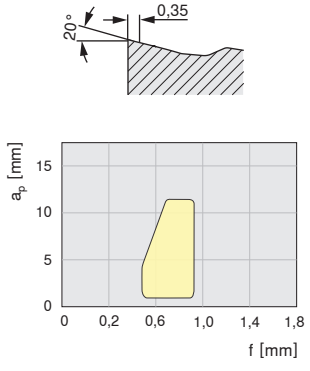
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| **CTCP125** | **CTC2135** | **CTC2135** |
| **CTC3110** CTCP115 | **CTCK120** | **CTCP125** |
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## -R28

- Einseitige Schruppgeometrie
- Längs-, Plan-, und Kopierdrehen
- Wechselnde Spantiefe
- Für Stähle mit hoher Festigkeit (800 N/mm²)
- Gute Spankontrolle



CNMM 190616..

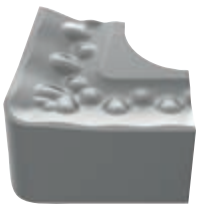



Bearbeitungsbedingungen

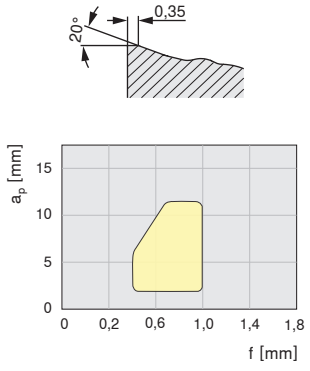
| | | |
|---|---|---|
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| CTCP115 | CTCP115 CTCP125 | CTCP135 |
| **CTCP115** | **CTCP115** CTCP125 | **CTCP125** |
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## -R58

- Einseitige Schruppgeometrie
- Längs- und Plandrehen
- Leicht unterbrochene Schnitte
- Geringe Schnittkräfte
- Labile Maschinen



CNMM 190616..




Bearbeitungsbedingungen

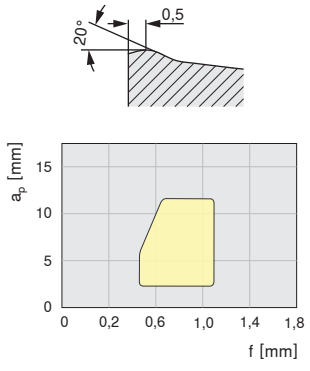
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|---|---|---|
| **CTCP115** | CTCP115 **CTCP125** | **CTCP135** |
| CTCP115 | CTCP115 CTCP125 | CTCP135 |
| **CTCP115** | **CTCP115** CTCP125 | **CTCP125** |
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## -R88

- Einseitige Schruppgeometrie
- Längs- und Plandrehen
- Hohe Vorschübe
- Große Schnitttiefen
- Stark unterbrochene Schnitte



CNMM 190616..




Bearbeitungsbedingungen

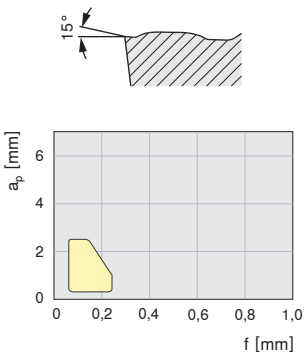
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|---|---|---|
| **CTCP115** | CTCP115 **CTCP125** | **CTCP135** |
| CTCP115 | CTCP115 CTCP125 | CTCP135 |
| **CTCP115** | **CTCP115** CTCP125 | **CTCP125** |
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## -CF05

- Cermet: feine Schlichtstufe (Umfanggeschliffen)
- Gute Spankontrolle
- Hohe Oberflächengüte
- Geringe Schnittkräfte



CCGT 09T308..



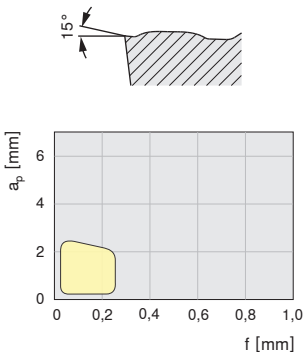

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTEP110** | | |
| CTEP110 | | |
| CTEP110 | | |
| | | |
| | | |
| | | |

## -SF

- Schlichten/Konturdrehen
- Gute Spankontrolle
- Hohe Oberflächengüte
- Geringe Schnittkräfte



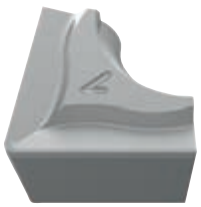
CCGT 09T308..



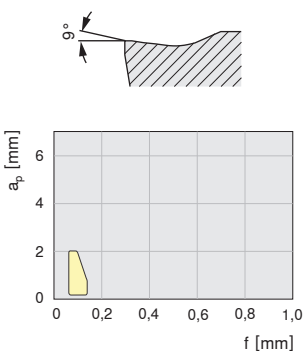

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP115 TCM407** | **CTCP125 TCM10** | **CTCP135** |
| **CTCP125** | **CTC2135** | **CTC2135** |
| | **CTCP125** | **CTCP125** |
| | | |
| CTCP125 | CTCP125 | |
| | | |

## -F23

- Feinste Schlichtstufe (Umfanggeschliffen)
- Sehr hohe Oberflächengüten
- Hohe Wiederholgenauigkeit
- Geringe Schnitttiefen



CCGT 09T308..



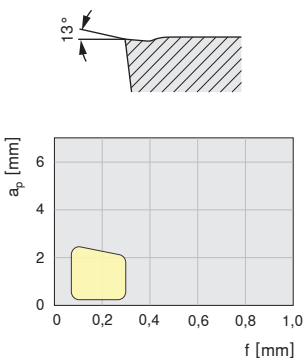

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| **CTP2120** | **CTP2120** | |
| CTP2120 | | |
| CTP2120 | | |
| CTP2120 | | |
| | | |

## -CF55

- Cermet: Schlichten bis mittlere Bearbeitung
- Geringe Schnittkräfte
- Gute Spankontrolle
- Hohe Oberflächengüte



CCMT 09T308..




| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTEP110** | | |
| CTEP110 | | |
| CTEP110 | | |
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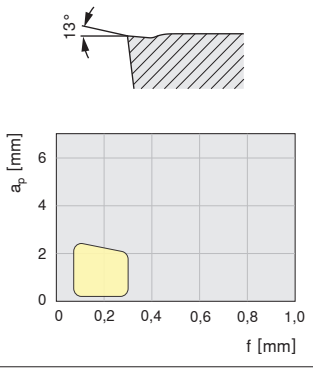
# Spanleitstufen für positive Wendeplatten

## -SMF

- Schlichten bis mittlere Bearbeitung
- Geringe Schnittkräfte
- Gute Spankontrolle
- Hohe Oberflächengüte



CCMT 09T308..




Bearbeitungsbedingungen

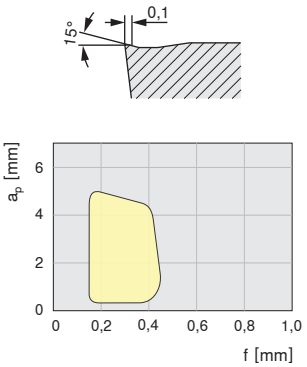
| | | |
|---|---|---|
| **CTCP115 TCM10** | **CTCP125 TCM10** | **CTCP125** |
| **CTCP125** | **CTCP135** | **CTCP135** |
| CTCP115 | | |
| | | |
| | | |
| | | |

## -SM

- Mittlere Bearbeitung
- Universell einsetzbar
- Stabile Schneidkante
- Wechselnde Spantiefen
- Breites Anwendungsfeld



CCMT 09T308..




Bearbeitungsbedingungen

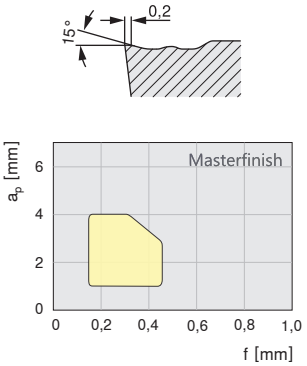
| | | |
|---|---|---|
| **CTCP115** | **CTCP125** | **CTCP135** |
| **CTCP125** | **CTC2135** | **CTC2135** |
| **CTC3110** | **CTCK120** | **CTCK120** |
| | | |
| | | |
| | | |

## -SMQ

- Positive Masterfinish Geometrie
- Schlichten bis mittlere Bearbeitung
- Sehr hohe Vorschübe
- Hohe Oberflächengüte



CCMT 09T308..




Bearbeitungsbedingungen

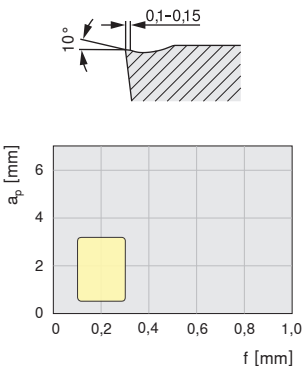
| | | |
|---|---|---|
| **CTCP115** | **CTCP125** | |
| CTCP115 | CTCP125 | |
| CTCP115 | CTCP125 | |
| | | |
| | | |
| | | |

## -M25

- Erste Wahl für schlichten bis mittlere Bearbeitung von Rostfrei
- Glatter Schnitt
- Hohe Oberflächengüte
- Geringe Aufbauschneidenbildung



CCMT 09T308..




Bearbeitungsbedingungen

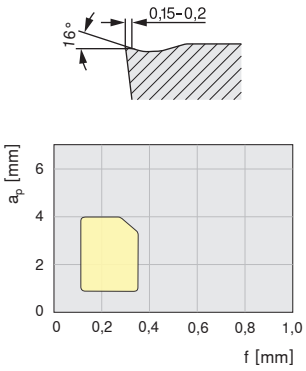
| | | |
|---|---|---|
| | | CTPM125 |
| | **CTPM125** | CTPM125 |
| | | |
| | | |
| CTPM125 | CTPM125 | |
| | | |

## -M55

- Erste Wahl für mittlere Bearbeitung bis Schruppen von Rostfrei
- Glatter bis leicht unterbrochener Schnitt
- Gute Spankontrolle
- Stabile Schneidkante



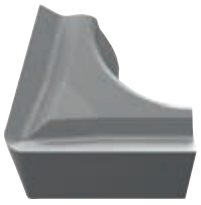
CCMT 09T308..



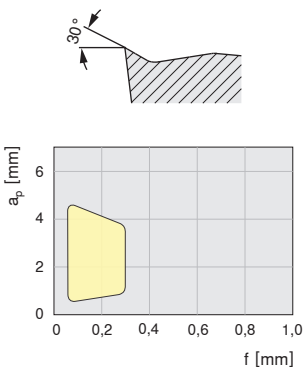

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | CTPM125 |
| | **CTPM125** | CTPM125 |
| | | |
| | | |
| CTPM125 | CTPM125 | |
| | | |

## -23P

- Geringe Aufklebeneigung
- Gute Spankontrolle bei weichen Alulegierungen



CCGT 09T308..



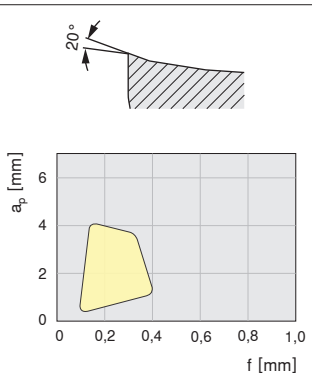

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| **H216T** | **H216T** | **H216T** |
| | | |
| | | |

## -25P

- Scharfe Schneidkante
- Gute Spankontrolle bei weicheren Alulegierungen
- Geringe Aufklebeneigung



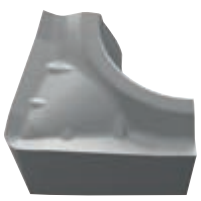
CCGT 09T308..



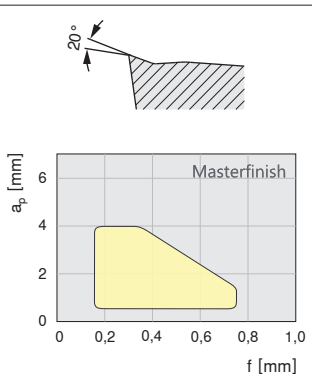

| Bearbeitungsbedingungen | | |
|---|---|---|
| AMZ | AMZ | |
| AMZ | AMZ | |
| **AMZ** | **AMZ** | |
| **H210T** | **H210T** | **H210T** |
| **AMZ** | **AMZ** | |
| | | |

## -25Q

- Masterfinish Geometrie
- Hohe Vorschübe
- Hohe Oberflächengüte
- Gute Spankontrolle bei weicheren Alulegierungen
- Geringe Aufklebeneigung



CCGT 09T308..




| Bearbeitungsbedingungen | | |
|---|---|---|
| H210T | | |
| H210T | H210T | |
| **H210T** | **H210T** | |
| **H210T** | **H210T** | **H210T** |
| **H210T** | **H210T** | |
| | | |

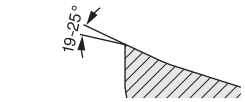
# Spanleitstufen für positive Wendeplatten

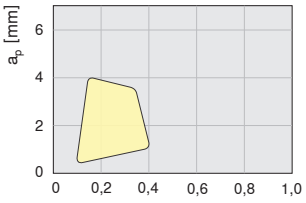
## -27

- Die Universelle Alu-Geometrie
- Scharfe Schneidkante
- Extrem positiver Spanwinkel
- Geringe Aufklebeneigung
- Hohe Vorschübe



CCGT 09T308..




Bearbeitungsbedingungen

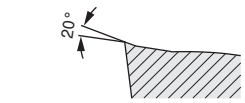
| | | |
|---|---|---|
| AMZ | AMZ | |
| AMZ | AMZ | |
| **AMZ** | **AMZ** | **H10T** |
| **H10T** | **H10T** | **H10T** |
| | | |
| | | |

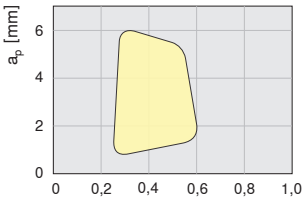
## -29

- Umfangrohe Alu-Geometrie
- Positiver Spanwinkel
- Gute Spankontrolle
- Für Mittlere- bis Schruppbearbeitung



CCMT 09T308..



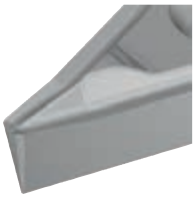




Bearbeitungsbedingungen

| | | |
|---|---|---|
| AMZ | AMZ | |
| AMZ | AMZ | |
| **AMZ** | **AMZ** | |
| **H216T** | **H216T** | **H216T** |
| AMZ | AMZ | |
| | | |

## -24P

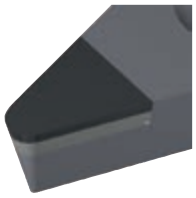
- Für die Bearbeitung von geschmiedetem Aluminium mit weniger als 1 % Silizium, Nichteisenmetalle, Kunststoffe und hochschmelzende Metalle
- Im mittleren bis zum Schruppbereich
- Guter Spanbruch für einen großen Anwendungsbereich



| Bearbeitungsbedingungen | | |
|---|---|---|
| H210T, H216T | H210T, H216T | H210T, H216T |

## -F4

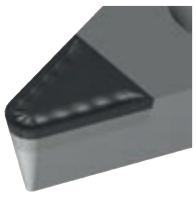
- PKD Segment ohne Spanleitstufe
- Vorrangig verwendbar bei unterbrochenen Schnitt
- Erhältliche Schneidkantenzurichtung: scharf (F), gerundet (E), gefast (T) nach ISO-Bezeichnungssystem



| Bearbeitungsbedingungen | | |
|---|---|---|
| CTD4110 | CTD4110 | CTD4110 |

## -F41

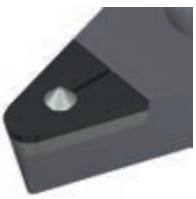
- PKD Segment
- Spanbruch optimierte Spanleitstufe für kleine Schnitttiefen
- Erhältliche Schneidkantenzurichtung: scharf (F), gerundet (E), gefast (T) nach ISO-Bezeichnungssystem



| Bearbeitungsbedingungen | | |
|---|---|---|
| CTD4110 | CTD4110 | CTD4110 |

## -M4

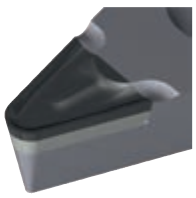
- PKD Segment mit Hartmetallpin zur Verbesserung des Spanbruchs bei höheren Schnitttiefen
- Erhältliche Schneidkantenzurichtung: scharf (F), gerundet (E), gefast (T) nach ISO-Bezeichnungssystem



| Bearbeitungsbedingungen | | |
|---|---|---|
| CTD4110 | CTD4110 | CTD4110 |

## -M41

- PKD Segment mit bewährter M41 Spanleitstufe
- Optimierter Spanleitstufe für niedrigen Schnittdruck und ideale Spanform
- Erhältliche Schneidkantenzurichtung: scharf (F), gerundet (E), gefast (T) nach ISO-Bezeichnungssystem



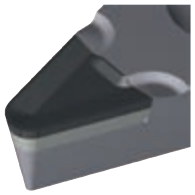
| Bearbeitungsbedingungen | | |
|---|---|---|
| CTD4110 | CTD4110 | CTD4110 |

# Spanleitstufen für Aluradbearbeitung



## -R41

- PKD Segment mit R41 Spanleitstufe
- Schruppstufe zur Vorbearbeitung mit bis zu 4mm Spantiefe
- Erhältliche Schneidkantenzurichtung: scharf (F), gerundet (E), gefast (T) nach ISO-Bezeichnungssystem



Bearbeitungsbedingungen

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|---|---|---|
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| CTD4110 | CTD4110 | CTD4110 |
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## -U41

- PKD Segment mit U41 Spanleitstufe
- Universell anwendbare Spanleitstufe, mit gutem Spanbruch bei niedrigen wie auch bei hohen Spantiefen
- Erhältliche Schneidkantenzurichtung: scharf (F),gerundet (E), gefast (T) nach ISO-Bezeichnungssystem



Bearbeitungsbedingungen

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|---|---|---|
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| | | |
| CTD4110 | CTD4110 | CTD4110 |
| | | |
| | | |

## -M23

- Weichschneidende Geometrie mit ausgezeichnetem Spanbruchverhalten bei geringen Schnitttiefen in der Schlichtbearbeitung



| Bearbeitungsbedingungen | | |
|---|---|---|
| CTCP115 | CTCP125 | CTCP125 |
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## -R23

- Für hohe Oberflächengüte im glatten Schnitt



| Bearbeitungsbedingungen | | |
|---|---|---|
| CTCP115 | CTCP125 | CTCP125 |
| | | |
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## -R53

- Weichschneidende Geometrie mit einem sehr positiven Spanwinkel in Kombination mit einer stabilen Stützfase
- Für die mittlere Drehbearbeitung



| Bearbeitungsbedingungen | | |
|---|---|---|
| CTCP115 | CTCP125 | CTCP125 |
| | | |
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## -R70

- Schruppgeometrie zur Rädernachbearbeitung
- Stabile Geometrie für hohe Standzeit
- Für eine sehr gute Spankontrolle



| Bearbeitungsbedingungen | | |
|---|---|---|
| CTCP115 | CTCP125 | CTCP125 |
| | | |
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## -R71

- Schlichtgeometrie zur Rädernachbearbeitung
- Sehr weicher Schnitt für hohe Oberflächengüte
- Spezielle Spanleitstufe für gute Spankontrolle - kurzspanend - bei niedrigen Vorschubgeschwindigkeiten



| Bearbeitungsbedingungen | | |
|---|---|---|
| CTCP115 | CTCP125 | CTCP125 |
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# Spanleitstufen für Radsatzbearbeitung



## -R74

- Universalgeometrie zur Rädernachbearbeitung
- Für weichen Schnitt und kurzspanend



| Bearbeitungsbedingungen | | |
|---|---|---|
| CTCP115 | CTCP125 | CTCP125 |
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## -R83

- Geometrie für hohe Vorschübe und großer Schnitttiefe sowie schwankendem Schmiedeaufmaß
- Für eine sehr gute Spankontrolle



| Bearbeitungsbedingungen | | |
|---|---|---|
| CTCP115 | CTCP125 | CTCP125 |
| | | |
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## -11

- Für Kopierbearbeitung im Schlichtbereich
- Auf allgemeinen Stählen, rostfreien Stählen und Guss
- Einsetzbar auf leistungsschwachen Maschinen



| Bearbeitungsbedingungen | | |
|---|---|---|
| | **CTCP125** | **CTCP135** |
| | | |
| | | |
| | | |
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## -12

- Für Kopierbearbeitung im mittleren Bearbeitungsbereich
- Auf allgemeinen Stählen, rostfreien Stählen und Guss



| Bearbeitungsbedingungen | | |
|---|---|---|
| | **CTCP125** | **CTCP135** |
| | | |
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## -EN

- Universelle Stufe für allgemeine Stähle



| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP115** | **CTCP125** | **CTCP135** |
| CTCP125 | CTCP135 | CTCP135 |
| **CTC3110** | **CTCK120** | CTCP125 |
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## -ER/EL

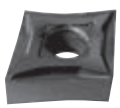
- Problemlöser bei labilen und instabilen Bedingungen
- Einsetzbar auf leistungsschwachen Maschinen
- Für allgemeine Stähle und auf rostfreien Werkstoffen als Nebenanwendung einsetzbar



| Bearbeitungsbedingungen | | |
|---|---|---|
| | **CTCP125** | **CTCP135** |
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## -F32

- Zum Schlichten von rostfreien Stählen
- Als Nebenanwendung allgemeine Stähle und Superlegierungen

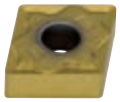


| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| **CTP2120** | **CTP2120** | |
| CTP2120 | | |
| CTP2120 | CTP2120 | |
| **CTP2120** | | |

# Ergänzende Spanleitstufen

## -F34

- Stabile, positve Schneidkante
- Auch für leicht unterbrochene Schnitte



| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| CTP5115 | CTP5115 | |
| | | |
| | | |
| CTP5115 | CTP5115 | |
| | | |

## -F43

- Für die Schlicht- bis mittlere Bearbeitung auf allen rostfreien Stählen, allgemeinen Stählen und Superlegierungen



| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| CTC2135 | CTC2135 | CTC2135 |
| | | |
| | | |
| | | |
| | | |

## -M42

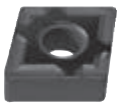
- Für die mittlere Zerspanung auf rostfreien Stählen
- Als Nebenanwendung allgemeine Stähle und Superlegierungen



| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| CTP2120 | CTC2135 | CTC2135 |
| | | |
| | | |
| | | |
| | | |

## -M52

- Universalgeometrie bei der Bearbeitung von rostfreien Stählen
- Als Nebenanwendung allgemeine Stähle und Superlegierungen



| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| CTP2120 | CTP2120 | |
| CTP2120 | CTP2120 | CTP2120 |
| | | |
| CTP2120 | | |
| | | |

## -R80

- Einseitige Schruppgeometrie
- Wälzlagerstähle
- Gusskruste und Schmiedehaut



| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| CTCP125 | CTCP125 | CTCP125 |
| CTCP125 | CTCP125 | CTCP125 |
| | | |
| | | |
| | | |
| | | |

## -TR

- Leichte bis mittlere Schruppbearbeitung
- Stähle mit hoher Festigkeit (>800 N/mm²)
- Gute Spankontrolle
- Unterbrochener Schnitt



| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP125** | **CTCP125** | **CTCP125** |
| **CTCP125** | **CTCP125** | |
| **CTCP125** | **CTCP125** | |
| | | |
| | | |
| | | |

## -TRM

- Leichte bis mittlere Schruppbearbeitung
- Wälzlagerstähle
- Gusskruste und Schmiedehaut
- Leicht unterbrochene Schnitte



| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP115** | **CTCP125** | **CTCP135** |
| **CTCP125** | **CTCP135** | **CTCP135** |
| | | |
| | | |
| CTCP125 | CTCP135 | |
| | | |

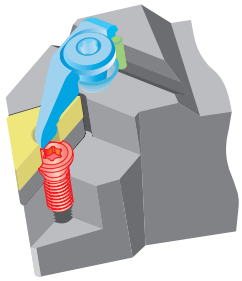
## -TRR

- Leichte bis mittlere Schruppbearbeitung
- Stähle mit geringer Festigkeit (300-800 N/mm²)
- Langspanende Werkstoffe
- Unterbrochener Schnitt



| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP125** | **CTCP125** | **CTCP125** |
| **CTCP125** | **CTCP125** | **CTCP125** |
| | | |
| | | |
| CTCP125 | CTCP125 | |
| | | |

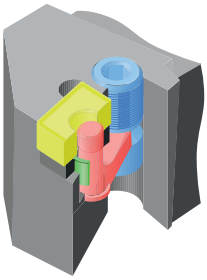
# Klemmsysteme



- Klemmelement
- Wendeplatte
- Unterlagsplatte
- Stift
- Schraube

## MaxiLock D

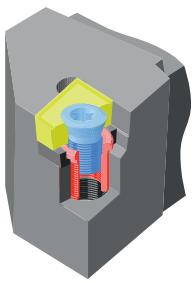
Die 1. Wahl für die Bearbeitung mit negativen Mittellochplatten. **Sichere** und **genaue Positionierung** der Wendeplatte durch **doppelte Klemmwirkung** des Klemmelements.



- Klemmschraube
- Wendeplatte
- Unterlagsplatte
- Rohrstift
- Hebel

## MaxiLock N

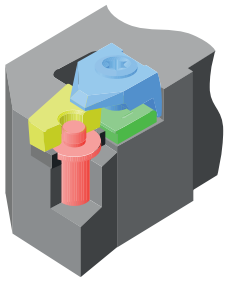
Dieses Klemmsystem ist für alle Mittellochplatten mit negativer Grundform geeignet. Die Klemmschraube ist von der Ober- und Unterseite des Halters leicht zugänglich. Bei gelöstem Spannsystem gibt es keine losen Ersatzteile.



- Klemmschraube
- Wendeplatte
- Unterlagplatte
- Gewindebüchse

## MaxiLock S

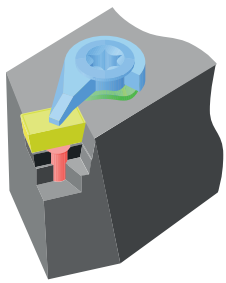
Die formschlüssige Schraubenklemmung gewährleistet eine sichere Verbindung der Wendeplatte mit dem Trägerwerkzeug. Der Spanablauf ist nicht durch vorspringende Klemmelemente gestört. Durch die neutrale Plattenlage ist der effektiv verfügbare Spanwinkel identisch mit dem Spanwinkel der Wendeplatte.



- Klemmelement
- Wendeplatte
- Unterlagplatte
- Keilstück
- Passstift

## MaxiLock P

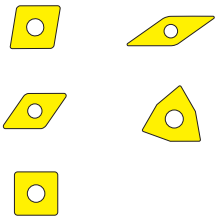
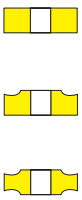
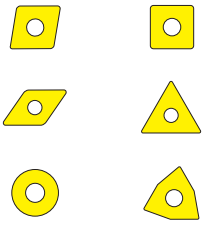
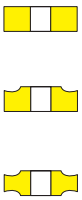
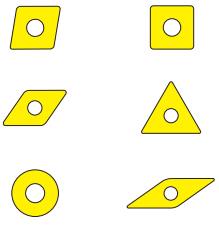
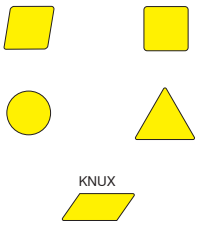
Die Wendeplatte mit 7° Freiwinkel und zylindrischer Bohrung wird mit einer Keil- und Klauenspannung gegen einen fixen Stift geklemmt. Es stehen bis zu drei Schneidkanten für den Einsatz zur Verfügung (eine Anlagenfläche).

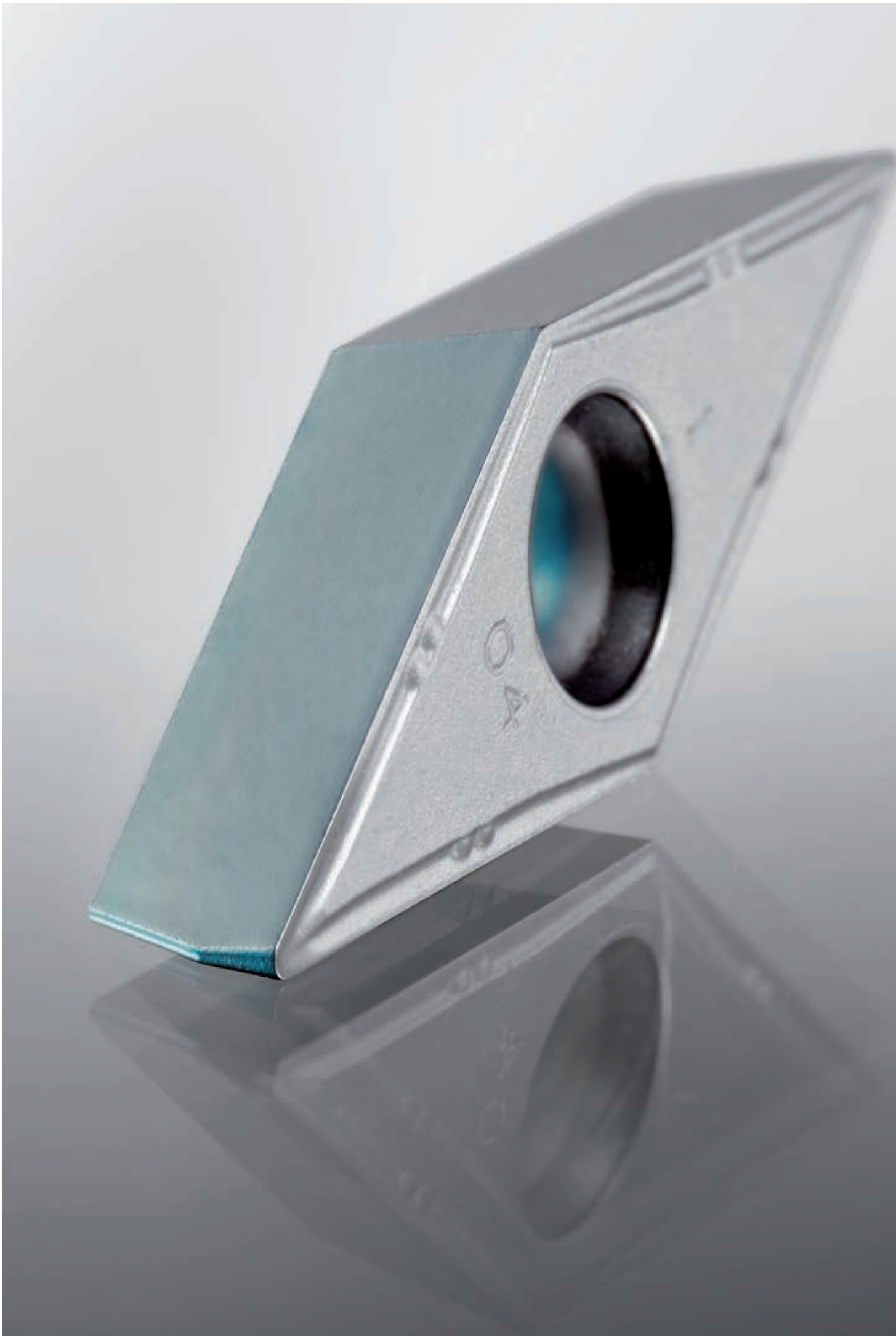


- Klemmschraube & Spannklaue
- Wendeplatte
- Unterlagplatte
- Kerbnagel

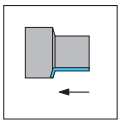
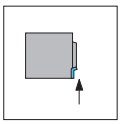
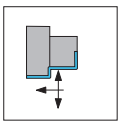
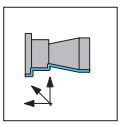
## Simplex N / P

Die bewährten CERATIZIT Simplex-Klemmsysteme zeichnen sich durch solide Einfachheit aus. Die Wendeplatten ohne Mittelloch werden mit einer Klaue gespannt. Nicht geeignet für ziehende Schnitte.

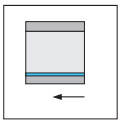
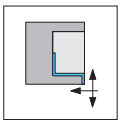
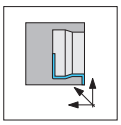
| Klemmsystem | Schnitttiefe / Vorschub (mm) | | | | | | Wendeplatten Form | Wendeplatten Merkmale |
|---|---|---|---|---|---|---|---|---|
| | $a_p$ | f | $a_p$ | f | $a_p$ | f | | |
| | 0,3 - 2,0 | 0,08 - 0,25 | 2,0 - 6,0 | 0,2 - 0,6 | 5,0 - 15,0 | 0,5 - 1,5 | | |
| |  | |  | |  | | | |
| **MaxiLock D**  | ✓ | | ✓ | | ✓ | |  |  |
| **MaxiLock N**  | ✓ | | ✓ | | ✓ | |  |  |
| **MaxiLock P**  | | | ✓ | | | |  |  |
| **MaxiLock S**  | ✓ | | ✓ | | | |  |  |
| **Simplex N**  | | | ✓ | | | |   |   |
| **Simplex P**  | ✓ | | ✓ | | | |  |  |



## Außenbearbeitung


| | | |
|---|---|---|
|  | Längsdrehen | A43-A47 |
|  | Plandrehen | A48-A50 |
|  | Längs-/Plandrehen | A51 |
|  | Kopierdrehen | A52-A54 |


## Innenbearbeitung


| | | |
|---|---|---|
|  | Ausdrehen | A55 |
|  | Aus-/Plandrehen | A56-A57 |
|  | Kopierdrehen | A58-A59 |

# Außenbearbeitung

Längsdrehen



**DCBN...** A109






**DDJN...** A112






**DSBN...** A113






**DSDN...** A114






**DSSN...** A116






**DTJN...** A117






**DVJN...** A118






**DVVN...** A119






**PCBN...** A121






**PDJN...** A124






**PDNN...** A125






**PRDC...** A126





**PSBN...** A128






**PSDN...** A129






**PSSN...** A131






**PTGN...** A133






**PTTN...** A134






**SCAC...** A136





**SCDC...** A137






**SCMC...** A140






**SCRC...** A141






**SCSC...** A142






**SDAC...** A143






**SDJC...** A145






**SDNC...** A146






**SRDC...** A147





**SRGC...** A148





**SSBC...** A149






**SSDC...** A150






**SSSC...** A152






**STAC...** A153






**STGC...** A156






**SVHC...** A157






**SVJC...** A158






**SVVC...** A159






**SVZC/SVZP...** A160





# Außenbearbeitung

Längsdrehen




**MCLC...** A161





**MSSC...** A162





**MTJC...** A165





**MTGC...** A164





**MTNC...** A166





**CCLN...** A167





**CKJN...** A168





**CRDN...** A169




**CSBN...** A171





**CSDN...** A172





**CTAN...** A173





**CTGN...** A175





**CTRN...** A176





**CTAP...** A177





**CTGP...** A179





**CTSP...** A180





**HSK-T DDHN...** A184





**HSK-T DDJN...** A185




## HSK-T DSDN... A188






## HSK-T DCMN... A182






## HSK-T DDMN... A186






## HSK-T DVMN... A189






## HSK-T PRDC... A191





## HSK-T SDJC... A195






## HSK-T SVHC... A197






## HSK-T SVJC... A198






## HSK-T SCMC... A194






## HSK-T SDMC... A196






## HSK-T SVMC... A199






## UTS PDJN... A202






## UTS PDNN... A203






## UTS PRDC... A205





## UTS PSBN... A207






## UTS PSDN... A208






## UTS PSSN... A210






## UTS PTGN... A212





# Außenbearbeitung

Längsdrehen



## UTS SDHC... A215






## UTS SDJC... A216






## UTS SDNC... A217






## UTS SRDC... A220





## UTS SRGC... A221





## UTS SSDC... A150






## UTS SSSC... A224






## UTS SVHC... A225






## UTS SVJC... A226






## UTS SVVC... A227





**DCKN...** A110





**DSKN...** A115





**DSSN...** A116





**PCKN...** A122





**PDJN...** A124





**PRGC...** A127




**PSKN...** A130





**PSSN...** A131





**PTFN...** A132





**PTTN...** A134





**SCFC...** A138





**SCSC...** A142





**SDHC...** A144





**SDJC...** A145





**SRGC...** A148




**SSKC...** A151





**SSSC...** A152





**STCC...** A154




# Außenbearbeitung

Plandrehen



## STFC... A155






## SVHC... A157






## MCLC... A161






## MSSC... A162






## MTFC... A163






## CCLN... A167






## CRGN... A170





## CTFN... A174






## CTRN... A176






## CTFP... A178






## CTSP... A180






## HSK-T DDHN... A184






## HSK-T DDUN... A187






## HSK-T PRSC... A192





## HSK-T SVHC... A197






## HSK-T SVUC... A200






## UTS PDJN... A202






## UTS PDUN... A204





**UTS PRGC...** A206





**UTS PSKN...** A209






**UTS PSSN...** A210






**UTS PTFN...** A211






**UTS SDUC...** A218






**UTS SRGC...** A221





**UTS SSKC...** A223






**UTS SSSC...** A224






**UTS SVHC...** A225






**UTS SDXC...** A219





# Außenbearbeitung

Längs- und Plandrehen



## DCLN... A111






## DWLN... A120






## PCLN... A123






## PWLN... A135






## SCLC... A139






## HSK-T DCLN... A181






## HSK-T DWLN... A190






## HSK-T SCLC... A193






## UTS PCLN... A201






## UTS PWLN... A213






## UTS SCLC... A214





**DDJN...** A112






**DTJN...** A117






**DVJN...** A118






**DVVN...** A119






**PDJN...** A124






**PDNN...** A125






**PRDC...** A126





**PRGC...** A127





**PTTN...** A134






**SCDC...** A137






**SCMC...** A140






**SDAC...** A143






**SDHC...** A144






**SDJC...** A145






**SDNC...** A146






**SRDC...** A147





**SRGC...** A148





**SVHC...** A157





# Außenbearbeitung

Kopierdrehen



## SVJC... A158






## SVVC... A159






## SVZC/SVZP... A160






## MTJC... A165






## MTNC... A166






## CKJN... A168






## CRDN... A169





## CRGN... A170





## HSK-T DDHN... A184






## HSK-T DDJN... A185






## HSK-T DDUN... A187






## HSK-T DDMN... A186






## HSK-T DVMN... A189






## HSK-T PRDC... A191





## HSK-T PRSC... A192





## HSK-T SDJC... A195






## HSK-T SVHC... A197






## HSK-T SVJC... A198





## HSK-T SVUC... A200






## HSK-T SCMC... A194






## HSK-T SDMC... A196






## HSK-T SVMC... A199






## UTS PDJN... A202






## UTS PDNN... A203






## UTS PDUN... A204






## UTS PRDC... A205





## UTS PRGC... A206





## UTS SDHC... A215






## UTS SDJC... A216






## UTS SDNC... A217






## UTS SDUC... A218






## UTS SRDC... A220





## UTS SRGC... A221





## UTS SVHC... A225






## UTS SVJC... A226






## UTS SVVC... A227





# Innenbearbeitung

Ausdrehen



**DSKN...** A230






**PSKN...** A234






**PTFN...** A235






**SCFC...** A237






**SDXC...** A243






**SSKC...** A244






**SSSC...** A245






**STFC...** A246






**MSSC...** A251






**CRSN...** A253





**CTFP...** A254






**UTS SDXC...** A266






**UTS SSKC...** A267






**UTS PSKN...** A209





**DCLN...** A228






**DWLN...** A231






**PCLN...** A232






**PWLN...** A236






**SCLC...** A238






**CRSN...** A253





**UTS PCLN...** A261






**UTS PWLN...** A263






**UTS SCLC...** A264






**UTS PCLN...** A201






**UTS PDJN...** A202






**UTS PTFN...** A211






**UTS PWLN...** A213






**UTS SCLC...** A214






**UTS SDHC...** A215






**UTS SDJC...** A216






**HSK-T DCLN...** A255






**HSK-T DWLN...** A257





# Innenbearbeitung

Aus- und Plandrehen



## HSK-T SCLC... A258






## HSK-T DCLN... A181






## HSK-T DWLN... A190






## HSK-T DDJN... A185






## HSK-T DCMN... A182






## HSK-T SCLC... A193






## HSK-T SDJC... A195






## HSK-T SVJC... A198






## HSK-T SCMC... A194





**DDUN...** A229






**PDUN...** A233






**SDQC...** A240






**SDUC...** A241






**SVQC...** A247






**SVUC...** A248






**SVXC/P** A269






**MTUC...** A252






**HSK-T DDUN...** A256






**HSK-T SDUC...** A259






**HSK-T SVUC...** A260






**HSK-T DDHN...** A184






**HSK-T DDUN...** A187






**HSK-T DDMN...** A186






**HSK-T DVMN...** A189






**HSK-T PRSC...** A192





**HSK-T SVHC...** A197






**HSK-T SVUC...** A200





# Innenbearbeitung

Kopierdrehen



## HSK-T SDMC... A196






## HSK-T SVMC... A199






## UTS PDUN... A262






## UTS SDUC... A265






## SVQC... A268






## SVUC... A269






## UTS PDUN... A204






## UTS SDUC... A218






## UTS SDXC... A219

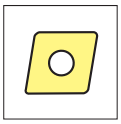
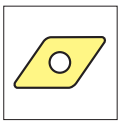
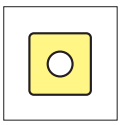




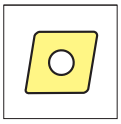
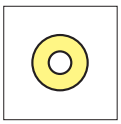
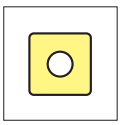
# Notizen



## MaxiLock D/N


| | | |
|---|---|---|
|  | 80° | A63-A66 |
|  | 55° | A67-A69 |
|  | 90° | A70-A72 |
|  | 60° | A73-A75 |
|  | 35° | A76 |
|  | 80° | A77-A78 |
|  | Andere / Radsatz | A79-A81 |

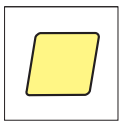
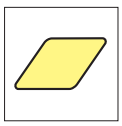
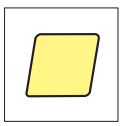
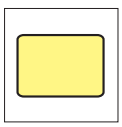
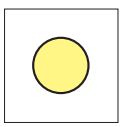
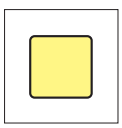
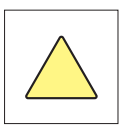

## MaxiLock S


| | | |
|---|---|---|
|  | 80° | A82-A84 |
|  | 55° | A85-A86 |
|  | 0° | A87 |
|  | 90° | A88 |
|  | 60° | A89 |
|  | 35° | A90-A91 |

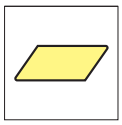
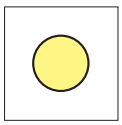
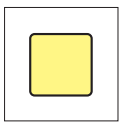
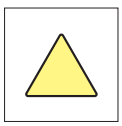

## MaxiLock S


| | | |
|---|---|---|
|  | Andere | A92 |


## Simplex N


| | | |
|---|---|---|
|  | 80° | A97 |
|  | 55° | A98 |
|  | 75° | A98 |
|  | 90° | A98 |
|  | 0° | A99 |
|  | 90° | A100 |
|  | 60° | A101 |

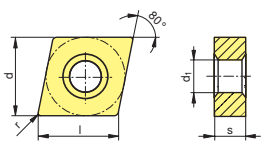

## Simplex P


| | | |
|---|---|---|
|  | 55° | A102 |
|  | 0° | A103 |
|  | 90° | A104 |
|  | 60° | A105 |

# MaxiLock D/N

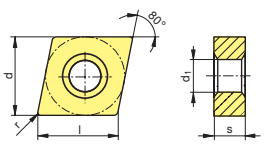
CN..

| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | | | | | | | |
| M | | | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | ○ | ○ | | | | | |
| K | | | ○ | ○ | ● | ● | | ○ | | | ● | ● | ● | | | | | | | |
| N | | | | | | | | ○ | | | | | ● | | | | | | | |
| S | | | | | | | ○ | ○ | ○ | ○ | | | | ● | ● | | | | | |
| H | | | | | | | | | | | | | | | | | | | | |
| -27 |  | CNGM 190612FN-27 | | | | | | | | | | | ● | | | 19,05 | 19,30 | 6,35 | 1,20 | 7,94 |
| -CF20 |  | CNMG 120404EN-CF20 | ● | | | | | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,40 | 5,16 |
| | | CNMG 120408EN-CF20 | ● | | | | | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| -CF |  | CNMG 120404EN-CF | | ● | | | | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,40 | 5,16 |
| | | CNMG 120408EN-CF | | ● | | | | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| -F32 |  | CNGP 120402FN-F32 | | | | | | ● | | | | | | | | 12,70 | 12,90 | 4,76 | 0,20 | 5,16 |
| | | CNGP 120404FN-F32 | | | | | | ● | | | | | | | | 12,70 | 12,90 | 4,76 | 0,40 | 5,16 |
| | | CNGP 120408FN-F32 | | | | | | ● | | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| -F30 |  | CNMG 120404EN-F30 | | | | | | | ● | | | | | | | 12,70 | 12,90 | 4,76 | 0,40 | 5,16 |
| | | CNMG 120408EN-F30 | | | | | | | ● | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| -TF |  | CNMG 090304EN-TF | | | ● | | | | | | | | | | | 9,52 | 9,70 | 3,18 | 0,40 | 3,81 |
| | | CNMG 120404EN-TF | | | ● | | ● | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,40 | 5,16 |
| | | CNMG 120408EN-TF | | | | ● | ● | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| -F34 |  | CNMG 120404EN-F34 | | | | | | | | | | | | | ● | 12,70 | 12,90 | 4,76 | 0,40 | 5,16 |
| | | CNMG 120408EN-F34 | | | | | | | | | | | | | ● | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| | | CNMG 120412EN-F34 | | | | | | | | | | | | | ● | 12,70 | 12,90 | 4,76 | 1,20 | 5,16 |
| -M30 |  | CNMG 120408EN-M30 | | | | | | | ● | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| | | CNMG 120412EN-M30 | | | | | | | ● | | | | | | | 12,70 | 12,90 | 4,76 | 1,20 | 5,16 |
| | | CNMG 120416EN-M30 | | | | | | | ● | | | | | | | 12,70 | 12,90 | 4,76 | 1,60 | 5,16 |
| -M34 |  | CNMG 120404EN-M34 | | | | | | | | | | | | ● | ● | 12,70 | 12,90 | 4,76 | 0,40 | 5,16 |
| | | CNMG 120408EN-M34 | | | | | | | | | | | | ● | ● | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| | | CNMG 120412EN-M34 | | | | | | | | | | | | ● | ● | 12,70 | 12,90 | 4,76 | 1,20 | 5,16 |
| | | CNMG 120416EN-M34 | | | | | | | | | | | | | ● | 12,70 | 12,90 | 4,76 | 1,60 | 5,16 |
| -42 |  | CNMG 120408EN-42 | | | | | ● | | | ● | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| -TFQ |  | CNMG 120404EN-TFQ | ● | | | ● | | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,40 | 5,16 |
| | | CNMG 120408EN-TFQ | ● | | ● | ● | | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| | | CNMG 120412EN-TFQ | ● | | ● | ● | | | | | | | | | | 12,70 | 12,90 | 4,76 | 1,20 | 5,16 |
| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d | l | s | r | $d_1$ |




A13
A24
A297
□ A109-A111
**HSK** A181-A183
□ A121-A123
**UTS** A201
⌀ A228
**HSK** A255
⌀ A232
**UTS** A261

| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | | | | | | | |
| M | | | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | ○ | ○ | | | | | |
| K | | | ○ | ○ | ● | ● | | ○ | | | ● | ● | ● | | | | | | | |
| N | | | | | | | | ○ | | | | | ● | | | | | | | |
| S | | | | | | | ○ | ○ | ○ | ○ | | | | ● | ● | | | | | |
| H | | | | | | | | | | | | | | | | | | | | |
| -TMF |  | CNMG 120404EN-TMF | | | ● | ● | ● | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,40 | 5,16 |
| | | CNMG 120408EN-TMF | | | ● | ● | ● | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| -M42 |  | CNMG 120404EN-M42 | | | | | | ● | | ● | | | | | | 12,70 | 12,90 | 4,76 | 0,40 | 5,16 |
| | | CNMG 120408EN-M42 | | | | | | ● | | ● | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| | | CNMG 120412EN-M42 | | | | | | | | ● | | | | | | 12,70 | 12,90 | 4,76 | 1,20 | 5,16 |
| -M52 |  | CNMG 120404EN-M52 | | | | | | ● | | | | | | | | 12,70 | 12,90 | 4,76 | 0,40 | 5,16 |
| | | CNMG 120408EN-M52 | | | | | | ● | | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| | | CNMG 120412EN-M52 | | | | | | ● | | | | | | | | 12,70 | 12,90 | 4,76 | 1,20 | 5,16 |
| -M50 |  | CNMG 120404EN-M50 | | | ● | ● | ● | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,40 | 5,16 |
| | | CNMG 120408EN-M50 | | | ● | ● | ● | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| | | CNMG 120412EN-M50 | | | ● | ● | ● | | | | | | | | | 12,70 | 12,90 | 4,76 | 1,20 | 5,16 |
| | | CNMG 120416EN-M50 | | | ● | ● | ● | | | | | | | | | 12,70 | 12,90 | 4,76 | 1,60 | 5,16 |
| | | CNMG 160608EN-M50 | | | ● | ● | ● | | | | | | | | | 15,88 | 16,10 | 6,35 | 0,80 | 6,35 |
| | | CNMG 160612EN-M50 | | | ● | ● | ● | | | | | | | | | 15,88 | 16,10 | 6,35 | 1,20 | 6,35 |
| | | CNMG 160616EN-M50 | | | ● | ● | ● | | | | | | | | | 15,88 | 16,10 | 6,35 | 1,60 | 6,35 |
| -TM |  | CNMG 090308EN-TM | | | | ● | | | | | | ● | | | | 9,52 | 9,70 | 3,18 | 0,80 | 3,81 |
| | | CNMG 120408EN-TM | | | ● | ● | ● | | | ● | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| | | CNMG 120412EN-TM | | | | ● | ● | | | ● | | | | | | 12,70 | 12,90 | 4,76 | 1,20 | 5,16 |
| | | CNMG 120416EN-TM | | | | | ● | | | | | | | | | 12,70 | 12,90 | 4,76 | 1,60 | 5,16 |
| | | CNMG 160608EN-TM | | | | ● | ● | | | | | | | | | 15,88 | 16,10 | 6,35 | 0,80 | 6,35 |
| | | CNMG 160612EN-TM | | | | ● | ● | | | | | | | | | 15,88 | 16,10 | 6,35 | 1,20 | 6,35 |
| | | CNMG 190612EN-TM | | | | ● | | | | | | | | | | 19,05 | 19,30 | 6,35 | 1,20 | 7,94 |
| | | CNMG 190616EN-TM | | | | ● | | | | | | | | | | 19,05 | 19,30 | 6,35 | 1,60 | 7,94 |
| -TMQ |  | CNMG 120408EN-TMQ | | | | ● | | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| | | CNMG 120412EN-TMQ | | | ● | ● | | | | | | | | | | 12,70 | 12,90 | 4,76 | 1,20 | 5,16 |
| -TRM |  | CNMG 120408EN-TRM | | | ● | ● | ● | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| | | CNMG 120412EN-TRM | | | | ● | ● | | | | | | | | | 12,70 | 12,90 | 4,76 | 1,20 | 5,16 |
| | | CNMG 120416EN-TRM | | | | ● | | | | | | | | | | 12,70 | 12,90 | 4,76 | 1,60 | 5,16 |
| | | CNMG 160612EN-TRM | | | ● | ● | | | | | | | | | | 15,88 | 16,10 | 6,35 | 1,20 | 6,35 |
| | | CNMG 160616EN-TRM | | | | ● | ● | | | | | | | | | 15,88 | 16,10 | 6,35 | 1,60 | 6,35 |
| | | CNMG 190612EN-TRM | | | | ● | | | | | | | | | | 19,05 | 19,30 | 6,35 | 1,20 | 7,94 |
| -M60 |  | CNMG 120408EN-M60 | | | | | | | ● | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| | | CNMG 120412EN-M60 | | | | | | | ● | | | | | | | 12,70 | 12,90 | 4,76 | 1,20 | 5,16 |
| | | CNMG 120416EN-M60 | | | | | | | ● | | | | | | | 12,70 | 12,90 | 4,76 | 1,60 | 5,16 |
| | | CNMG 160612EN-M60 | | | | | | | ● | | | | | | | 15,88 | 16,10 | 6,35 | 1,20 | 6,35 |
| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d | l | s | r | $d_1$ |




A13

A24

A297

□ A109-A111
**HSK** A181-A183

□ A121-A123
**UTS** A201

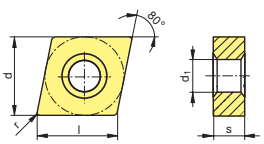
⌀ A228
**HSK** A255

⌀ A232
**UTS** A261

# MaxiLock D/N

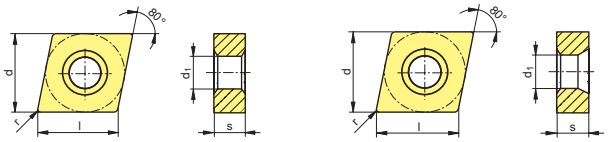
CN..

| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | | | | | | | |
| | | M | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | ○ | ○ | | | | | |
| | | K | ○ | ○ | ● | ● | | ○ | | | ● | ● | ● | | | | | | | |
| | | N | | | | | | ○ | | | | | ● | | | | | | | |
| | | S | | | | | ○ | ○ | ○ | ○ | | | | ● | ● | | | | | |
| | | H | | | | | | | | | | | | | | | | | | |
| -M70 | | CNMG 120408EN-M70 | | | ● | ● | ● | | | ● | ● | ● | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| | | CNMG 120412EN-M70 | | | ● | ● | ● | | | ● | ● | ● | | | | 12,70 | 12,90 | 4,76 | 1,20 | 5,16 |
| | | CNMG 120416EN-M70 | | | ● | ● | ● | | | | ● | ● | | | | 12,70 | 12,90 | 4,76 | 1,60 | 5,16 |
| | | CNMG 160608EN-M70 | | | ● | ● | ● | | | | | | | | | 15,88 | 16,10 | 6,35 | 0,80 | 6,35 |
| | | CNMG 160612EN-M70 | | | ● | ● | ● | | | ● | ● | | | | | 15,88 | 16,10 | 6,35 | 1,20 | 6,35 |
| | | CNMG 160616EN-M70 | | | ● | ● | ● | | | | ● | | | | | 15,88 | 16,10 | 6,35 | 1,60 | 6,35 |
| | | CNMG 190612EN-M70 | | | ● | ● | ● | | | ● | | | | | | 19,05 | 19,30 | 6,35 | 1,20 | 7,94 |
| | | CNMG 190616EN-M70 | | | ● | ● | ● | | | ● | | | | | | 19,05 | 19,30 | 6,35 | 1,60 | 7,94 |
| | | CNMG 190624EN-M70 | | | ● | ● | ● | | | | | | | | | 19,05 | 19,30 | 6,35 | 2,40 | 7,94 |
| | | CNMG 250924EN-M70 | | | | ● | | | | | | | | | | 25,40 | 25,80 | 9,52 | 2,40 | 9,12 |
| -R28 | | CNMM 120408EN-R28 | | | ● | ● | | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| | | CNMM 120412EN-R28 | | | ● | ● | ● | | | | | | | | | 12,70 | 12,90 | 4,76 | 1,20 | 5,16 |
| | | CNMM 120416EN-R28 | | | ● | ● | ● | | | | | | | | | 12,70 | 12,90 | 4,76 | 1,60 | 5,16 |
| | | CNMM 160612EN-R28 | | | ● | ● | ● | | | | | | | | | 15,88 | 16,10 | 6,35 | 1,20 | 6,35 |
| | | CNMM 160616EN-R28 | | | ● | ● | ● | | | | | | | | | 15,88 | 16,10 | 6,35 | 1,60 | 6,35 |
| | | CNMM 190612EN-R28 | | | ● | ● | ● | | | | | | | | | 19,05 | 19,30 | 6,35 | 1,20 | 7,94 |
| | | CNMM 190616EN-R28 | | | ● | ● | ● | | | | | | | | | 19,05 | 19,30 | 6,35 | 1,60 | 7,94 |
| | | CNMM 190624EN-R28 | | | ● | ● | ● | | | | | | | | | 19,05 | 19,30 | 6,35 | 2,40 | 7,94 |
| -R58 | | CNMM 120408EN-R58 | | | ● | ● | ● | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| | | CNMM 120412EN-R58 | | | ● | ● | ● | | | | | | | | | 12,70 | 12,90 | 4,76 | 1,20 | 5,16 |
| | | CNMM 120416EN-R58 | | | ● | ● | ● | | | | | | | | | 12,70 | 12,90 | 4,76 | 1,60 | 5,16 |
| | | CNMM 160612EN-R58 | | | ● | ● | ● | | | | | | | | | 15,88 | 16,10 | 6,35 | 1,20 | 6,35 |
| | | CNMM 160616EN-R58 | | | ● | ● | ● | | | | | | | | | 15,88 | 16,10 | 6,35 | 1,60 | 6,35 |
| | | CNMM 190612EN-R58 | | | ● | ● | ● | | | | | | | | | 19,05 | 19,30 | 6,35 | 1,20 | 7,94 |
| | | CNMM 190616EN-R58 | | | ● | ● | ● | | | | | | | | | 19,05 | 19,30 | 6,35 | 1,60 | 7,94 |
| | | CNMM 190624EN-R58 | | | ● | ● | ● | | | | | | | | | 19,05 | 19,30 | 6,35 | 2,40 | 7,94 |
| | | CNMM 250924EN-R58 | | | ● | ● | ● | | | | | | | | | 25,40 | 25,80 | 9,52 | 2,40 | 9,12 |
| -TR | | CNMM 120408EN-TR | | | | ● | | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| | | CNMM 120412EN-TR | | | | ● | | | | | | | | | | 12,70 | 12,90 | 4,76 | 1,20 | 5,16 |
| | | CNMM 160612EN-TR | | | | ● | | | | | | | | | | 15,88 | 16,10 | 6,35 | 1,20 | 6,35 |
| | | CNMM 160616EN-TR | | | | ● | | | | | | | | | | 15,88 | 16,10 | 6,35 | 1,60 | 6,35 |
| | | CNMM 190616EN-TR | | | | ● | | | | | | | | | | 19,05 | 19,30 | 6,35 | 1,60 | 7,94 |
| -TRR | | CNMM 120408SN-TRR | | | | ● | | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| | | CNMM 120412SN-TRR | | | | ● | | | | | | | | | | 12,70 | 12,90 | 4,76 | 1,20 | 5,16 |
| | | CNMM 160612SN-TRR | | | | ● | | | | | | | | | | 15,88 | 16,10 | 6,35 | 1,20 | 6,35 |
| | | CNMM 160616SN-TRR | | | | ● | | | | | | | | | | 15,88 | 16,10 | 6,35 | 1,60 | 6,35 |
| | | CNMM 190616SN-TRR | | | | ● | | | | | | | | | | 19,05 | 19,30 | 6,35 | 1,60 | 7,94 |
| -R80 | | CNMM 190616SN-R80 | | | | ● | | | | | | | | | | 19,05 | 19,30 | 6,35 | 1,60 | 7,94 |
| | | CNMM 190624SN-R80 | | | | ● | | | | | | | | | | 19,05 | 19,30 | 6,35 | 2,40 | 7,94 |
| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d | l | s | r | $d_1$ |




A13 A24 A297 □ A109-A111 **HSK** A181-A183 □ A121-A123 **UTS** A201 ⌀ A228 **HSK** A255 ⌀ A232 **UTS** A261

| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | | | | | | | |
| M | | | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | ○ | ○ | | | | | |
| K | | | ○ | ○ | ● | ● | | ○ | | | ● | ● | ● | | | | | | | |
| N | | | | | | | | ○ | | | | | ● | | | | | | | |
| S | | | | | | | ○ | ○ | ○ | ○ | | | | ● | ● | | | | | |
| H | | | | | | | | | | | | | | | | | | | | |
| -R88 |  | CNMM 190616SN-R88 | | | ● | ● | ● | | | | | | | | | 19,05 | 19,30 | 6,35 | 1,60 | 7,94 |
| | | CNMM 190624SN-R88 | | | ● | ● | ● | | | | | | | | | 19,05 | 19,30 | 6,35 | 2,40 | 7,94 |
| | | CNMM 250924SN-R88 | | | ● | ● | ● | | | | | | | | | 25,40 | 25,80 | 9,52 | 2,40 | 9,12 |
| | | CNMT 320932SN-R88 | | | ● | ● | ● | | | | | | | | | 31,75 | 32,24 | 9,52 | 3,20 | 9,12 |
| -R88Q |  | CNMM 190624SN-R88Q | | | ● | ● | | | | | | | | | | 19,05 | 19,30 | 6,35 | 2,40 | 7,94 |
| CN..A |  | CNMA 120404EN | | | | | | | | | ● | | | | | 12,70 | 12,90 | 4,76 | 0,40 | 5,16 |
| | | CNMA 120408EN | | | | | | | | | ● | ● | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| | | CNMA 120412EN | | | | | | | | | ● | ● | | | | 12,70 | 12,90 | 4,76 | 1,20 | 5,16 |
| | | CNMA 120416EN | | | | | | | | | | ● | | | | 12,70 | 12,90 | 4,76 | 1,60 | 5,16 |
| | | CNMA 160608EN | | | | | | | | | ● | | | | | 15,88 | 16,10 | 6,35 | 0,80 | 6,35 |
| | | CNMA 160612EN | | | | | | | | | ● | | | | | 15,88 | 16,10 | 6,35 | 1,20 | 6,35 |
| | | CNMA 160616EN | | | | | | | | | ● | | | | | 15,88 | 16,10 | 6,35 | 1,60 | 6,35 |
| | | CNMA 190612EN | | | | | | | | | ● | | | | | 19,05 | 19,30 | 6,35 | 1,20 | 7,94 |
| | | CNMA 190616EN | | | | | | | | | ● | | | | | 19,05 | 19,30 | 6,35 | 1,60 | 7,94 |
| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d | l | s | r | $d_1$ |





A13



A24


A297


□ A109-A111
**HSK** A181-A183


□ A121-A123
**UTS** A201

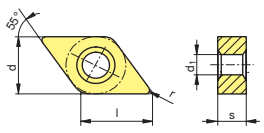

⌀ A228
**HSK** A255


⌀ A232
**UTS** A261

# MaxiLock D/N

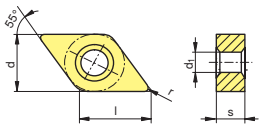
DN..

| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -CF20 |  | DNMG 110404EN-CF20 | ● | | | | | | | | | | | | | 9,52 | 11,60 | 4,76 | 0,40 | 3,81 |
| | | DNMG 110408EN-CF20 | ● | | | | | | | | | | | | | 9,52 | 11,60 | 4,76 | 0,80 | 3,81 |
| | | DNMG 150604EN-CF20 | ● | | | | | | | | | | | | | 12,70 | 15,50 | 6,35 | 0,40 | 5,16 |
| | | DNMG 150608EN-CF20 | ● | | | | | | | | | | | | | 12,70 | 15,50 | 6,35 | 0,80 | 5,16 |
| | | DNMG 150612EN-CF20 | ● | | | | | | | | | | | | | 12,70 | 15,50 | 6,35 | 1,20 | 5,16 |
| -CF |  | DNMG 110404EN-CF | | ● | | | | | | | | | | | | 9,52 | 11,60 | 4,76 | 0,40 | 3,81 |
| | | DNMG 150604EN-CF | | ● | | | | | | | | | | | | 12,70 | 15,50 | 6,35 | 0,40 | 5,16 |
| -F32 |  | DNGP 150402FN-F32 | | | | | | ● | | | | | | | | 12,70 | 15,50 | 4,76 | 0,20 | 5,16 |
| | | DNGP 150404FN-F32 | | | | | | ● | | | | | | | | 12,70 | 15,50 | 4,76 | 0,40 | 5,16 |
| | | DNGP 150408FN-F32 | | | | | | ● | | | | | | | | 12,70 | 15,50 | 4,76 | 0,80 | 5,16 |
| | | DNGP 150602FN-F32 | | | | | | ● | | | | | | | | 12,70 | 15,50 | 6,35 | 0,20 | 5,16 |
| | | DNGP 150604FN-F32 | | | | | | ● | | | | | | | | 12,70 | 15,50 | 6,35 | 0,40 | 5,16 |
| | | DNGP 150608FN-F32 | | | | | | ● | | | | | | | | 12,70 | 15,50 | 6,35 | 0,80 | 5,16 |
| -F30 |  | DNMG 110404EN-F30 | | | | | | | ● | | | | | | | 9,52 | 11,60 | 4,76 | 0,40 | 3,81 |
| | | DNMG 110408EN-F30 | | | | | | | ● | | | | | | | 9,52 | 11,60 | 4,76 | 0,80 | 3,81 |
| | | DNMG 150604EN-F30 | | | | | | | ● | | | | | | | 12,70 | 15,50 | 6,35 | 0,40 | 5,16 |
| | | DNMG 150608EN-F30 | | | | | | | ● | | | | | | | 12,70 | 15,50 | 6,35 | 0,80 | 5,16 |
| -TF |  | DNMG 110404EN-TF | | | ● | ● | | | | | | | | | | 9,52 | 11,60 | 4,76 | 0,40 | 3,81 |
| | | DNMG 110408EN-TF | | | | ● | | | | | | | | | | 9,52 | 11,60 | 4,76 | 0,80 | 3,81 |
| | | DNMG 150604EN-TF | | | ● | ● | | | | | | | | | | 12,70 | 15,50 | 6,35 | 0,40 | 5,16 |
| | | DNMG 150608EN-TF | | | ● | ● | | | | | | | | | | 12,70 | 15,50 | 6,35 | 0,80 | 5,16 |
| | | DNMG 150612EN-TF | | | ● | | | | | | | | | | | 12,70 | 15,50 | 6,35 | 1,20 | 5,16 |
| -M30 |  | DNMG 110408EN-M30 | | | | | | | ● | | | | | | | 9,52 | 11,60 | 4,76 | 0,80 | 3,81 |
| | | DNMG 110412EN-M30 | | | | | | | ● | | | | | | | 9,52 | 11,60 | 4,76 | 1,20 | 3,81 |
| | | DNMG 150608EN-M30 | | | | | | | ● | | | | | | | 12,70 | 15,50 | 6,35 | 0,80 | 5,16 |
| | | DNMG 150612EN-M30 | | | | | | | ● | | | | | | | 12,70 | 15,50 | 6,35 | 1,20 | 5,16 |
| -M34 |  | DNMG 150404EN-M34 | | | | | | | | | | | | ● | ● | 12,70 | 15,50 | 4,76 | 0,40 | 5,16 |
| | | DNMG 150408EN-M34 | | | | | | | | | | | | ● | ● | 12,70 | 15,50 | 4,76 | 0,80 | 5,16 |
| | | DNMG 150412EN-M34 | | | | | | | | | | | | ● | ● | 12,70 | 15,50 | 4,76 | 1,20 | 5,16 |
| | | DNMG 150608EN-M34 | | | | | | | | | | | | ● | ● | 12,70 | 15,50 | 6,35 | 0,80 | 5,16 |
| | | DNMG 150612EN-M34 | | | | | | | | | | | | ● | ● | 12,70 | 15,50 | 6,35 | 1,20 | 5,16 |
| -TFQ |  | DNMG 150604EN-TFQ | ● | | | ● | | | | | | | | | | 12,70 | 15,50 | 6,35 | 0,40 | 5,16 |
| | | DNMG 150608EN-TFQ | ● | | ● | ● | | | | | | | | | | 12,70 | 15,50 | 6,35 | 0,80 | 5,16 |
| -TMF |  | DNMG 110404EN-TMF | | | ● | ● | | | | | | | | | | 9,52 | 11,60 | 4,76 | 0,40 | 3,81 |
| | | DNMG 110408EN-TMF | | | ● | | ● | | | | | | | | | 9,52 | 11,60 | 4,76 | 0,80 | 3,81 |
| | | DNMG 110412EN-TMF | | | ● | | | | | | | | | | | 9,52 | 11,60 | 4,76 | 1,20 | 3,81 |
| | | DNMG 150604EN-TMF | | | ● | ● | ● | | | | | | | | | 12,70 | 15,50 | 6,35 | 0,40 | 5,16 |
| | | DNMG 150608EN-TMF | | | ● | ● | ● | | | | | | | | | 12,70 | 15,50 | 6,35 | 0,80 | 5,16 |
| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d | l | s | r | $d_1$ |




A13 | A24 | A297 | □ A112 **HSK** A183-A187 | □ A124-A125 **UTS** A202-A204 | ⌀ A229 **HSK** A256 | ⌀ A233 **UTS** A262

| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | | | | | | | |
| | | M | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | ○ | ○ | | | | | |
| | | K | ○ | ○ | ● | ● | | ○ | | | ● | ● | ● | | | | | | | |
| | | N | | | | | | ○ | | | | | ● | | | | | | | |
| | | S | | | | | ○ | ○ | ○ | ○ | | | | ● | ● | | | | | |
| | | H | | | | | | | | | | | | | | | | | | |
| -M42 | | DNMG 110404EN-M42 | | | | | | | | ● | | | | | | 9,52 | 11,60 | 4,76 | 0,40 | 3,81 |
| | | DNMG 110408EN-M42 | | | | | | | | ● | | | | | | 9,52 | 11,60 | 4,76 | 0,80 | 3,81 |
| | | DNMG 150404EN-M42 | | | | | | ● | | ● | | | | | | 12,70 | 15,50 | 4,76 | 0,40 | 5,16 |
| | | DNMG 150408EN-M42 | | | | | | | | ● | | | | | | 12,70 | 15,50 | 4,76 | 0,80 | 5,16 |
| | | DNMG 150604EN-M42 | | | | | | ● | | ● | | | | | | 12,70 | 15,50 | 6,35 | 0,40 | 5,16 |
| | | DNMG 150608EN-M42 | | | | | | ● | | ● | | | | | | 12,70 | 15,50 | 6,35 | 0,80 | 5,16 |
| -M52 | | DNMG 150404EN-M52 | | | | | | ● | | | | | | | | 12,70 | 15,50 | 4,76 | 0,40 | 5,16 |
| | | DNMG 150408EN-M52 | | | | | | ● | | | | | | | | 12,70 | 15,50 | 4,76 | 0,80 | 5,16 |
| | | DNMG 150604EN-M52 | | | | | | ● | | | | | | | | 12,70 | 15,50 | 6,35 | 0,40 | 5,16 |
| | | DNMG 150608EN-M52 | | | | | | ● | | | | | | | | 12,70 | 15,50 | 6,35 | 0,80 | 5,16 |
| -M50 | | DNMG 110404EN-M50 | | | ● | ● | ● | | | | | | | | | 9,52 | 11,60 | 4,76 | 0,40 | 3,81 |
| | | DNMG 110408EN-M50 | | | ● | ● | ● | | | | | | | | | 9,52 | 11,60 | 4,76 | 0,80 | 3,81 |
| | | DNMG 110412EN-M50 | | | ● | ● | ● | | | | | | | | | 9,52 | 11,60 | 4,76 | 1,20 | 3,81 |
| | | DNMG 150404EN-M50 | | | ● | ● | ● | | | | | | | | | 12,70 | 15,50 | 4,76 | 0,40 | 5,16 |
| | | DNMG 150408EN-M50 | | | ● | ● | ● | | | | | | | | | 12,70 | 15,50 | 4,76 | 0,80 | 5,16 |
| | | DNMG 150412EN-M50 | | | ● | ● | ● | | | | | | | | | 12,70 | 15,50 | 4,76 | 1,20 | 5,16 |
| | | DNMG 150416EN-M50 | | | ● | ● | ● | | | | | | | | | 12,70 | 15,50 | 4,76 | 1,60 | 5,16 |
| | | DNMG 150604EN-M50 | | | ● | ● | ● | | | | | | | | | 12,70 | 15,50 | 6,35 | 0,40 | 5,16 |
| | | DNMG 150608EN-M50 | | | ● | ● | ● | | | | | | | | | 12,70 | 15,50 | 6,35 | 0,80 | 5,16 |
| | | DNMG 150612EN-M50 | | | ● | ● | ● | | | | | | | | | 12,70 | 15,50 | 6,35 | 1,20 | 5,16 |
| | | DNMG 150616EN-M50 | | | ● | ● | ● | | | | | | | | | 12,70 | 15,50 | 6,35 | 1,60 | 5,16 |
| -TM | | DNMG 110408EN-TM | | | ● | ● | | | | | | | | | | 9,52 | 11,60 | 4,76 | 0,80 | 3,81 |
| | | DNMG 150608EN-TM | | | ● | ● | ● | | | ● | | | | | | 12,70 | 15,50 | 6,35 | 0,80 | 5,16 |
| | | DNMG 150612EN-TM | | | | ● | ● | | | | | | | | | 12,70 | 15,50 | | 1,20 | |
| | | DNMG 150616EN-TM | | | | ● | ● | | | | | | | | | 12,70 | 15,50 | 6,35 | 1,60 | 5,16 |
| -TMQ | | DNMG 150608EN-TMQ | | | | ● | | | | | | | | | | 12,70 | 15,50 | 6,35 | 0,80 | 5,16 |
| | | DNMG 150612EN-TMQ | | | ● | ● | | | | | | | | | | 12,70 | 15,50 | 6,35 | 1,20 | 5,16 |
| -TRM | | DNMG 110408EN-TRM | | | | ● | | | | | | | | | | 9,52 | 11,60 | 4,76 | 0,80 | 3,81 |
| | | DNMG 110412EN-TRM | | | ● | | | | | | | | | | | 9,52 | 11,60 | 4,76 | 1,20 | 3,81 |
| | | DNMG 150412EN-TRM | | | | ● | | | | | | | | | | 12,70 | 15,50 | 4,76 | 1,20 | 5,16 |
| | | DNMG 150608EN-TRM | | | | ● | | | | | | | | | | 12,70 | 15,50 | 6,35 | 0,80 | 5,16 |
| | | DNMG 150612EN-TRM | | | ● | ● | | | | | | | | | | 12,70 | 15,50 | 6,35 | 1,20 | 5,16 |
| | | DNMG 150616EN-TRM | | | | ● | | | | | | | | | | 12,70 | 15,50 | 6,35 | 1,60 | 5,16 |
| -M60 | | DNMG 150608EN-M60 | | | | | | | ● | | | | | | | 12,70 | 15,50 | 6,35 | 0,80 | 5,16 |
| | | DNMG 150612EN-M60 | | | | | | | ● | | | | | | | 12,70 | 15,50 | 6,35 | 1,20 | 5,16 |
| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d | l | s | r | $d_1$ |




A13

A24

A297

□ A112
**HSK** A183-A187

□ A124-A125
**UTS** A202-A204

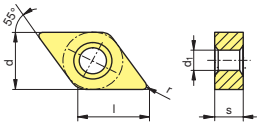
⌀ A229
**HSK** A256

⌀ A233
**UTS** A262

# MaxiLock D/N

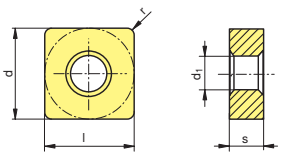
DN..

| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | P | | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | | | | | | | |
| | M | | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | ○ | ○ | | | | | |
| | K | | ○ | ○ | ● | ● | | ○ | | | ● | ● | ● | | | | | | | |
| | N | | | | | | | ○ | | | | | ● | | | | | | | |
| | S | | | | | | ○ | ○ | ○ | ○ | | | | ● | ● | | | | | |
| | H | | | | | | | | | | | | | | | | | | | |
| -M70 |  | DNMG 110408EN-M70 | | | ● | ● | ● | | | ● | | | | | | 9,52 | 11,60 | 4,76 | 0,80 | 3,81 |
| | | DNMG 110412EN-M70 | | | ● | ● | ● | | | | | | | | | 9,52 | 11,60 | 4,76 | 1,20 | 3,81 |
| | | DNMG 150408EN-M70 | | | ● | ● | ● | | | | | | | | | 12,70 | 15,50 | 4,76 | 0,80 | 5,16 |
| | | DNMG 150412EN-M70 | | | ● | ● | ● | | | | | | | | | 12,70 | 15,50 | 4,76 | 1,20 | 5,16 |
| | | DNMG 150416EN-M70 | | | ● | ● | ● | | | | | | | | | 12,70 | 15,50 | 4,76 | 1,60 | 5,16 |
| | | DNMG 150608EN-M70 | | | ● | ● | ● | | | | ● | | | | | 12,70 | 15,50 | 6,35 | 0,80 | 5,16 |
| | | DNMG 150612EN-M70 | | | ● | ● | ● | | | | ● | ● | | | | 12,70 | 15,50 | 6,35 | 1,20 | 5,16 |
| | | DNMG 150616EN-M70 | | | ● | ● | ● | | | | | ● | | | | 12,70 | 15,50 | 6,35 | 1,60 | 5,16 |
| -R28 |  | DNMM 150612EN-R28 | | | ● | ● | ● | | | | | | | | | 12,70 | 15,50 | 6,35 | 1,20 | 5,16 |
| | | DNMM 150616EN-R28 | | | ● | ● | ● | | | | | | | | | 12,70 | 15,50 | 6,35 | 1,60 | 5,16 |
| -R58 |  | DNMM 150612EN-R58 | | | ● | ● | ● | | | | | | | | | 12,70 | 15,50 | 6,35 | 1,20 | 5,16 |
| | | DNMM 150616EN-R58 | | | ● | ● | ● | | | | | | | | | 12,70 | 15,50 | 6,35 | 1,60 | 5,16 |
| -TR |  | DNMM 150608EN-TR | | | | ● | | | | | | | | | | 12,70 | 15,50 | 6,35 | 0,80 | 5,16 |
| | | DNMM 150612EN-TR | | | | ● | | | | | | | | | | 12,70 | 15,50 | 6,35 | 1,20 | 5,16 |
| DN..A |  | DNMA 150608EN | | | | | | | | | ● | | | | | 12,70 | 15,50 | 6,35 | 0,80 | 5,16 |
| | | DNMA 150612EN | | | | | | | | | ● | | | | | 12,70 | 15,50 | 6,35 | 1,20 | 5,16 |




A13 A24 A297 □ A112 **HSK** A183-A187 □ A124-A125 **UTS** A202-A204 ⌀ A229 **HSK** A256 ⌀ A233 **UTS** A262

| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | | | | | | | |
| M | | | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | ○ | ○ | | | | | |
| K | | | ○ | ○ | ● | ● | | ○ | | | ● | ● | ● | | | | | | | |
| N | | | | | | | | ○ | | | | | ● | | | | | | | |
| S | | | | | | | ○ | ○ | ○ | ○ | | | | ● | ● | | | | | |
| H | | | | | | | | | | | | | | | | | | | | |
| -F30 | | SNMG 120404EN-F30 | | | | | | | ● | | | | | | | 12,70 | 12,70 | 4,76 | 0,40 | 5,16 |
| | | SNMG 120408EN-F30 | | | | | | | ● | | | | | | | 12,70 | 12,70 | 4,76 | 0,80 | 5,16 |
| -TF | | SNMG 120404EN-TF | | | | ● | | | | | | | | | | 12,70 | 12,70 | 4,76 | 0,40 | 5,16 |
| -M30 | | SNMG 120408EN-M30 | | | | | | | ● | | | | | | | 12,70 | 12,70 | 4,76 | 0,80 | 5,16 |
| | | SNMG 120412EN-M30 | | | | | | | ● | | | | | | | 12,70 | 12,70 | 4,76 | 1,20 | 5,16 |
| -M34 | | SNMG 120408EN-M34 | | | | | | | | | | | | ● | ● | 12,70 | 12,70 | 4,76 | 0,80 | 5,16 |
| | | SNMG 120412EN-M34 | | | | | | | | | | | | ● | ● | 12,70 | 12,70 | 4,76 | 1,20 | 5,16 |
| -TMF | | SNMG 120408EN-TMF | | | ● | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 0,80 | 5,16 |
| | | SNMG 120412EN-TMF | | | | | ● | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,20 | 5,16 |
| -M42 | | SNMG 120408EN-M42 | | | | | | | | ● | | | | | | 12,70 | 12,70 | 4,76 | 0,80 | 5,16 |
| | | SNMG 120412EN-M42 | | | | | | | | ● | | | | | | 12,70 | 12,70 | 4,76 | 1,20 | 5,16 |
| -M52 | | SNMG 120408EN-M52 | | | | | | ● | | | | | | | | 12,70 | 12,70 | 4,76 | 0,80 | 5,16 |
| -M50 | | SNMG 120408EN-M50 | | | ● | ● | ● | | | | | | | | | 12,70 | 12,70 | 4,76 | 0,80 | 5,16 |
| | | SNMG 120412EN-M50 | | | ● | ● | ● | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,20 | 5,16 |
| | | SNMG 120416EN-M50 | | | ● | ● | ● | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,60 | 5,16 |
| | | SNMG 150612EN-M50 | | | ● | ● | ● | | | | | | | | | 15,88 | 15,88 | 6,35 | 1,20 | 6,35 |
| | | SNMG 150616EN-M50 | | | ● | ● | ● | | | | | | | | | 15,88 | 15,88 | 6,35 | 1,60 | 6,35 |
| -TM | | SNMG 120408EN-TM | | | ● | ● | ● | | | ● | | | | | | 12,70 | 12,70 | 4,76 | 0,80 | 5,16 |
| | | SNMG 120412EN-TM | | | | ● | | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,20 | 5,16 |
| | | SNMG 120416EN-TM | | | | ● | ● | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,60 | 5,16 |
| -TRM | | SNMG 120412EN-TRM | | | | ● | | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,20 | 5,16 |
| | | SNMG 120416EN-TRM | | | | ● | | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,60 | 5,16 |
| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d | l | s | r | $d_1$ |




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A297

□ A113-A116
**HSK** A188

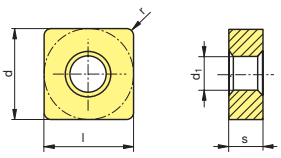
□ A128-A131
**UTS** A207-A210

⌀ A230

# MaxiLock D/N

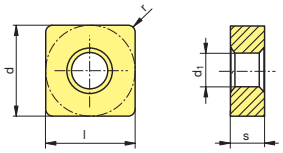
SN..

| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | P | | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | | | | | | | |
| | M | | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | ○ | ○ | | | | | |
| | K | | ○ | ○ | ● | ● | | ○ | | | ● | ● | ● | | | | | | | |
| | N | | | | | | | ○ | | | | | ● | | | | | | | |
| | S | | | | | | ○ | ○ | ○ | ○ | | | | ● | ● | | | | | |
| | H | | | | | | | | | | | | | | | | | | | |
| -M60 | | SNMG 120408EN-M60 | | | | | | | ● | | | | | | | 12,70 | 12,70 | 4,76 | 0,80 | 5,16 |
| | | SNMG 120412EN-M60 | | | | | | | ● | | | | | | | 12,70 | 12,70 | 4,76 | 1,20 | 5,16 |
| | | SNMG 120416EN-M60 | | | | | | | ● | | | | | | | 12,70 | 12,70 | 4,76 | 1,60 | 5,16 |
| -M70 | | SNMG 120408EN-M70 | | | ● | ● | ● | | | ● | ● | | | | | 12,70 | 12,70 | 4,76 | 0,80 | 5,16 |
| | | SNMG 120412EN-M70 | | | ● | ● | ● | | | ● | ● | | | | | 12,70 | 12,70 | 4,76 | 1,20 | 5,16 |
| | | SNMG 120416EN-M70 | | | ● | ● | ● | | | | ● | | | | | 12,70 | 12,70 | 4,76 | 1,60 | 5,16 |
| | | SNMG 150612EN-M70 | | | ● | ● | ● | | | | | | | | | 15,88 | 15,88 | 6,35 | 1,20 | 6,35 |
| | | SNMG 150616EN-M70 | | | ● | ● | ● | | | | | | | | | 15,88 | 15,88 | 6,35 | 1,60 | 6,35 |
| | | SNMG 190612EN-M70 | | | ● | ● | ● | | | | | | | | | 19,05 | 19,05 | 6,35 | 1,20 | 7,94 |
| | | SNMG 190616EN-M70 | | | ● | ● | ● | | | ● | | | | | | 19,05 | 19,05 | 6,35 | 1,60 | 7,94 |
| | | SNMG 190624EN-M70 | | | ● | ● | ● | | | | | | | | | 19,05 | 19,05 | 6,35 | 2,40 | 7,94 |
| | | SNMG 250924EN-M70 | | | | ● | | | | | | | | | | 25,40 | 25,40 | 9,52 | 2,40 | 9,12 |
| -R28 | | SNMM 150612EN-R28 | | | ● | ● | ● | | | | | | | | | 15,88 | 15,88 | 6,35 | 1,20 | 6,35 |
| | | SNMM 150616EN-R28 | | | ● | ● | ● | | | | | | | | | 15,88 | 15,88 | 6,35 | 1,60 | 6,35 |
| | | SNMM 190616EN-R28 | | | ● | ● | ● | | | | | | | | | 19,05 | 19,05 | 6,35 | 1,60 | 7,94 |
| | | SNMM 250724EN-R28 | | | | | ● | | | | | | | | | 25,40 | 25,40 | 7,94 | 2,40 | 9,12 |
| | | SNMM 250924EN-R28 | | | ● | ● | ● | | | | | | | | | 25,40 | 25,40 | 9,52 | 2,40 | 9,12 |
| -R58 | | SNMM 120408EN-R58 | | | ● | ● | ● | | | | | | | | | 12,70 | 12,70 | 4,76 | 0,80 | 5,16 |
| | | SNMM 120412EN-R58 | | | ● | ● | ● | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,20 | 5,16 |
| | | SNMM 150612EN-R58 | | | ● | ● | ● | | | | | | | | | 15,88 | 15,88 | 6,35 | 1,20 | 6,35 |
| | | SNMM 150616EN-R58 | | | ● | ● | ● | | | | | | | | | 15,88 | 15,88 | 6,35 | 1,60 | 6,35 |
| | | SNMM 190612EN-R58 | | | ● | ● | ● | | | | | | | | | 19,05 | 19,05 | 6,35 | 1,20 | 7,94 |
| | | SNMM 190616EN-R58 | | | ● | ● | ● | | | | | | | | | 19,05 | 19,05 | 6,35 | 1,60 | 7,94 |
| | | SNMM 190624EN-R58 | | | ● | ● | ● | | | | | | | | | 19,05 | 19,05 | 6,35 | 2,40 | 7,94 |
| | | SNMM 250724EN-R58 | | | ● | ● | ● | | | | | | | | | 25,40 | 25,40 | 7,94 | 2,40 | 9,12 |
| | | SNMM 250924EN-R58 | | | ● | ● | ● | | | | | | | | | 25,40 | 25,40 | 9,52 | 2,40 | 9,12 |
| -TR | | SNMM 120408EN-TR | | | | ● | | | | | | | | | | 12,70 | 12,70 | 4,76 | 0,80 | 5,16 |
| | | SNMM 120412EN-TR | | | | ● | | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,20 | 5,16 |
| | | SNMM 150612EN-TR | | | | ● | | | | | | | | | | 15,88 | 15,88 | 6,35 | 1,20 | 6,35 |
| | | SNMM 190616EN-TR | | | | ● | | | | | | | | | | 19,05 | 19,05 | 6,35 | 1,60 | 7,94 |
| | | SNMM 250724EN-TR | | | | ● | | | | | | | | | | 25,40 | 25,40 | 7,94 | 2,40 | 9,12 |
| -TRR | | SNMM 190616SN-TRR | | | | ● | | | | | | | | | | 19,05 | 19,05 | 6,35 | 1,60 | 7,94 |
| | | SNMM 250724SN-TRR | | | | ● | | | | | | | | | | 25,40 | 25,40 | 7,94 | 2,40 | 9,12 |
| -R88 | | SNMM 190616SN-R88 | | | ● | ● | ● | | | | | | | | | 19,05 | 19,05 | 6,35 | 1,60 | 7,94 |
| | | SNMM 190624SN-R88 | | | ● | ● | ● | | | | | | | | | 19,05 | 19,05 | 6,35 | 2,40 | 7,94 |
| | | SNMM 250724SN-R88 | | | ● | ● | ● | | | | | | | | | 25,40 | 25,40 | 7,94 | 2,40 | 9,12 |
| | | SNMM 250732SN-R88 | | | ● | ● | ● | | | | | | | | | 25,40 | 25,40 | 7,94 | 3,20 | 9,12 |
| | | SNMM 250924SN-R88 | | | ● | ● | ● | | | | | | | | | 25,40 | 25,40 | 9,52 | 2,40 | 9,12 |
| | | SNMM 250932SN-R88 | | | ● | ● | ● | | | | | | | | | 25,40 | 25,40 | 9,52 | 3,20 | 9,12 |
| | | SNMM 310932SN-R88 | | | ● | ● | | | | | | | | | | 31,75 | 31,75 | 9,52 | 3,20 | 9,12 |
| | | SNMT 310932SN-R88 | | | ● | ● | ● | | | | | | | | | 31,75 | 31,75 | 9,52 | 3,20 | 9,12 |
| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d | l | s | r | $d_1$ |




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A297
□ A113-A116
**HSK** A188
□ A128-A131
**UTS** A207-A210
⌀ A230

| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | | | | | | | |
| M | | | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | ○ | ○ | | | | | |
| K | | | ○ | ○ | ● | ● | | ○ | | | ● | ● | ● | | | | | | | |
| N | | | | | | | | ○ | | | | | ● | | | | | | | |
| S | | | | | | | ○ | ○ | ○ | ○ | | | | ● | ● | | | | | |
| H | | | | | | | | | | | | | | | | | | | | |
| SN..A | | SNMA 120408EN | | | | | | | | | ● | ● | | | | 12,70 | 12,70 | 4,76 | 0,80 | 5,16 |
| | | SNMA 120412EN | | | | | | | | | ● | ● | | | | 12,70 | 12,70 | 4,76 | 1,20 | 5,16 |
| | | SNMA 120416EN | | | | | | | | | ● | ● | | | | 12,70 | 12,70 | 4,76 | 1,60 | 5,16 |
| | | SNMA 150616EN | | | | | | | | | ● | | | | | 15,88 | 15,88 | 6,35 | 1,60 | 6,35 |
| | | SNMA 190616EN | | | | | | | | | ● | | | | | 19,05 | 19,05 | 6,35 | 1,60 | 7,94 |
| EN | | SNMG 090308EN | | | | ● | ● | | | | | ● | | | | 9,52 | 9,52 | 3,18 | 0,80 | 3,81 |
| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d | l | s | r | $d_1$ |

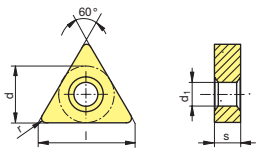



A13 | A24 | A297 | □ A113-A116 **HSK** A188 | □ A128-A131 **UTS** A207-A210 | ⌀ A230

# MaxiLock D/N

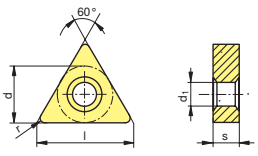
TN..

| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | | | | | | | |
| M | | | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | ○ | ○ | | | | | |
| K | | | ○ | ○ | ● | ● | | ○ | | | ● | ● | ● | | | | | | | |
| N | | | | | | | | ○ | | | | | ● | | | | | | | |
| S | | | | | | | ○ | ○ | ○ | ○ | | | | ● | ● | | | | | |
| H | | | | | | | | | | | | | | | | | | | | |
| -CF20 |  | TNMG 160404EN-CF20 | ● | | | | | | | | | | | | | 9,52 | 16,50 | 4,76 | 0,40 | 3,81 |
| | | TNMG 160408EN-CF20 | ● | | | | | | | | | | | | | 9,52 | 16,50 | 4,76 | 0,80 | 3,81 |
| | | TNMG 160412EN-CF20 | ● | | | | | | | | | | | | | 9,52 | 16,50 | 4,76 | 1,20 | 3,81 |
| -F30 |  | TNMG 160404EN-F30 | | | | | | | ● | | | | | | | 9,52 | 16,50 | 4,76 | 0,40 | 3,81 |
| | | TNMG 160408EN-F30 | | | | | | | ● | | | | | | | 9,52 | 16,50 | 4,76 | 0,80 | 3,81 |
| -TF |  | TNMG 110304EN-TF | | | | ● | | | | | | | | | | 6,35 | 11,00 | 3,18 | 0,40 | 2,26 |
| | | TNMG 160404EN-TF | | | ● | ● | ● | | | | | | | | | 9,52 | 16,50 | 4,76 | 0,40 | 3,81 |
| | | TNMG 160408EN-TF | | | ● | ● | | | | | | | | | | 9,52 | 16,50 | 4,76 | 0,80 | 3,81 |
| -M30 |  | TNMG 160408EN-M30 | | | | | | | ● | | | | | | | 9,52 | 16,50 | 4,76 | 0,80 | 3,81 |
| | | TNMG 160412EN-M30 | | | | | | | ● | | | | | | | 9,52 | 16,50 | 4,76 | 1,20 | 3,81 |
| -M34 |  | TNMG 160408EN-M34 | | | | | | | | | | | | ● | | 9,52 | 16,50 | 4,76 | 0,80 | 3,81 |
| | | TNMG 220404EN-M34 | | | | | | | | | | | | ● | | 12,70 | 22,00 | 4,76 | 0,40 | 5,16 |
| | | TNMG 220408EN-M34 | | | | | | | | | | | | ● | | 12,70 | 22,00 | 4,76 | 0,80 | 5,16 |
| | | TNMG 220416EN-M34 | | | | | | | | | | | | ● | | 12,70 | 22,00 | 4,76 | 1,60 | 5,16 |
| -TMF |  | TNMG 160404EN-TMF | | | ● | ● | ● | | | | | | | | | 9,52 | 16,50 | 4,76 | 0,40 | 3,81 |
| | | TNMG 160408EN-TMF | | | | ● | ● | | | | | | | | | 9,52 | 16,50 | 4,76 | 0,80 | 3,81 |
| | | TNMG 160412EN-TMF | | | ● | | | | | | | | | | | 9,52 | 16,50 | 4,76 | 1,20 | 3,81 |
| -M42 |  | TNMG 160404EN-M42 | | | | | | ● | | ● | | | | | | 9,52 | 16,50 | 4,76 | 0,40 | 3,81 |
| | | TNMG 160408EN-M42 | | | | | | ● | | ● | | | | | | 9,52 | 16,50 | 4,76 | 0,80 | 3,81 |
| -M52 |  | TNMG 160404EN-M52 | | | | | | ● | | | | | | | | 9,52 | 16,50 | 4,76 | 0,40 | 3,81 |
| | | TNMG 160408EN-M52 | | | | | | ● | | | | | | | | 9,52 | 16,50 | 4,76 | 0,80 | 3,81 |
| -M50 |  | TNMG 160404EN-M50 | | | ● | ● | ● | | | | | | | | | 9,52 | 16,50 | 4,76 | 0,40 | 3,81 |
| | | TNMG 160408EN-M50 | | | ● | ● | ● | | | | | | | | | 9,52 | 16,50 | 4,76 | 0,80 | 3,81 |
| | | TNMG 160412EN-M50 | | | ● | ● | ● | | | | | | | | | 9,52 | 16,50 | 4,76 | 1,20 | 3,81 |
| | | TNMG 220408EN-M50 | | | ● | ● | ● | | | | | | | | | 12,70 | 22,00 | 4,76 | 0,80 | 5,16 |
| | | TNMG 220412EN-M50 | | | ● | ● | ● | | | | | | | | | 12,70 | 22,00 | 4,76 | 1,20 | 5,16 |
| -TM |  | TNMG 160408EN-TM | | | ● | ● | ● | | | ● | | | | | | 9,52 | 16,50 | 4,76 | 0,80 | 3,81 |
| | | TNMG 160412EN-TM | | | | ● | ● | | | | | | | | | 9,52 | 16,50 | 4,76 | 1,20 | 3,81 |
| | | TNMG 220408EN-TM | | | ● | ● | ● | | | | | | | | | 12,70 | 22,00 | 4,76 | 0,80 | 5,16 |
| | | TNMG 220412EN-TM | | | | ● | ● | | | | | | | | | 12,70 | 22,00 | 4,76 | 1,20 | 5,16 |
| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d | l | s | r | $d_1$ |




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| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | | | | | | | |
| M | | | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | ○ | ○ | | | | | |
| K | | | ○ | ○ | ● | ● | | ○ | | | ● | ● | ● | | | | | | | |
| N | | | | | | | | ○ | | | | | ● | | | | | | | |
| S | | | | | | | ○ | ○ | ○ | ○ | | | | ● | ● | | | | | |
| H | | | | | | | | | | | | | | | | | | | | |
| -TRM |  | TNMG 160408EN-TRM | | | | ● | | | | | | | | | | 9,52 | 16,50 | 4,76 | 0,80 | 3,81 |
| | | TNMG 160412EN-TRM | | | | ● | | | | | | | | | | 9,52 | 16,50 | 4,76 | 1,20 | 3,81 |
| | | TNMG 220408EN-TRM | | | | ● | | | | | | | | | | 12,70 | 22,00 | 4,76 | 0,80 | 5,16 |
| | | TNMG 220412EN-TRM | | | | ● | ● | | | | | | | | | 12,70 | 22,00 | 4,76 | 1,20 | 5,16 |
| | | TNMG 220416EN-TRM | | | | ● | | | | | | | | | | 12,70 | 22,00 | 4,76 | 1,60 | 5,16 |
| -M60 |  | TNMG 160408EN-M60 | | | | | | | ● | | | | | | | 9,52 | 16,50 | 4,76 | 0,80 | 3,81 |
| | | TNMG 160412EN-M60 | | | | | | | ● | | | | | | | 9,52 | 16,50 | 4,76 | 1,20 | 3,81 |
| -M70 |  | TNMG 160408EN-M70 | | | ● | ● | ● | | | ● | ● | ● | | | | 9,52 | 16,50 | 4,76 | 0,80 | 3,81 |
| | | TNMG 160412EN-M70 | | | ● | ● | ● | | | | ● | | | | | 9,52 | 16,50 | 4,76 | 1,20 | 3,81 |
| | | TNMG 220404EN-M70 | | | | ● | | | | | | | | | | 12,70 | 22,00 | 4,76 | 0,40 | 5,16 |
| | | TNMG 220408EN-M70 | | | ● | ● | ● | | | | | ● | | | | 12,70 | 22,00 | 4,76 | 0,80 | 5,16 |
| | | TNMG 220412EN-M70 | | | ● | ● | ● | | | | | ● | | | | 12,70 | 22,00 | 4,76 | 1,20 | 5,16 |
| | | TNMG 220416EN-M70 | | | ● | ● | ● | | | | | ● | | | | 12,70 | 22,00 | 4,76 | 1,60 | 5,16 |
| -R28 |  | TNMM 220416EN-R28 | | | ● | ● | ● | | | | | | | | | 12,70 | 22,00 | 4,76 | 1,60 | 5,16 |
| -R58 |  | TNMM 220412EN-R58 | | | ● | ● | ● | | | | | | | | | 12,70 | 22,00 | 4,76 | 1,20 | 5,16 |
| -TR |  | TNMM 160412EN-TR | | | | ● | | | | | | | | | | 9,52 | 16,50 | 4,76 | 1,20 | 3,81 |
| | | TNMM 220408EN-TR | | | | ● | | | | | | | | | | 12,70 | 22,00 | 4,76 | 0,80 | 5,16 |
| | | TNMM 220416EN-TR | | | | ● | | | | | | | | | | 12,70 | 22,00 | 4,76 | 1,60 | 5,16 |
| | | TNMM 270616EN-TR | | | | ● | | | | | | | | | | 15,88 | 27,50 | 6,35 | 1,60 | 6,35 |
| -TRR |  | TNMM 160408SN-TRR | | | | ● | | | | | | | | | | 9,52 | 16,50 | 4,76 | 0,80 | 3,81 |
| | | TNMM 220412SN-TRR | | | | ● | | | | | | | | | | 12,70 | 22,00 | 4,76 | 1,20 | 5,16 |
| TN..A |  | TNMA 160408EN | | | | | | | | | ● | ● | | | | 9,52 | 16,50 | 4,76 | 0,80 | 3,81 |
| | | TNMA 160412EN | | | | | | | | | ● | ● | | | | 9,52 | 16,50 | 4,76 | 1,20 | 3,81 |
| | | TNMA 160416EN | | | | | | | | | | ● | | | | 9,52 | 16,50 | 4,76 | 1,60 | 3,81 |
| | | TNMA 220408EN | | | | | | | | | ● | ● | | | | 12,70 | 22,00 | 4,76 | 0,80 | 5,16 |
| | | TNMA 220412EN | | | | | | | | | ● | ● | | | | 12,70 | 22,00 | 4,76 | 1,20 | 5,16 |
| | | TNMA 220416EN | | | | | | | | | ● | ● | | | | 12,70 | 22,00 | 4,76 | 1,60 | 5,16 |
| EN |  | TNMG 110302EN | | | | | ● | | | | | | | | | 6,35 | 11,00 | 3,18 | 0,20 | 2,26 |
| | | TNMG 330924EN | | | | ● | | | | | | | | | | 19,05 | 33,00 | 9,52 | 2,40 | 7,94 |
| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d | l | s | r | $d_1$ |

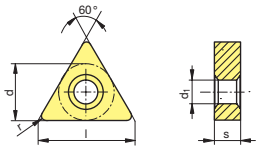



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# MaxiLock D/N

TN..

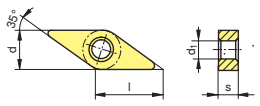
| | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | | | | | | | |
| M | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | ○ | ○ | | | | | |
| K | ○ | ○ | ● | ● | | ○ | | | ● | ● | ● | | | | | | | |
| N | | | | | | ○ | | | | | ● | | | | | | | |
| S | | | | | ○ | ○ | ○ | ○ | | | | ● | ● | | | | | |
| H | | | | | | | | | | | | | | | | | | |
| ER-EL | | | | | | | | | | | | | | | | | | |
| | | | | ● | ● | | | | | | | | | TNMG 160404ER | 9,52 | 16,50 | 4,76 | 0,40 | 3,81 |
| | | | | ● | ● | | | | | | | | | TNMG 160408EL | 9,52 | 16,50 | 4,76 | 0,80 | 3,81 |
| | | | | ● | ● | | | | | | | | | TNMG 160408ER | 9,52 | 16,50 | 4,76 | 0,80 | 3,81 |






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| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | | | | | | | |
| M | | | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | ○ | ○ | | | | | |
| K | | | ○ | ○ | ● | ● | | ○ | | | ● | ● | ● | | | | | | | |
| N | | | | | | | | ○ | | | | | ● | | | | | | | |
| S | | | | | | | ○ | ○ | ○ | ○ | | | | ● | ● | | | | | |
| H | | | | | | | | | | | | | | | | | | | | |
| -F32 |  | VNGP 160402FN-F32 | | | | | | ● | | | | | | | | 9,52 | 16,60 | 4,76 | 0,20 | 3,81 |
| | | VNGP 160404FN-F32 | | | | | | ● | | | | | | | | 9,52 | 16,60 | 4,76 | 0,40 | 3,81 |
| -F30 |  | VNMG 160404EN-F30 | | | | | | | ● | | | | | | | 9,52 | 16,60 | 4,76 | 0,40 | 3,81 |
| | | VNMG 160408EN-F30 | | | | | | | ● | | | | | | | 9,52 | 16,60 | 4,76 | 0,80 | 3,81 |
| -F40 |  | VNMG 160404EN-F40 | | | | ● | | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,40 | 3,81 |
| | | VNMG 160408EN-F40 | | | | ● | | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,80 | 3,81 |
| -M30 |  | VNMG 160408EN-M30 | | | | | | | ● | | | | | | | 9,52 | 16,60 | 4,76 | 0,80 | 3,81 |
| -M34 |  | VNMG 160404EN-M34 | | | | | | | | | | | | ● | ● | 9,52 | 16,60 | 4,76 | 0,40 | 3,81 |
| | | VNMG 160408EN-M34 | | | | | | | | | | | | ● | ● | 9,52 | 16,60 | 4,76 | 0,80 | 3,81 |
| | | VNMG 160412EN-M34 | | | | | | | | | | | | ● | ● | 9,52 | 16,60 | 4,76 | 1,20 | 3,81 |
| -M50 |  | VNMG 160404EN-M50 | | | ● | ● | | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,40 | 3,81 |
| | | VNMG 160408EN-M50 | | | ● | ● | | | | | | ● | | | | 9,52 | 16,60 | 4,76 | 0,80 | 3,81 |
| | | VNMG 160412EN-M50 | | | ● | ● | | | | | | ● | | | | 9,52 | 16,60 | 4,76 | 1,20 | 3,81 |
| -M40 |  | VNMG 160404EN-M40 | | | | ● | | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,40 | 3,81 |
| | | VNMG 160408EN-M40 | | | | ● | | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,80 | 3,81 |
| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d | l | s | r | $d_1$ |




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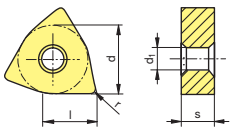
□ A118-A119
**HSK** A189

# MaxiLock D/N

WN..



| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | | | | | | | |
| | | M | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | ○ | ○ | | | | | |
| | | K | ○ | ○ | ● | ● | | ○ | | | ● | ● | ● | | | | | | | |
| | | N | | | | | | ○ | | | | | ● | | | | | | | |
| | | S | | | | | ○ | ○ | ○ | ○ | | | | ● | ● | | | | | |
| | | H | | | | | | | | | | | | | | | | | | |
| -CF20 |  | WNMG 060404EN-CF20 | ● | | | | | | | | | | | | | 9,52 | 6,50 | 4,76 | 0,40 | 3,81 |
| | | WNMG 060408EN-CF20 | ● | | | | | | | | | | | | | 9,52 | 6,50 | 4,76 | 0,80 | 3,81 |
| | | WNMG 080408EN-CF20 | ● | | | | | | | | | | | | | 12,70 | 8,69 | 4,76 | 0,80 | 5,16 |
| -F30 |  | WNMG 060404EN-F30 | | | | | | | ● | | | | | | | 9,52 | 6,50 | 4,76 | 0,40 | 3,81 |
| | | WNMG 060408EN-F30 | | | | | | | ● | | | | | | | 9,52 | 6,50 | 4,76 | 0,80 | 3,81 |
| | | WNMG 080404EN-F30 | | | | | | | ● | | | | | | | 12,70 | 8,69 | 4,76 | 0,40 | 5,16 |
| | | WNMG 080408EN-F30 | | | | | | | ● | | | | | | | 12,70 | 8,69 | 4,76 | 0,80 | 5,16 |
| -TF |  | WNMG 060404EN-TF | | | ● | | | | | | | | | | | 9,52 | 6,50 | 4,76 | 0,40 | 3,81 |
| | | WNMG 080404EN-TF | | | ● | | | | | | | | | | | 12,70 | 8,69 | 4,76 | 0,40 | 5,16 |
| | | WNMG 080408EN-TF | | | | ● | | | | | | | | | | 12,70 | 8,69 | 4,76 | 0,80 | 5,16 |
| -F34 |  | WNMG 080408EN-F34 | | | | | | | | | | | | | ● | 12,70 | 8,69 | 4,76 | 0,80 | 5,16 |
| -M30 |  | WNMG 060408EN-M30 | | | | | | | ● | | | | | | | 9,52 | 6,50 | 4,76 | 0,80 | 3,81 |
| | | WNMG 060412EN-M30 | | | | | | | ● | | | | | | | 9,52 | 6,50 | 4,76 | 1,20 | 3,81 |
| | | WNMG 080408EN-M30 | | | | | | | ● | | | | | | | 12,70 | 8,69 | 4,76 | 0,80 | 5,16 |
| | | WNMG 080412EN-M30 | | | | | | | ● | | | | | | | 12,70 | 8,69 | 4,76 | 1,20 | 5,16 |
| -M34 |  | WNMG 080408EN-M34 | | | | | | | | | | | | ● | ● | 12,70 | 8,69 | 4,76 | 0,80 | 5,16 |
| | | WNMG 080412EN-M34 | | | | | | | | | | | | ● | ● | 12,70 | 8,69 | 4,76 | 1,20 | 5,16 |
| -TFQ |  | WNMG 060404EN-TFQ | | | | ● | | | | | | | | | | 9,52 | 6,50 | 4,76 | 0,40 | 3,81 |
| | | WNMG 060408EN-TFQ | ● | | | ● | | | | | | | | | | 9,52 | 6,50 | 4,76 | 0,80 | 3,81 |
| | | WNMG 080404EN-TFQ | ● | | | | | | | | | | | | | 12,70 | 8,69 | 4,76 | 0,40 | 5,16 |
| | | WNMG 080408EN-TFQ | ● | | ● | ● | | | | | | | | | | 12,70 | 8,69 | 4,76 | 0,80 | 5,16 |
| | | WNMG 080412EN-TFQ | | | | ● | | | | | | | | | | 12,70 | 8,69 | 4,76 | 1,20 | 5,16 |
| -TMF |  | WNMG 060404EN-TMF | | | | ● | ● | | | | | | | | | 9,52 | 6,50 | 4,76 | 0,40 | 3,81 |
| | | WNMG 060408EN-TMF | | | ● | ● | | | | | | | | | | 9,52 | 6,50 | 4,76 | 0,80 | 3,81 |
| | | WNMG 080404EN-TMF | | | | ● | ● | | | | | ● | | | | 12,70 | 8,69 | 4,76 | 0,40 | 5,16 |
| | | WNMG 080408EN-TMF | | | ● | ● | ● | | | | | | | | | 12,70 | 8,69 | 4,76 | 0,80 | 5,16 |
| -M42 |  | WNMG 060404EN-M42 | | | | | | | | ● | | | | | | 9,52 | 6,50 | 4,76 | 0,40 | 3,81 |
| | | WNMG 060408EN-M42 | | | | | | | | ● | | | | | | 9,52 | 6,50 | 4,76 | 0,80 | 3,81 |
| | | WNMG 080404EN-M42 | | | | | | | | ● | | | | | | 12,70 | 8,69 | 4,76 | 0,40 | 5,16 |
| | | WNMG 080408EN-M42 | | | | | | ● | | ● | | | | | | 12,70 | 8,69 | 4,76 | 0,80 | 5,16 |
| | | WNMG 080412EN-M42 | | | | | | | | ● | | | | | | 12,70 | 8,69 | 4,76 | 1,20 | 5,16 |
| -M52 |  | WNMG 060404EN-M52 | | | | | | ● | | | | | | | | 9,52 | 6,50 | 4,76 | 0,40 | 3,81 |
| | | WNMG 060408EN-M52 | | | | | | ● | | | | | | | | 9,52 | 6,50 | 4,76 | 0,80 | 3,81 |
| | | WNMG 080404EN-M52 | | | | | | ● | | | | | | | | 12,70 | 8,69 | 4,76 | 0,40 | 5,16 |
| | | WNMG 080408EN-M52 | | | | | | ● | | | | | | | | 12,70 | 8,69 | 4,76 | 0,80 | 5,16 |
| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d | l | s | r | $d_1$ |





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A24

A297

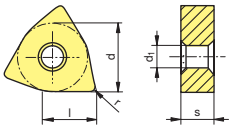
□ A120
**HSK** A190

□ A135
**UTS** A213

⌀ A231
**HSK** A257

⌀ A236
**UTS** A263

| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | | | | | | | |
| M | | | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | ○ | ○ | | | | | |
| K | | | ○ | ○ | ● | ● | | ○ | | | ● | ● | ● | | | | | | | |
| N | | | | | | | | ○ | | | | | ● | | | | | | | |
| S | | | | | | | ○ | ○ | ○ | ○ | | | | ● | ● | | | | | |
| H | | | | | | | | | | | | | | | | | | | | |
| -M50 |  | WNMG 060404EN-M50 | | | ● | ● | ● | | | | | | | | | 9,52 | 6,50 | 4,76 | 0,40 | 3,81 |
| | | WNMG 060408EN-M50 | | | ● | ● | ● | | | | | | | | | 9,52 | 6,50 | 4,76 | 0,80 | 3,81 |
| | | WNMG 060412EN-M50 | | | ● | ● | ● | | | | | | | | | 9,52 | 6,50 | 4,76 | 1,20 | 3,81 |
| | | WNMG 080404EN-M50 | | | ● | ● | ● | | | | | | | | | 12,70 | 8,69 | 4,76 | 0,40 | 5,16 |
| | | WNMG 080408EN-M50 | | | ● | ● | ● | | | | | | | | | 12,70 | 8,69 | 4,76 | 0,80 | 5,16 |
| | | WNMG 080412EN-M50 | | | ● | ● | ● | | | | | | | | | 12,70 | 8,69 | 4,76 | 1,20 | 5,16 |
| | | WNMG 080416EN-M50 | | | ● | ● | ● | | | | | | | | | 12,70 | 8,69 | 4,76 | 1,60 | 5,16 |
| -TM |  | WNMG 060408EN-TM | | | ● | ● | ● | | | ● | | | | | | 9,52 | 6,50 | 4,76 | 0,80 | 3,81 |
| | | WNMG 080408EN-TM | | | ● | ● | ● | | | ● | | | | | | 12,70 | 8,69 | 4,76 | 0,80 | 5,16 |
| | | WNMG 080412EN-TM | | | | ● | | | | ● | | | | | | 12,70 | 8,69 | 4,76 | 1,20 | 5,16 |
| -TMQ |  | WNMG 080408EN-TMQ | | | | ● | | | | | | | | | | 12,70 | 8,69 | 4,76 | 0,80 | 5,16 |
| | | WNMG 080412EN-TMQ | | | ● | ● | | | | | | | | | | 12,70 | 8,69 | 4,76 | 1,20 | 5,16 |
| -TRM |  | WNMG 060408EN-TRM | | | | ● | | | | | | | | | | 9,52 | 6,50 | 4,76 | 0,80 | 3,81 |
| | | WNMG 060412EN-TRM | | | | ● | | | | | | | | | | 9,52 | 6,50 | 4,76 | 1,20 | 3,81 |
| | | WNMG 080408EN-TRM | | | | ● | | | | | | | | | | 12,70 | 8,69 | 4,76 | 0,80 | 5,16 |
| | | WNMG 080412EN-TRM | | | | ● | | | | | | | | | | 12,70 | 8,69 | 4,76 | 1,20 | 5,16 |
| | | WNMG 080416EN-TRM | | | | ● | | | | | | | | | | 12,70 | 8,69 | 4,76 | 1,60 | 5,16 |
| -M60 |  | WNMG 060408EN-M60 | | | | | | | ● | | | | | | | 9,52 | 6,50 | 4,76 | 0,80 | 3,81 |
| | | WNMG 060412EN-M60 | | | | | | | ● | | | | | | | 9,52 | 6,50 | 4,76 | 1,20 | 3,81 |
| | | WNMG 080408EN-M60 | | | | | | | ● | | | | | | | 12,70 | 8,69 | 4,76 | 0,80 | 5,16 |
| | | WNMG 080412EN-M60 | | | | | ● | | ● | | | | | | | 12,70 | 8,69 | 4,76 | 1,20 | 5,16 |
| -M70 |  | WNMG 060408EN-M70 | | | ● | ● | ● | | | | | | | | | 9,52 | 6,50 | 4,76 | 0,80 | 3,81 |
| | | WNMG 060412EN-M70 | | | ● | ● | ● | | | | | | | | | 9,52 | 6,50 | 4,76 | 1,20 | 3,81 |
| | | WNMG 080408EN-M70 | | | ● | ● | ● | | | ● | ● | ● | | | | 12,70 | 8,69 | 4,76 | 0,80 | 5,16 |
| | | WNMG 080412EN-M70 | | | ● | ● | ● | | | | ● | ● | | | | 12,70 | 8,69 | 4,76 | 1,20 | 5,16 |
| | | WNMG 080416EN-M70 | | | ● | ● | ● | | | | ● | ● | | | | 12,70 | 8,69 | 4,76 | 1,60 | 5,16 |
| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d | l | s | r | $d_1$ |




A13

A24

A297

□ A120
**HSK** A190

□ A135
**UTS** A213

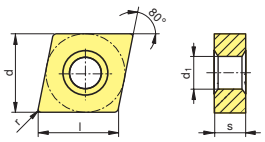
⌀ A231
**HSK** A257

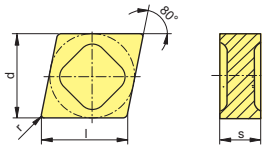
⌀ A236
**UTS** A263

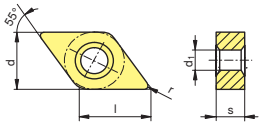
# MaxiLock D/N

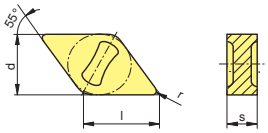
CN.. - DN.. (sonstige Schneidstoffe)

| | | | P | M | K | N | S | H | CTI3105 | CTN3105 | CTS3105 | CTBK102 | CTM3110 | CTN3110 | CTL6115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CN..A |  | CNGA 120408SN-025C | | | ● | | ○ | | | | | | | ● | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| | | CNGA 120408TN-020D | | | ● | | | ● | | | ● | ● | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| | | CNGA 120412SN-020D | | | ● | | | | | ● | | | | | | 12,70 | 12,90 | 4,76 | 1,20 | 5,16 |
| | | CNGA 120412SN-025C | | | ● | | | | | | | | | ● | | 12,70 | 12,90 | 4,76 | 1,20 | 5,16 |
| | | CNGA 120412TN-020D | | | ● | | | ● | | | | ● | | | | 12,70 | 12,90 | 4,76 | 1,20 | 5,16 |
| | | CNGA 160608SN-028C | | | ● | | | | | | | | ● | | | 15,88 | 16,10 | 6,35 | 0,80 | 6,35 |
| | | CNGA 160616SN-028C | | | ● | | | | | | | | | ● | | 15,88 | 16,10 | 6,35 | 1,60 | 6,35 |
| | | CNGA 160616TN-020D | | | ● | | | ● | | | | ● | | | | 15,88 | 16,10 | 6,35 | 1,60 | 6,35 |
| CN..A-B |  | CNGA 120404SN-013E_B3 | | | ● | | | | | | | | | | ● | 12,70 | 12,90 | 4,76 | 0,40 | 5,16 |
| | | CNGA 120408SNQ-013E_B2 | | | ● | | | | | | | | | | ● | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| | | CNGA 120408SN-013E_B3 | | | ● | | | | | | | | | | ● | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| | | CNGA 120412SN-013E_B3 | | | ● | | | | | | | | | | ● | 12,70 | 12,90 | 4,76 | 1,20 | 5,16 |
| CN..X |  | CNGX 120712TN-020D | | | ● | | | | ● | ● | | | | | | 12,70 | 12,90 | 7,94 | 1,20 | |
| | | CNGX 120716TN-020D | | | ● | | | | ● | ● | | | | | | 12,70 | 12,90 | 7,94 | 1,60 | |
| | | CNGX 160716TN-020D | | | ● | | | | ● | | | | | | | 15,88 | 16,10 | 7,94 | 1,60 | |
| | | CNNX 120716TN-020D | | | ● | | | | ● | ● | | | | | | 12,70 | 12,90 | 7,94 | 1,60 | |
| DN..A |  | DNGA 150604TN-020D | | | ● | | | | | | ● | | | | | 12,70 | 15,50 | 6,35 | 0,40 | 5,16 |
| | | DNGA 150608TN-020D | | | ● | | | | | | ● | | | | | 12,70 | 15,50 | 6,35 | 0,80 | 5,16 |
| | | DNGA 150612TN-020D | | | ● | | | | | | ● | | | | | 12,70 | 15,50 | 6,35 | 1,20 | 5,16 |
| | | DNGA 150616TN-020D | | | ● | | | | | | ● | | | | | 12,70 | 15,50 | 6,35 | 1,60 | 5,16 |
| DN..A-B |  | DNGA 150404SN-013E_B3 | | | ● | | | | | | | | | | ● | 12,70 | 15,50 | 4,76 | 0,40 | 5,16 |
| | | DNGA 150408SN-013E_B3 | | | ● | | | | | | | | | | ● | 12,70 | 15,50 | 4,76 | 0,80 | 5,16 |
| | | DNGA 150608SN-013E_B3 | | | ● | | | | | | | | | | ● | 12,70 | 15,50 | 6,35 | 0,80 | 5,16 |
| | | DNGA 150612SN-013E_B3 | | | ● | | | | | | | | | | ● | 12,70 | 15,50 | 6,35 | 1,20 | 5,16 |
| DN..X |  | DNGX 120712TN-020D | | | ● | | | | | ● | | | | | | 10,00 | 12,30 | 7,94 | 1,20 | |

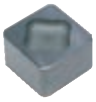


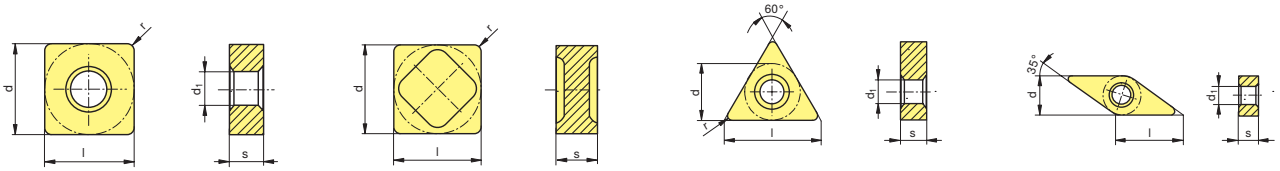




A13
A24
A297
□ A109-A112 **HSK** A181-A187
□ A121-A125 **UTS** A201-A204
⌀ A228-A229 **HSK** A255-A256
⌀ A232-A233 **UTS** A261-A262

| | | | CTI3105 | CTN3105 | CTS3105 | CTBK102 | CTM3110 | CTN3110 | CTL6115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P | | | | | | | | | | | | |
| | | M | | | | | | | | | | | | |
| | | K | ● | ● | ● | ● | ● | ● | | | | | | |
| | | N | | | | | | | | | | | | |
| | | S | ○ | | | | | | | | | | | |
| | | H | | | ● | ● | | | ● | | | | | |
| SN..A |  | SNGA 120408SN-025C | | | | | ● | | | 12,70 | 12,70 | 4,76 | 0,80 | 5,16 |
| | | SNGA 120412SN-025C | | | | | ● | | | 12,70 | 12,70 | 4,76 | 1,20 | 5,16 |
| | | SNGA 120412TN-020D | | | | ● | | | | 12,70 | 12,70 | 4,76 | 1,20 | 5,16 |
| SN..X |  | SNGX 120712TN-020D | ● | ● | | | | | | 12,70 | 12,70 | 7,94 | 1,20 | |
| | | SNGX 120716TN-020D | ● | ● | | | | | | 12,70 | 12,70 | 7,94 | 1,60 | |
| | | SNGX 150716TN-020D | ● | ● | | | | | | 15,88 | 15,88 | 7,94 | 1,60 | |
| | | SNGX 150716TN-040D | ● | | | | | | | 15,88 | 15,88 | 7,94 | 1,60 | |
| | | SNNX 120716TN-020D | ● | ● | | | | | | 12,70 | 12,70 | 7,94 | 1,60 | |
| TN..A-C |  | TNGA 160408SN-013E_C3 | | | | | | | ● | 9,52 | 16,50 | 4,76 | 0,80 | 3,81 |
| TN..A |  | TNGA 160408TN-020D | | | ● | | | | | 9,52 | 16,50 | 4,76 | 0,80 | 3,81 |
| VN..A-B |  | VNGA 160404SN-013E_B3 | | | | | | | ● | 9,52 | 16,60 | 4,76 | 0,40 | 3,81 |
| | | VNGA 160408SN-013E_B3 | | | | | | | ● | 9,52 | 16,60 | 4,76 | 0,80 | 3,81 |
| | | VNGX 160408SN-010E_B3 | | | | | | | ● | 9,52 | 16,60 | 4,76 | 0,80 | 3,81 |
| VN..A |  | VNGA 160408TN-020D | | | ● | | | | | 9,52 | 16,60 | 4,76 | 0,80 | 3,81 |
| | | VNGA 160412TN-020D | | | ● | | | | | 9,52 | 16,60 | 4,76 | 1,20 | 3,81 |
| | | | CTI3105 | CTN3105 | CTS3105 | CTBK102 | CTM3110 | CTN3110 | CTL6115 | d | l | s | r | $d_1$ |



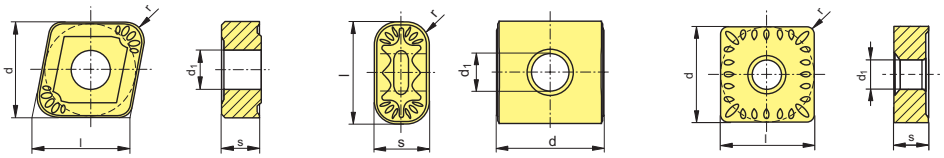


A13 | A24 | A297 | □ A113-A119 **HSK** A188-A189 | □ A128-A134 **UTS** A207-A212 | ⌀ A230 | ⌀ A234-A235

# MaxiLock D/N

CN.. LN.. SN.. (Radsatzwendeplatten)

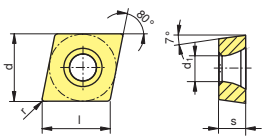
| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | | | | | | | |
| M | | | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | ○ | ○ | | | | | |
| K | | | ○ | ○ | ● | ● | | ○ | | | ● | ● | ● | | | | | | | |
| N | | | | | | | | ○ | | | | | ● | | | | | | | |
| S | | | | | | | ○ | ○ | ○ | ○ | | | | ● | ● | | | | | |
| H | | | | | | | | | | | | | | | | | | | | |
| CN..X |  | CNMX 190740SN | | | ● | | | | | | | ● | | | | 19,05 | 19,30 | 7,94 | 4,00 | 7,93 |
| -R70 |  | LNUX 191940SN-R70 | | | ● | ● | | | | | | | | | | 19,05 | 19,05 | 10,00 | 4,00 | 6,35 |
| | | LNUX 301940SN-R70 | | | ● | ● | | | | | | | | | | 19,05 | 30,00 | 12,00 | 4,00 | 6,35 |
| -R74 |  | LNUX 191940SN-R74 | | | ● | ● | | | | | | | | | | 19,05 | 19,05 | 10,00 | 4,00 | 6,35 |
| | | LNUX 301940SN-R74 | | | ● | ● | | | | | | | | | | 19,05 | 30,00 | 12,00 | 4,00 | 6,35 |
| -R70 |  | SNMG 211040SN-R70 | | | ● | ● | | | | | | | | | | 21,00 | 21,00 | 10,50 | 4,00 | 7,84 |
| -R71 |  | SNMG 211040SN-R71 | | | ● | ● | | | | | | | | | | 21,00 | 21,00 | 10,50 | 4,00 | 7,84 |
| | | | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H10T | CTP5110 | CTP5115 | d | l | s | r | $d_1$ |






A13 | A34 | A297 | □ A270

| | | | TCM407 | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H210T | AMZ | H10T | CTP4115 | H216T | CTW7120 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P | ● | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | ○ | | | | | | | | | | |
| | | M | ○ | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | | | | | ○ | ○ | | | | | |
| | | K | ○ | ○ | ○ | ● | ● | | ○ | | | ● | ● | ○ | ○ | ● | | ● | | | | | | | |
| | | N | | | | | | | ○ | | | | | ● | ● | ● | ● | ● | ● | | | | | | |
| | | S | | | | | | ○ | ○ | ○ | ○ | | | ● | | | | | ○ | ● | | | | | |
| | | H | | | | | | | | | | | | | | | | | | | | | | | |
| -23P | | CCGT 060202FN-23P | | | | | | | | | | | | | | | | ● | | | 6,35 | 6,40 | 2,38 | 0,20 | 2,80 |
| | | CCGT 060204FN-23P | | | | | | | | | | | | | | | | ● | | | 6,35 | 6,40 | 2,38 | 0,40 | 2,80 |
| | | CCGT 09T304FN-23P | | | | | | | | | | | | | | | | ● | | | 9,52 | 9,70 | 3,97 | 0,40 | 4,40 |
| | | CCGT 09T308FN-23P | | | | | | | | | | | | | | | | ● | | | 9,52 | 9,70 | 3,97 | 0,80 | 4,40 |
| -25P | | CCGT 060202FN-25P | | | | | | | | | | | | ● | ● | | | | | | 6,35 | 6,40 | 2,38 | 0,20 | 2,80 |
| | | CCGT 060204FN-25P | | | | | | | | | | | | ● | ● | | | | | | 6,35 | 6,40 | 2,38 | 0,40 | 2,80 |
| | | CCGT 09T302FN-25P | | | | | | | | | | | | ● | ● | | | | | | 9,52 | 9,70 | 3,97 | 0,20 | 4,40 |
| | | CCGT 09T304FN-25P | | | | | | | | | | | | ● | ● | | | | | | 9,52 | 9,70 | 3,97 | 0,40 | 4,40 |
| | | CCGT 09T308FN-25P | | | | | | | | | | | | ● | ● | | | | | | 9,52 | 9,70 | 3,97 | 0,80 | 4,40 |
| | | CCGT 120402FN-25P | | | | | | | | | | | | ● | | | | | | | 12,70 | 12,90 | 4,76 | 0,20 | 5,50 |
| | | CCGT 120404FN-25P | | | | | | | | | | | | ● | ● | | | | | | 12,70 | 12,90 | 4,76 | 0,40 | 5,50 |
| | | CCGT 120408FN-25P | | | | | | | | | | | | ● | ● | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,50 |
| -25Q | | CCGT 060204FN-25Q | | | | | | | | | | | | ● | | | | | | | 6,35 | 6,40 | 2,38 | 0,40 | 2,80 |
| | | CCGT 09T304FN-25Q | | | | | | | | | | | | ● | | | | | | | 9,52 | 9,70 | 3,97 | 0,40 | 4,40 |
| | | CCGT 09T308FN-25Q | | | | | | | | | | | | ● | | | | | | | 9,52 | 9,70 | 3,97 | 0,80 | 4,40 |
| | | CCGT 120404FN-25Q | | | | | | | | | | | | ● | | | | | | | 12,70 | 12,90 | 4,76 | 0,40 | 5,50 |
| | | CCGT 120408FN-25Q | | | | | | | | | | | | ● | | | | ● | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,50 |
| -27 | | CCGT 060202FN-27 | | | | | | | | | | | | | ● | ● | | | | | 6,35 | 6,40 | 2,38 | 0,20 | 2,80 |
| | | CCGT 060204FN-27 | | | | | | | | | | | | | ● | ● | | | | | 6,35 | 6,40 | 2,38 | 0,40 | 2,80 |
| | | CCGT 09T302FN-27 | | | | | | | | | | | | | ● | ● | | | | | 9,52 | 9,70 | 3,97 | 0,20 | 4,40 |
| | | CCGT 09T304FN-27 | | | | | | | | | | | | | ● | ● | | | | | 9,52 | 9,70 | 3,97 | 0,40 | 4,40 |
| | | CCGT 09T308FN-27 | | | | | | | | | | | | | ● | ● | | | | | 9,52 | 9,70 | 3,97 | 0,80 | 4,40 |
| | | CCGT 120402FN-27 | | | | | | | | | | | | | ● | ● | | | | | 12,70 | 12,90 | 4,76 | 0,20 | 5,50 |
| | | CCGT 120404FN-27 | | | | | | | | | | | | | ● | ● | | | | | 12,70 | 12,90 | 4,76 | 0,40 | 5,50 |
| | | CCGT 120408FN-27 | | | | | | | | | | | | | ● | ● | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,50 |
| -29 | | CCMT 060204EN-29 | | | | | | | | | | | | | ● | | | ● | | | 6,35 | 6,40 | 2,38 | 0,40 | 2,80 |
| | | CCMT 09T304EN-29 | | | | | | | | | | | | | ● | | | ● | | | 9,52 | 9,70 | 3,97 | 0,40 | 4,40 |
| | | CCMT 09T308EN-29 | | | | | | | | | | | | | ● | | | ● | | | 9,52 | 9,70 | 3,97 | 0,80 | 4,40 |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| -CF05 | | CCGT 060202EN-CF05 | | ● | | | | | | | | | | | | | | | | | 6,35 | 6,40 | 2,38 | 0,20 | 2,80 |
| | | CCGT 060204EN-CF05 | | ● | | | | | | | | | | | | | | | | | 6,35 | 6,40 | 2,38 | 0,40 | 2,80 |
| | | CCGT 09T302EN-CF05 | | ● | | | | | | | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,20 | 4,40 |
| | | CCGT 09T304EN-CF05 | | ● | | | | | | | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,40 | 4,40 |
| | | CCGT 09T308EN-CF05 | | ● | | | | | | | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,80 | 4,40 |
| -F23 | | CCGT 060200FN-F23 | | | | | | | ● | | | | | | | | | | | | 6,35 | 6,40 | 2,38 | 0,00 | 2,80 |
| | | CCGT 060201FN-F23 | | | | | | | ● | | | | | | | | | | | | 6,35 | 6,40 | 2,38 | 0,10 | 2,80 |
| | | CCGT 09T300FN-F23 | | | | | | | ● | | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,00 | 4,40 |
| | | CCGT 09T301FN-F23 | | | | | | | ● | | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,10 | 4,40 |
| -CF55 | | CCMT 060204EN-CF55 | | ● | | | | | | | | | | | | | | | | | 6,35 | 6,40 | 2,38 | 0,40 | 2,80 |
| | | CCMT 09T304EN-CF55 | | ● | | | | | | | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,40 | 4,40 |
| | | CCMT 09T308EN-CF55 | | ● | | | | | | | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,80 | 4,40 |
| | | CCMT 120404EN-CF55 | | ● | | | | | | | | | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,40 | 5,50 |
| | | | TCM407 | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H210T | AMZ | H10T | CTP4115 | H216T | CTW7120 | CTP5115 | d | l | s | r | $d_1$ |

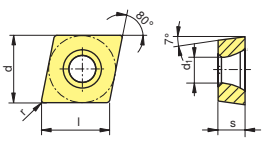



A13
A28
A297
□ A136-A142
**HSK** A193-A194
**UTS** A214
⌀ A237-A239
**HSK** A258
**UTS** A264

# MaxiLock S

CC..

| | TCM407 | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H210T | AMZ | H10T | CTP4115 | H216T | CTW7120 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | ○ | | | | | | | | | | |
| M | ○ | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | | | | | ○ | ○ | | | | | |
| K | ○ | ○ | ○ | ● | ● | | ○ | | | ● | ● | ○ | ○ | ● | | ● | | | | | | | |
| N | | | | | | | ○ | | | | | ● | ● | ● | ● | ● | ● | | | | | | |
| S | | | | | | ○ | ○ | ○ | ○ | | | ● | | | | | ○ | ● | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | |
| -SF | | CCGT 060202EN-SF | ● | | ● | | ● | ● | | | | | | | | | | | | 6,35 | 6,40 | 2,38 | 0,20 | 2,80 |
| | | CCGT 060204EN-SF | ● | | ● | | | ● | | | | | | | | | | | | 6,35 | 6,40 | 2,38 | 0,40 | 2,80 |
| | | CCGT 09T302EN-SF | ● | | ● | | | | | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,20 | 4,40 |
| | | CCGT 09T304EN-SF | ● | | ● | | | | | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,40 | 4,40 |
| | | CCGT 09T308EN-SF | | | ● | | | | | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,80 | 4,40 |
| | | CCGT 120404EN-SF | | | ● | | | | | | | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,40 | 5,50 |
| | | CCMT 060204EN-SF | | | | ● | ● | ● | | | ● | | | | | | | | | 6,35 | 6,40 | 2,38 | 0,40 | 2,80 |
| | | CCMT 09T304EN-SF | | | | ● | ● | ● | | | ● | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,40 | 4,40 |
| | | CCMT 09T308EN-SF | | | | ● | ● | | | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,80 | 4,40 |
| | | CCMT 120404EN-SF | | | | | ● | | | | | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,40 | 5,50 |
| | | CCMT 120408EN-SF | | | | | ● | | | | | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,50 |
| | | CPMT 060204EN-SF | | | | ● | | | | | | | | | | | | | | 6,35 | 6,40 | 2,38 | 0,40 | 2,80 |
| | | CPMT 060208EN-SF | | | | ● | | | | | | | | | | | | | | 6,35 | 6,40 | 2,38 | 0,80 | 2,80 |
| | | CPMT 09T304EN-SF | | | | ● | | | | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,40 | 4,40 |
| | | CPMT 09T308EN-SF | | | | ● | | | | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,80 | 4,40 |
| -M25 | | CCMT 060204EN-M25 | | | | | | | ● | | | | | | | | | | | 6,35 | 6,40 | 2,38 | 0,40 | 2,80 |
| | | CCMT 09T304EN-M25 | | | | | | | ● | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,40 | 4,40 |
| | | CCMT 09T308EN-M25 | | | | | | | ● | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,80 | 4,40 |
| -F43 | | CCMT 09T304EN-F43 | | | | | | | | ● | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,40 | 4,40 |
| | | CCMT 09T308EN-F43 | | | | | | | | ● | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,80 | 4,40 |
| -SMF | | CCMT 060204EN-SMF | | | ● | | ● | ● | | | | | | | | | | | | 6,35 | 6,40 | 2,38 | 0,40 | 2,80 |
| | | CCMT 060208EN-SMF | | | | | ● | | | | | | | | | | | | | 6,35 | 6,40 | 2,38 | 0,80 | 2,80 |
| | | CCMT 09T304EN-SMF | | | ● | ● | ● | ● | | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,40 | 4,40 |
| | | CCMT 09T308EN-SMF | | | ● | ● | ● | | | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,80 | 4,40 |
| | | CCMT 120404EN-SMF | | | ● | | ● | | | | | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,40 | 5,50 |
| | | CCMT 120408EN-SMF | | | | ● | | ● | | | | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,50 |
| -M55 | | CCMT 060204EN-M55 | | | | | | | ● | | | | | | | | | | | 6,35 | 6,40 | 2,38 | 0,40 | 2,80 |
| | | CCMT 09T304EN-M55 | | | | | | | ● | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,40 | 4,40 |
| | | CCMT 09T308EN-M55 | | | | | | | ● | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,80 | 4,40 |
| | | CCMT 120404EN-M55 | | | | | | | ● | | | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,40 | 5,50 |
| | | CCMT 120408EN-M55 | | | | | | | ● | | | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,50 |
| -SM | | CCGT 060202EN-SM | | | | | ● | ● | | | | | | | | | | | | 6,35 | 6,40 | 2,38 | 0,20 | 2,80 |
| | | CCMT 060204EN-SM | | | | ● | ● | ● | | | ● | ● | | | | | | | | 6,35 | 6,40 | 2,38 | 0,40 | 2,80 |
| | | CCMT 060208EN-SM | | | | ● | | ● | | | | ● | | | | | | | | 6,35 | 6,40 | 2,38 | 0,80 | 2,80 |
| | | CCMT 09T304EN-SM | | | | ● | ● | ● | | | ● | ● | | | | | | | | 9,52 | 9,70 | 3,97 | 0,40 | 4,40 |
| | | CCMT 09T308EN-SM | | | | ● | ● | ● | | | ● | ● | ● | | | | | | | 9,52 | 9,70 | 3,97 | 0,80 | 4,40 |
| | | CCMT 09T312EN-SM | | | | | | | | | | | ● | | | | | | | 9,52 | 9,70 | 3,97 | 1,20 | 4,40 |
| | | CCMT 120404EN-SM | | | | ● | ● | ● | | | ● | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,40 | 5,50 |
| | | CCMT 120408EN-SM | | | | ● | ● | ● | | | ● | ● | | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,50 |
| | | CCMT 120412EN-SM | | | | ● | | | | | | | | | | | | | | 12,70 | 12,90 | 4,76 | 1,20 | 5,50 |
| | TCM407 | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H210T | AMZ | H10T | CTP4115 | H216T | CTW7120 | CTP5115 | d | l | s | r | $d_1$ |




A13

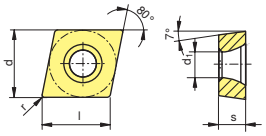
A28

A297

□ A136-A142
**HSK** A193-A194
**UTS** A214

⌀ A237-A239
**HSK** A258
**UTS** A264

| | | | TCM407 | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H210T | AMZ | H10T | CTP4115 | H216T | CTW7120 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P | ● | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | ○ | | | | | | | | | | | |
| | | M | ○ | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | | | | | | ○ | ○ | | | | | |
| | | K | ○ | ○ | ○ | ● | ● | | ○ | | | ● | ● | ○ | ○ | ● | | ● | | | | | | | | |
| | | N | | | | | | | ○ | | | | | ● | ● | ● | ● | ● | ● | | | | | | | |
| | | S | | | | | | ○ | ○ | ○ | ○ | | | ● | | | | | ○ | ● | | | | | | |
| | | H | | | | | | | | | | | | | | | | | | | | | | | | |
| -SMQ | | CCMT 09T304EN-SMQ | | | | | ● | | | | | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,40 | 4,40 |
| | | CCMT 09T308EN-SMQ | | | | | ● | | | | | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,80 | 4,40 |
| | | CCMT 120404EN-SMQ | | | | | ● | | | | | | | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,40 | 5,50 |
| | | CCMT 120408EN-SMQ | | | | ● | ● | | | | | | | | | | | | | | | 12,70 | 12,90 | 4,76 | 0,80 | 5,50 |
| CC..W | | CCGW 09T304FN | | | | | | | | | | | | | | | | | ● | | | 9,52 | 9,70 | 3,97 | 0,40 | 4,40 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | TCM407 | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H210T | AMZ | H10T | CTP4115 | H216T | CTW7120 | CTP5115 | d | l | s | r | $d_1$ |




A13

A28

A297

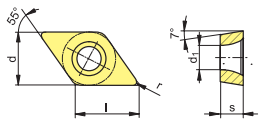
□ A136-A142
**HSK** A193-A194
**UTS** A214

⌀ A237-A239
**HSK** A258
**UTS** A264

# MaxiLock S

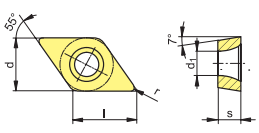
DC..

| | | | TCM407 | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H210T | AMZ | H10T | CTP4115 | H216T | CTW7120 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -23P |  | DCGT 070204FN-23P | | | | | | | | | | | | | | | | ● | | | 6,35 | 7,75 | 2,38 | 0,40 | 2,80 |
| | | DCGT 11T304FN-23P | | | | | | | | | | | | | | | | ● | | | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCGT 11T308FN-23P | | | | | | | | | | | | | | | | ● | | | 9,52 | 11,60 | 3,97 | 0,80 | 4,40 |
| -25P |  | DCGT 070202FN-25P | | | | | | | | | | | | ● | ● | | | | | | 6,35 | 7,75 | 2,38 | 0,20 | 2,80 |
| | | DCGT 070204FN-25P | | | | | | | | | | | | ● | ● | | | | | | 6,35 | 7,75 | 2,38 | 0,40 | 2,80 |
| | | DCGT 11T302FN-25P | | | | | | | | | | | | ● | ● | | | | | | 9,52 | 11,60 | 3,97 | 0,20 | 4,40 |
| | | DCGT 11T304FN-25P | | | | | | | | | | | | ● | ● | | | | | | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCGT 11T308FN-25P | | | | | | | | | | | | ● | ● | | | | | | 9,52 | 11,60 | 3,97 | 0,80 | 4,40 |
| -25Q |  | DCGT 11T304FL-25Q | | | | | | | | | | | | ● | | | | | | | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCGT 11T304FN-25Q | | | | | | | | | | | | ● | | | | | | | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCGT 11T304FR-25Q | | | | | | | | | | | | ● | | | | | | | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCGT 11T308FL-25Q | | | | | | | | | | | | ● | | | | | | | 9,52 | 11,60 | 3,97 | 0,80 | 4,40 |
| | | DCGT 11T308FN-25Q | | | | | | | | | | | | ● | | | | | | | 9,52 | 11,60 | 3,97 | 0,80 | 4,40 |
| | | DCGT 11T308FR-25Q | | | | | | | | | | | | ● | | | | | | | 9,52 | 11,60 | 3,97 | 0,80 | 4,40 |
| -27 |  | DCGT 070202FN-27 | | | | | | | | | | | | | ● | ● | | | | | 6,35 | 7,75 | 2,38 | 0,20 | 2,80 |
| | | DCGT 070204FN-27 | | | | | | | | | | | | | ● | ● | | | | | 6,35 | 7,75 | 2,38 | 0,40 | 2,80 |
| | | DCGT 11T302FN-27 | | | | | | | | | | | | | ● | ● | | | | | 9,52 | 11,60 | 3,97 | 0,20 | 4,40 |
| | | DCGT 11T304FN-27 | | | | | | | | | | | | | ● | ● | | | | | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCGT 11T308FN-27 | | | | | | | | | | | | | ● | ● | | | | | 9,52 | 11,60 | 3,97 | 0,80 | 4,40 |
| -29 |  | DCMT 070204EN-29 | | | | | | | | | | | | | ● | | | ● | | | 6,35 | 7,75 | 2,38 | 0,40 | 2,80 |
| | | DCMT 11T304EN-29 | | | | | | | | | | | | | ● | | | ● | | | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCMT 11T308EN-29 | | | | | | | | | | | | | ● | | | ● | | | 9,52 | 11,60 | 3,97 | 0,80 | 4,40 |
| -CF05 |  | DCGT 070202EN-CF05 | | ● | | | | | | | | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,20 | 2,80 |
| | | DCGT 070204EN-CF05 | | ● | | | | | | | | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,40 | 2,80 |
| | | DCGT 11T302EN-CF05 | | ● | | | | | | | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,20 | 4,40 |
| | | DCGT 11T304EN-CF05 | | ● | | | | | | | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCGT 11T308EN-CF05 | | ● | | | | | | | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,80 | 4,40 |
| -F23 |  | DCGT 070200FN-F23 | | | | | | | ● | | | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,00 | 2,80 |
| | | DCGT 070201FN-F23 | | | | | | | ● | | | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,10 | 2,80 |
| | | DCGT 11T300FN-F23 | | | | | | | ● | | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,00 | 4,40 |
| | | DCGT 11T301FN-F23 | | | | | | | ● | | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,10 | 4,40 |
| -CF55 |  | DCMT 070202EN-CF55 | | ● | | | | | | | | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,20 | 2,80 |
| | | DCMT 070204EN-CF55 | | ● | | | | | | | | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,40 | 2,80 |
| | | DCMT 11T304EN-CF55 | | ● | | | | | | | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCMT 11T308EN-CF55 | | ● | | | | | | | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,80 | 4,40 |
| | | | TCM407 | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H210T | AMZ | H10T | CTP4115 | H216T | CTW7120 | CTP5115 | d | l | s | r | $d_1$ |




A13
A28
A297
□ A143-A146
**HSK** A195-A196
**UTS** A215-A219
⌀ A240-A243
**HSK** A259
**UTS** A265-A266

| | | | TCM407 | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H210T | AMZ | H10T | CTP4115 | H216T | CTW7120 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | ○ | | | | | | | | | | |
| M | | | ○ | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | | | | | ○ | ○ | | | | | |
| K | | | ○ | ○ | ○ | ● | ● | | ○ | | | ● | ● | ○ | ○ | ● | | ● | | | | | | | |
| N | | | | | | | | | ○ | | | | | ● | ● | ● | ● | ● | ● | | | | | | |
| S | | | | | | | | ○ | ○ | ○ | ○ | | | ● | | | | | ○ | ● | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | |
| -SF | | DCGT 070201EN-SF | | | ● | | | | | | | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,10 | 2,80 |
| | | DCGT 070202EN-SF | ● | | ● | | ● | | | | ● | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,20 | 2,80 |
| | | DCGT 070204EN-SF | ● | | ● | | | | | | | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,40 | 2,80 |
| | | DCGT 11T302EN-SF | ● | | ● | | | | | | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,20 | 4,40 |
| | | DCGT 11T304EN-SF | ● | | ● | | | | | | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCGT 11T308EN-SF | ● | | ● | | | | | | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,80 | 4,40 |
| | | DCMT 070204EN-SF | | | | ● | ● | ● | | | ● | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,40 | 2,80 |
| | | DCMT 11T304EN-SF | | | | ● | ● | ● | | | ● | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCMT 11T308EN-SF | | | | ● | ● | ● | | | ● | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,80 | 4,40 |
| -M25 | | DCMT 070202EN-M25 | | | | | | | | ● | | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,20 | 2,80 |
| | | DCMT 070204EN-M25 | | | | | | | | ● | | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,40 | 2,80 |
| | | DCMT 11T302EN-M25 | | | | | | | | ● | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,20 | 4,40 |
| | | DCMT 11T304EN-M25 | | | | | | | | ● | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCMT 11T308EN-M25 | | | | | | | | ● | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,80 | 4,40 |
| -F43 | | DCMT 070202EN-F43 | | | | | | | | | ● | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,20 | 2,80 |
| | | DCMT 070204EN-F43 | | | | | | | | | ● | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,40 | 2,80 |
| | | DCMT 11T302EN-F43 | | | | | | | | | ● | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,20 | 4,40 |
| | | DCMT 11T304EN-F43 | | | | | | | | | ● | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCMT 11T308EN-F43 | | | | | | | | | ● | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,80 | 4,40 |
| -SMF | | DCMT 070202EN-SMF | | | ● | | | | | | | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,20 | 2,80 |
| | | DCMT 070204EN-SMF | | | ● | | ● | ● | | | | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,40 | 2,80 |
| | | DCMT 070208EN-SMF | | | | | | ● | | | | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,80 | 2,80 |
| | | DCMT 11T304EN-SMF | | | ● | ● | ● | ● | | | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCMT 11T308EN-SMF | | | ● | ● | ● | ● | | | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,80 | 4,40 |
| -M55 | | DCMT 070204EN-M55 | | | | | | | | ● | | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,40 | 2,80 |
| | | DCMT 070208EN-M55 | | | | | | | | ● | | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,80 | 2,80 |
| | | DCMT 11T304EN-M55 | | | | | | | | ● | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCMT 11T308EN-M55 | | | | | | | | ● | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,80 | 4,40 |
| -SM | | DCGT 070202EN-SM | | | | | ● | ● | | | | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,20 | 2,80 |
| | | DCMT 070204EN-SM | | | | ● | ● | ● | | | ● | ● | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,40 | 2,80 |
| | | DCMT 070208EN-SM | | | | ● | ● | ● | | | ● | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,80 | 2,80 |
| | | DCMT 11T304EN-SM | | | | ● | ● | ● | | | ● | ● | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCMT 11T308EN-SM | | | | ● | ● | ● | | | ● | ● | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,80 | 4,40 |
| | | DCMT 11T312EN-SM | | | | | ● | | | | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 1,20 | 4,40 |
| -SMQ | | DCMT 070204EN-SMQ | | | | ● | ● | | | | | | | | | | | | | | 6,35 | 7,75 | 2,38 | 0,40 | 2,80 |
| | | DCMT 11T304EL-SMQ | | | | | ● | | | | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCMT 11T304EN-SMQ | | | | | ● | | | | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCMT 11T304ER-SMQ | | | | | ● | | | | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCMT 11T308EN-SMQ | | | | | ● | | | | | | | | | | | | | | 9,52 | 11,60 | 3,97 | 0,80 | 4,40 |
| DC..W | | DCGW 070204FN | | | | | | | | | | | | | | | | | ● | | 6,35 | 7,75 | 2,38 | 0,40 | 2,80 |
| | | | TCM407 | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H210T | AMZ | H10T | CTP4115 | H216T | CTW7120 | CTP5115 | d | l | s | r | $d_1$ |

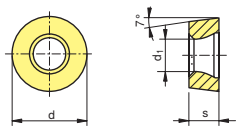



A13
A28
A297
□ A143-A146
HSK A195-A196
UTS A215-A219
⌀ A240-A243
HSK A259
UTS A265-A266

# MaxiLock S

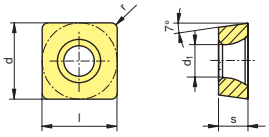
RC..

| | | | TCM407 | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H210T | AMZ | H10T | CTP4115 | H216T | CTW7120 | CTP5115 | d [mm] | s [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P | ● | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | ○ | | | | | | | | | |
| | | M | ○ | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | | | | | ○ | ○ | | | | |
| | | K | ○ | ○ | ○ | ● | ● | | ○ | | | ● | ● | ○ | ○ | ● | | ● | | | | | | |
| | | N | | | | | | | ○ | | | | | ● | ● | ● | ● | ● | ● | | | | | |
| | | S | | | | | | ○ | ○ | ○ | ○ | | | ● | | | | | ○ | ● | | | | |
| | | H | | | | | | | | | | | | | | | | | | | | | | |
| -25P |  | RCGT 0803MOFN-25P | | | | | | | | | | | | ● | | | | | | | 8,00 | 3,18 | 3,40 |
| | | RCMT 0803MOEN-25 | | | | | | | | | | | | ● | | | | | | | 8,00 | 3,18 | 3,40 |
| -27 |  | RCGT 0602MOFN-27 | | | | | | | | | | | | | | ● | | | | | 6,00 | 2,38 | 2,80 |
| | | RCGT 0803MOFN-27 | | | | | | | | | | | | | ● | ● | | | | | 8,00 | 3,18 | 3,40 |
| | | RCGT 1003MOFN-27 | | | | | | | | | | | | | ● | ● | | | | | 10,00 | 3,18 | 4,00 |
| -M23 |  | RCMT 1606MOSN-M23 | | | | ● | ● | | | | | | | | | | | | | | 16,00 | 6,35 | 5,30 |
| | | RCMT 2006MOSN-M23 | | | | ● | ● | | | | | | | | | | | | | | 20,00 | 6,35 | 6,50 |
| -SMF |  | RCMT 1606MOEN-SMF | | | | | | | | | | ● | | | | | | | | | 16,00 | 6,35 | 5,30 |
| -SM |  | RCGT 0602MOEN-SM | | | | | ● | ● | | | | | | | | | | | | | 6,00 | 2,38 | 2,80 |
| | | RCGT 0803MOEN-SM | | | | | ● | ● | | | | | | | | | | | | | 8,00 | 3,18 | 3,40 |
| | | RCMT 1003MOSN-SM | | | | | ● | ● | | | | | | | | | | | | | 10,00 | 3,18 | 4,00 |
| | | RCMT 1204MOSN-SM | | | | ● | ● | ● | | | | | | | | | | | | | 12,00 | 4,76 | 4,90 |
| | | RCMT 1606MOSN-SM | | | | ● | ● | ● | | | | | | | | | | | | | 16,00 | 6,35 | 5,30 |
| | | RCMT 2006MOSN-SM | | | | | ● | ● | | | | | | | | | | | | | 20,00 | 6,35 | 6,50 |
| | | RCMT 2507MOSN-SM | | | | ● | ● | ● | | | | | | | | | | | | | 25,00 | 7,94 | 7,20 |
| | | RCMT 3209MOSN-SM | | | | ● | ● | | | | | | | | | | | | | | 32,00 | 9,52 | 9,50 |
| -R23 |  | RCMX 2507MOSN-R23 | | | | ● | ● | | | | | | | | | | | | | | 25,00 | 7,94 | 7,20 |
| | | RCMX 3209MOSN-R23 | | | | ● | ● | | | | | | | | | | | | | | 32,00 | 9,52 | 9,50 |
| -R53 |  | RCMX 2507MOSN-R53 | | | | ● | ● | | | | | | | | | | | | | | 25,00 | 7,94 | 7,20 |
| | | RCMX 3209MOSN-R53 | | | | ● | ● | | | | | | | | | | | | | | 32,00 | 9,52 | 9,50 |
| -R83 |  | RCMX 2507MOSN-R83 | | | | ● | ● | | | | | | | | | | | | | | 25,00 | 7,94 | 7,70 |
| | | RCMX 3209MOSN-R83 | | | | ● | ● | | | | | | | | | | | | | | 32,00 | 9,52 | 9,50 |




A13
A28
A297
□ A126-A127
**HSK** A191-A192
**UTS** A205-A206
□ A147-A148
**UTS** A220-A221

| | | | TCM407 | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H210T | AMZ | H10T | CTP4115 | H216T | CTW7120 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | ○ | | | | | | | | | | |
| M | | | ○ | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | | | | | ○ | ○ | | | | | |
| K | | | ○ | ○ | ○ | ● | ● | | ○ | | | ● | ● | ○ | ○ | ● | | ● | | | | | | | |
| N | | | | | | | | | ○ | | | | | ● | ● | ● | ● | ● | ● | | | | | | |
| S | | | | | | | | ○ | ○ | ○ | ○ | | | ● | | | | | ○ | ● | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | |
| -25P | | SCGT 120408FN-25P | | | | | | | | | | | | ● | ● | | | | | | 12,70 | 12,70 | 4,76 | 0,80 | 5,50 |
| -27P | | SCGT 09T304FN-27 | | | | | | | | | | | | | | ● | | | | | 9,52 | 9,52 | 3,97 | 0,40 | 4,40 |
| | | SCGT 09T308FN-27 | | | | | | | | | | | | | ● | ● | | | | | 9,52 | 9,52 | 3,97 | 0,80 | 4,40 |
| | | SCGT 09T308FN-27P | | | | | | | | | | | | | | ● | | | | | 9,52 | 9,52 | 3,97 | 0,80 | 4,40 |
| | | SCGT 120408FN-27 | | | | | | | | | | | | | | ● | | | | | 12,70 | 12,70 | 4,76 | 0,80 | 5,50 |
| -CF05 | | SCGT 09T304EN-CF05 | | ● | | | | | | | | | | | | | | | | | 9,52 | 9,52 | 3,97 | 0,40 | 4,40 |
| | | SCGT 09T308EN-CF05 | | ● | | | | | | | | | | | | | | | | | 9,52 | 9,52 | 3,97 | 0,80 | 4,40 |
| -CF55 | | SCMT 09T304EN-CF55 | | ● | | | | | | | | | | | | | | | | | 9,52 | 9,52 | 3,97 | 0,40 | 4,40 |
| | | SCMT 09T308EN-CF55 | | ● | | | | | | | | | | | | | | | | | 9,52 | 9,52 | 3,97 | 0,80 | 4,40 |
| -SF | | SCGT 09T304EN-SF | ● | | ● | | | | | | | | | | | | | | | | 9,52 | 9,52 | 3,97 | 0,40 | 4,40 |
| | | SCGT 09T308EN-SF | | | ● | | | | | | | | | | | | | | | | 9,52 | 9,52 | 3,97 | 0,80 | 4,40 |
| | | SCMT 09T304EN-SF | | | | | ● | | | | | | | | | | | | | | 9,52 | 9,52 | 3,97 | 0,40 | 4,40 |
| | | SCMT 09T308EN-SF | | | | | ● | | | | | | | | | | | | | | 9,52 | 9,52 | 3,97 | 0,80 | 4,40 |
| | | SCMT 120408EN-SF | | | | | ● | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 0,80 | 5,50 |
| -M25 | | SCMT 09T304EN-M25 | | | | | | | | ● | | | | | | | | | | | 9,52 | 9,52 | 3,97 | 0,40 | 4,40 |
| -SMF | | SCMT 09T304EN-SMF | | | | ● | | | | | | | | | | | | | | | 9,52 | 9,52 | 3,97 | 0,40 | 4,40 |
| | | SCMT 09T308EN-SMF | | | | ● | | | | | | | | | | | | | | | 9,52 | 9,52 | 3,97 | 0,80 | 4,40 |
| | | SCMT 120408EN-SMF | | | | | | ● | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 0,80 | 5,50 |
| -M55 | | SCMT 09T308EN-M55 | | | | | | | | ● | | | | | | | | | | | 9,52 | 9,52 | 3,97 | 0,80 | 4,40 |
| | | SCMT 120408EN-M55 | | | | | | | | ● | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 0,80 | 5,50 |
| -SM | | SCMT 09T304EN-SM | | | | ● | ● | ● | | | | | | | | | | | | | 9,52 | 9,52 | 3,97 | 0,40 | 4,40 |
| | | SCMT 09T308EN-SM | | | | ● | ● | ● | | | ● | ● | | | | | | | | | 9,52 | 9,52 | 3,97 | 0,80 | 4,40 |
| | | SCMT 120408EN-SM | | | | ● | ● | ● | | | ● | ● | | | | | | | | | 12,70 | 12,70 | 4,76 | 0,80 | 5,50 |
| | | SCMT 120412EN-SM | | | | | ● | | | | | ● | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,20 | 5,30 |
| | | | TCM407 | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H210T | AMZ | H10T | CTP4115 | H216T | CTW7120 | CTP5115 | d | l | s | r | $d_1$ |

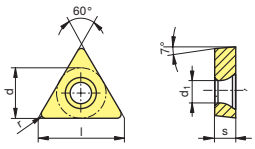



A13
A28
A297
□ A149-A152
**UTS** A222-A224
⌀ A244-A245
**UTS** A267

# MaxiLock S

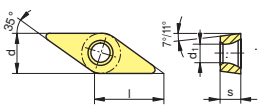
TC..

| | | | TCM407 | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H210T | AMZ | H10T | CTP4115 | H216T | CTW7120 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -27 |  | TCGT 110202FN-27 | | | | | | | | | | | | | | ● | | | | | 6,35 | 11,00 | 2,38 | 0,20 | 2,80 |
| | | TCGT 110204FN-27 | | | | | | | | | | | | | ● | ● | | | | | 6,35 | 11,00 | 2,38 | 0,40 | 2,80 |
| | | TCGT 16T302FN-27 | | | | | | | | | | | | | | ● | | | | | 9,52 | 16,50 | 3,97 | 0,20 | 4,40 |
| | | TCGT 16T304FN-27 | | | | | | | | | | | | | | ● | | | | | 9,52 | 16,50 | 3,97 | 0,40 | 4,40 |
| | | TCGT 16T308FN-27 | | | | | | | | | | | | | ● | ● | | | | | 9,52 | 16,50 | 3,97 | 0,80 | 4,40 |
| -CF05 |  | TCGT 110202EN-CF05 | | ● | | | | | | | | | | | | | | | | | 6,35 | 11,00 | 2,38 | 0,20 | 2,80 |
| | | TCGT 110204EN-CF05 | | ● | | | | | | | | | | | | | | | | | 6,35 | 11,00 | 2,38 | 0,40 | 2,80 |
| | | TCGT 110208EN-CF05 | | ● | | | | | | | | | | | | | | | | | 6,35 | 11,00 | 2,38 | 0,80 | 2,80 |
| | | TCGT 16T304EN-CF05 | | ● | | | | | | | | | | | | | | | | | 9,52 | 16,50 | 3,97 | 0,40 | 4,40 |
| -CF55 |  | TCMT 110204EN-CF55 | | ● | | | | | | | | | | | | | | | | | 6,35 | 11,00 | 2,38 | 0,40 | 2,80 |
| | | TCMT 16T308EN-CF55 | | ● | | | | | | | | | | | | | | | | | 9,52 | 16,50 | 3,97 | 0,80 | 4,40 |
| -SF |  | TCGT 110202EN-SF | | | ● | | | | | | | | | | | | | | | | 6,35 | 11,00 | 2,38 | 0,20 | 2,80 |
| | | TCGT 110204EN-SF | ● | | ● | | | | | | | | | | | | | | | | 6,35 | 11,00 | 2,38 | 0,40 | 2,80 |
| | | TCGT 16T304EN-SF | | | ● | | | | | | | | | | | | | | | | 9,52 | 16,50 | 3,97 | 0,40 | 4,40 |
| | | TCMT 110204EN-SF | | | | | ● | | | | | | | | | | | | | | 6,35 | 11,00 | 2,38 | 0,40 | 2,80 |
| | | TCMT 110208EN-SF | | | | | ● | | | | | | | | | | | | | | 6,35 | 11,00 | 2,38 | 0,80 | 2,80 |
| | | TCMT 16T304EN-SF | | | | | ● | | | | | | | | | | | | | | 9,52 | 16,50 | 3,97 | 0,40 | 4,40 |
| | | TCMT 16T308EN-SF | | | | | ● | | | | | | | | | | | | | | 9,52 | 16,50 | 3,97 | 0,80 | 4,40 |
| -M25 |  | TCMT 090204EN-M25 | | | | | | | | ● | | | | | | | | | | | 5,56 | 9,60 | 2,38 | 0,40 | 2,50 |
| | | TCMT 110204EN-M25 | | | | | | | | ● | | | | | | | | | | | 6,35 | 11,00 | 2,38 | 0,40 | 2,80 |
| | | TCMT 16T304EN-M25 | | | | | | | | ● | | | | | | | | | | | 9,52 | 16,50 | 3,97 | 0,40 | 4,40 |
| | | TCMT 16T308EN-M25 | | | | | | | | ● | | | | | | | | | | | 9,52 | 16,50 | 3,97 | 0,80 | 4,40 |
| -F43 |  | TCMT 110204EN-F43 | | | | | | | | | ● | | | | | | | | | | 6,35 | 11,00 | 2,38 | 0,40 | 2,80 |
| | | TCMT 16T304EN-F43 | | | | | | | | | ● | | | | | | | | | | 9,52 | 16,50 | 3,97 | 0,40 | 4,40 |
| | | TCMT 16T308EN-F43 | | | | | | | | | ● | | | | | | | | | | 9,52 | 16,50 | 3,97 | 0,80 | 4,40 |
| -SMF |  | TCMT 110204EN-SMF | | | ● | | | | | | | | | | | | | | | | 6,35 | 11,00 | 2,38 | 0,40 | 2,80 |
| | | TCMT 110208EN-SMF | | | | ● | | ● | | | | | | | | | | | | | 6,35 | 11,00 | 2,38 | 0,80 | 2,80 |
| | | TCMT 16T304EN-SMF | | | | ● | | | | | | | | | | | | | | | 9,52 | 16,50 | 3,97 | 0,40 | 4,40 |
| | | TCMT 16T308EN-SMF | | | | ● | | | | | | | | | | | | | | | 9,52 | 16,50 | 3,97 | 0,80 | 4,40 |
| -M55 |  | TCMT 090204EN-M55 | | | | | | | | ● | | | | | | | | | | | 5,56 | 9,60 | 2,38 | 0,40 | 2,50 |
| | | TCMT 110204EN-M55 | | | | | | | | ● | | | | | | | | | | | 6,35 | 11,00 | 2,38 | 0,40 | 2,80 |
| | | TCMT 16T308EN-M55 | | | | | | | | ● | | | | | | | | | | | 9,52 | 16,50 | 3,97 | 0,80 | 4,40 |
| -SM |  | TCGT 110202EN-SM | | | | | | ● | | | | | | | | | | | | | 6,35 | 11,00 | 2,38 | 0,20 | 2,80 |
| | | TCMT 090204EN-SM | | | | | ● | ● | | | ● | | | | | | | | | | 5,56 | 9,60 | 2,38 | 0,40 | 2,50 |
| | | TCMT 110204EN-SM | | | | ● | ● | ● | | | ● | ● | | | | | | | | | 6,35 | 11,00 | 2,38 | 0,40 | 2,80 |
| | | TCMT 110208EN-SM | | | | ● | | ● | | | | ● | | | | | | | | | 6,35 | 11,00 | 2,38 | 0,80 | 2,80 |
| | | TCMT 16T304EN-SM | | | | ● | ● | ● | | | | | | | | | | | | | 9,52 | 16,50 | 3,97 | 0,40 | 4,40 |
| | | TCMT 16T308EN-SM | | | | ● | ● | ● | | | ● | ● | ● | | | | | | | | 9,52 | 16,50 | 3,97 | 0,80 | 4,40 |
| | | TCMT 16T312EN-SM | | | | | | | | | | | ● | | | | | | | | 9,52 | 16,50 | 3,97 | 1,20 | 4,40 |
| | | TCMT 220408EN-SM | | | | | ● | ● | | | | | | | | | | | | | 12,70 | 22,00 | 4,76 | 0,80 | 5,30 |
| | | | TCM407 | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H210T | AMZ | H10T | CTP4115 | H216T | CTW7120 | CTP5115 | d | l | s | r | $d_1$ |




A13 A28 A297 □ A153-A156 □ A246

| | | | TCM407 | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H210T | AMZ | H10T | CTP4115 | H216T | CTW7120 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P | ● | ● | ● | ● | ● | ● | | ● | ○ | ○ | ○ | | ○ | | | | | | | | | | |
| | | M | ○ | ○ | ● | ○ | ○ | ○ | ● | ● | ● | | | | | | | | ○ | ○ | | | | | |
| | | K | ○ | ○ | ○ | ● | ● | | ○ | | | ● | ● | ○ | ○ | ● | | ● | | | | | | | |
| | | N | | | | | | | ○ | | | | | ● | ● | ● | ● | ● | ● | | | | | | |
| | | S | | | | | | ○ | ○ | ○ | ○ | | | ● | | | | | ○ | ● | | | | | |
| | | H | | | | | | | | | | | | | | | | | | | | | | | |
| -25P | | VCGT 110302FN-25P | | | | | | | | | | | | ● | ● | | | | | | 6,35 | 11,10 | 3,18 | 0,20 | 2,90 |
| | | VCGT 110304FN-25P | | | | | | | | | | | | ● | ● | | | | | | 6,35 | 11,10 | 3,18 | 0,40 | 2,90 |
| | | VCGT 160404FN-25P | | | | | | | | | | | | ● | ● | | | | | | 9,52 | 16,60 | 4,76 | 0,40 | 4,40 |
| | | VCGT 160408EN-25P | | | | | | | | | | | | | | | | | | ● | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCGT 160408FN-24P | | | | | | | | | | | | ● | | | | | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCGT 160408FN-25P | | | | | | | | | | | | ● | ● | | | | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCGT 160412EN-25P | | | | | | | | | | | | | | | | | | ● | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCGT 160412FN-24P | | | | | | | | | | | | ● | | | | | | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCGT 160412FN-25P | | | | | | | | | | | | ● | ● | | | | | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCGT 220530FN-24P | | | | | | | | | | | | | | | | ● | | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCGT 220530FN-25P | | | | | | | | | | | | ● | ● | | | | | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCMT 160412EN-25 | | | | | | | | | | | | ● | | | | | | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCMT 220530EN-25 | | | | | | | | | | | | ● | | | | | | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VPGT 220516FN-24P | | | | | | | | | | | | | | | | ● | | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPGT 220516FN-25P | | | | | | | | | | | | ● | | | | | | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPGX 220612FN-25P | | | | | | | | | | | | | | | | ● | | | 12,90 | 22,10 | 6,35 | 1,20 | 5,16 |
| -25Q | | VCGT 110304FL-25Q | | | | | | | | | | | | ● | | | | | | | 6,35 | 11,10 | 3,18 | 0,40 | 2,90 |
| | | VCGT 110304FR-25Q | | | | | | | | | | | | ● | | | | | | | 6,35 | 11,10 | 3,18 | 0,40 | 2,90 |
| -27 | | VCGT 110302FN-27 | | | | | | | | | | | | | ● | ● | | | | | 6,35 | 11,10 | 3,18 | 0,20 | 2,90 |
| | | VCGT 110304FN-27 | | | | | | | | | | | | | ● | ● | | | | | 6,35 | 11,10 | 3,18 | 0,40 | 2,90 |
| | | VCGT 110308FN-27 | | | | | | | | | | | | | | ● | | | | | 6,35 | 11,10 | 3,18 | 0,80 | 2,90 |
| | | VCGT 160404FN-27 | | | | | | | | | | | | | ● | ● | | | | | 9,52 | 16,60 | 4,76 | 0,40 | 4,40 |
| | | VCGT 160408FN-27 | | | | | | | | | | | | | ● | ● | | | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCGT 160412FN-27 | | | | | | | | | | | | | | ● | | | | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCGT 220530FN-27 | | | | | | | | | | | | | | ● | | | | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VPGT 220516FN-27 | | | | | | | | | | | | | | ● | | | | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| -29 | | VCMT 160404EN-29 | | | | | | | | | | | | | ● | | | ● | | | 9,52 | 16,60 | 4,76 | 0,40 | 4,40 |
| | | VCMT 160408EN-29 | | | | | | | | | | | | | ● | | | ● | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCMT 160412EN-29 | | | | | | | | | | | | | ● | | | ● | | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| -CF05 | | VCGT 110302EN-CF05 | | ● | | | | | | | | | | | | | | | | | 6,35 | 11,10 | 3,18 | 0,20 | 2,80 |
| | | VCGT 110304EN-CF05 | | ● | | | | | | | | | | | | | | | | | 6,35 | 11,10 | 3,18 | 0,40 | 2,90 |
| | | VCGT 160404EN-CF05 | | ● | | | | | | | | | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,40 | 4,40 |
| | | VCGT 160408EN-CF05 | | ● | | | | | | | | | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| -F23 | | VCGT 110300FN-F23 | | | | | | | ● | | | | | | | | | | | | 6,35 | 11,10 | 3,18 | 0,00 | 2,80 |
| | | VCGT 110301FN-F23 | | | | | | | ● | | | | | | | | | | | | 6,35 | 11,10 | 3,18 | 0,10 | 2,80 |
| | | VCGT 160401FN-F23 | | | | | | | ● | | | | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,10 | 4,40 |
| -CF55 | | VCMT 110304EN-CF55 | | ● | | | | | | | | | | | | | | | | | 6,35 | 11,10 | 3,18 | 0,40 | 2,90 |
| | | VCMT 160404EN-CF55 | | ● | | | | | | | | | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,40 | 4,40 |
| | | VCMT 160408EN-CF55 | | ● | | | | | | | | | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |

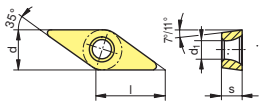



A13
A28
A297
□ A157-A160
**HSK** A197-A200
**UTS** A225-A227
⌀ A247-A250
**HSK** A260
**UTS** A268-A269

# MaxiLock S

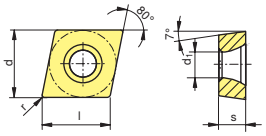
VC..

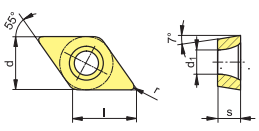
| | | TCM407 | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H210T | AMZ | H10T | CTP4115 | H216T | CTW7120 | CTP5115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -SF | | VCGT 110301EN-SF | | | ● | | | | | | | | | | | | | | | | 6,35 | 11,10 | 3,18 | 0,10 | 2,80 |
| | | VCGT 110302EN-SF | ● | | ● | ● | ● | ● | | | ● | | | | | | | | | | 6,35 | 11,10 | 3,18 | 0,20 | 2,80 |
| | | VCGT 110304EN-SF | ● | | ● | ● | ● | ● | | | ● | | | | | | | | | | 6,35 | 11,10 | 3,18 | 0,40 | 2,90 |
| | | VCGT 110308EN-SF | | | | ● | ● | ● | | | | | | | | | | | | | 6,35 | 11,10 | 3,18 | 0,80 | 2,90 |
| | | VCGT 160404EN-SF | ● | | ● | | | | | | | | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,40 | 4,40 |
| | | VCGT 160408EN-SF | ● | | ● | | | | | | | | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCMT 160404EN-SF | | | | ● | ● | ● | | | ● | | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,40 | 4,40 |
| | | VCMT 160408EN-SF | | | | ● | ● | | | | | | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| -M25 | | VCMT 160404EN-M25 | | | | | | | | ● | | | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,40 | 4,40 |
| | | VCMT 160408EN-M25 | | | | | | | | ● | | | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| -SMF | | VCGT 110302EN-SMF | | | | | | ● | | | | | | | | | | | | | 6,35 | 11,10 | 3,18 | 0,20 | 2,80 |
| | | VCMT 110304EN-SMF | | | ● | ● | ● | ● | | | | | | | | | | | | | 6,35 | 11,10 | 3,18 | 0,40 | 2,90 |
| | | VCMT 160404EN-SMF | | | ● | ● | ● | ● | | | | | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,40 | 4,40 |
| | | VCMT 160408EN-SMF | | | ● | ● | ● | ● | | | | | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| -M55 | | VCMT 160404EN-M55 | | | | | | | | ● | | | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,40 | 4,40 |
| | | VCMT 160408EN-M55 | | | | | | | | ● | | | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| -SM | | VCMT 160404EN-SM | | | | ● | ● | ● | | | ● | ● | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,40 | 4,40 |
| | | VCMT 160406EN-SM | | | | ● | | | | | | | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,60 | 4,40 |
| | | VCMT 160408EN-SM | | | | ● | ● | ● | | | ● | ● | | | | | | | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCMT 160412EN-SM | | | | | | ● | | | | ● | | | | | | | | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| VC..W | | VCMW 160404FN | | | | | | | | | | | | | | | | ● | | | 9,52 | 16,60 | 4,76 | 0,40 | 4,40 |
| | | | TCM407 | CTEP110 | TCM10 | CTCP115 | CTCP125 | CTCP135 | CTP2120 | CTPM125 | CTC2135 | CTC3110 | CTCK120 | H210T | AMZ | H10T | CTP4115 | H216T | CTW7120 | CTP5115 | d | l | s | r | $d_1$ |

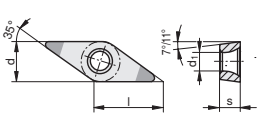



A13
A28
A297
□ A157-A160
**HSK** A197-A200
**UTS** A225-A227
⌀ A247-A250
**HSK** A260
**UTS** A268-A269

| | | | P | M | K | N | S | H | CTBK104 | CTD4110 | CTL6115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CC..W-B |  | CCGW 09T304FN_B3 | | | ● | | | ● | ● | | | 9,52 | 9,70 | 3,97 | 0,40 | 4,40 |
| | | CCGW 09T304SN-013E_B3 | | | | ● | | ● | | | ● | 9,52 | 9,70 | 3,97 | 0,40 | 4,40 |
| | | CCGW 09T304TN-020D_B3 | | | ● | | | ● | ● | | | 9,52 | 9,70 | 3,97 | 0,40 | 4,40 |
| | | CCGW 09T308FN_B3 | | | ● | | | ● | ● | | | 9,52 | 9,70 | 3,97 | 0,80 | 4,40 |
| | | CCGW 09T308SN-013E_B3 | | | | ● | | ● | | | ● | 9,52 | 9,70 | 3,97 | 0,80 | 4,40 |
| | | CCGW 09T308TN-020D_B3 | | | ● | | | ● | ● | | | 9,52 | 9,70 | 3,97 | 0,80 | 4,40 |
| DC..W-A |  | DCGW 070208FN_A3 | | | ● | | | ● | ● | | | 6,35 | 7,75 | 2,38 | 0,80 | 2,80 |
| | | DCGW 070208TN-020D_A3 | | | ● | | | ● | ● | | | 6,35 | 7,75 | 2,38 | 0,80 | 2,80 |
| DC..W-B |  | DCGW 11T304FN_B3 | | | ● | | | ● | ● | | | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCGW 11T304SN-013E_B3 | | | | ● | | ● | | | ● | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCGW 11T304TN-020D_B3 | | | ● | | | ● | ● | | | 9,52 | 11,60 | 3,97 | 0,40 | 4,40 |
| | | DCGW 11T308SN-013E_B3 | | | | ● | | ● | | | ● | 9,52 | 11,60 | 3,97 | 0,80 | 4,40 |
| -F4 |  | VCUW 160408FL-F4 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUW 160408FN-F4 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUW 160408FR-F4 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUW 160408TL-F4 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUW 160408TN-F4 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUW 160408TR-F4 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUW 160412FL-F4 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUW 160412FR-F4 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUW 160412TL-F4 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUW 160412TN-F4 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUW 160412TR-F4 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUW 220530FL-F4 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCUW 220530FR-F4 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCUW 220530TL-F4 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCUW 220530TN-F4 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCUW 220530TR-F4 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VPUW 220516FL-F4 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPUW 220516FN-F4 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPUW 220516FR-F4 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPUW 220516TL-F4 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPUW 220516TN-F4 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPUW 220516TR-F4 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | | | | | | | | CTBK104 | CTD4110 | CTL6115 | d | l | s | r | $d_1$ |



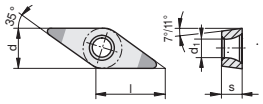




A13
A32
A297
□ A136-A146
**HSK** A193-A196
**UTS** A214-A219
□ A157-A160
**HSK** A197-A200
**UTS** A225-A227
⌀ A237-A243
**HSK** A258-A259
**UTS** A264-A266
⌀ A247-A250
**HSK** A260
**UTS** A268-A269

# MaxiLock S

CC.. DC.. VC.. (sonstige Schneidstoffe)

| | | | P | M | K | N | S | H | CTBK104 | CTD4110 | CTL6115 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -F41 |  | VCUT 160408FL-F41 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUT 160408FN-F41 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUT 160408FR-F41 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUT 160408TL-F41 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUT 160408TN-F41 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUT 160408TR-F41 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUT 160412FL-F41 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUT 160412FN-F41 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUT 160412FR-F41 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUT 160412TL-F41 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUT 160412TN-F41 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUT 160412TR-F41 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUT 220530FL-F41 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCUT 220530FN-F41 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCUT 220530FR-F41 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCUT 220530TL-F41 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCUT 220530TN-F41 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCUT 220530TR-F41 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VPUT 220516FL-F41 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPUT 220516FN-F41 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPUT 220516FR-F41 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPUT 220516TL-F41 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPUT 220516TN-F41 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPUT 220516TR-F41 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| -M4 |  | VCUW 160408FN-M4 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUW 160412FN-M4 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUW 160412TN-M4 | | | ● | | | ● | | ● | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUW 220530FN-M4 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCUW 220530TN-M4 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VPUW 220516FN-M4 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPUW 220516TN-M4 | | | ● | | | ● | | ● | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | | | | | | | | CTBK104 | CTD4110 | CTL6115 | d | l | s | r | $d_1$ |





A13

A32

A297

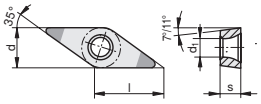
□ A136-A146
**HSK** A193-A196
**UTS** A214-A219

□ A157-A160
**HSK** A197-A200
**UTS** A225-A227

⌀ A237-A243
**HSK** A258-A259
**UTS** A264-A266

⌀ A247-A250
**HSK** A260
**UTS** A268-A269

| | | | P | M | K | N | S | H | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | ● | | | | CTBK104 | | | | |
| | | | | | | ● | | | CTD4110 | | | | |
| | | | | | | | | ● | CTL6115 | | | | |
| -M41 |  | VCUT 160408FL-M41 | | | | ● | | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUT 160408FN-M41 | | | | ● | | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUT 160408FR-M41 | | | | ● | | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUT 160408TL-M41 | | | | ● | | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUT 160408TN-M41 | | | | ● | | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUT 160408TR-M41 | | | | ● | | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUT 160412FL-M41 | | | | ● | | | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUT 160412FN-M41 | | | | ● | | | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUT 160412FR-M41 | | | | ● | | | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUT 160412TL-M41 | | | | ● | | | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUT 160412TN-M41 | | | | ● | | | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUT 160412TR-M41 | | | | ● | | | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUT 220530FL-M41 | | | | ● | | | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCUT 220530FN-M41 | | | | ● | | | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCUT 220530FR-M41 | | | | ● | | | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCUT 220530TL-M41 | | | | ● | | | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCUT 220530TN-M41 | | | | ● | | | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCUT 220530TR-M41 | | | | ● | | | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VPUT 220516FL-M41 | | | | ● | | | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPUT 220516FN-M41 | | | | ● | | | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPUT 220516FR-M41 | | | | ● | | | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPUT 220516TL-M41 | | | | ● | | | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPUT 220516TN-M41 | | | | ● | | | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPUT 220516TR-M41 | | | | ● | | | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| -U41 |  | VCUT 160408FN-U41 | | | | ● | | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUT 160408TN-U41 | | | | ● | | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUT 160412FN-U41 | | | | ● | | | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUT 160412TN-U41 | | | | ● | | | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUT 220530FN-U41 | | | | ● | | | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCUT 220530TN-U41 | | | | ● | | | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VPUT 220516FN-U41 | | | | ● | | | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VPUT 220516TN-U41 | | | | ● | | | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | | | | | | | | CTBK104 | | | | |
| | | | | | | | | | CTD4110 | | | | |
| | | | | | | | | | CTL6115 | | | | |



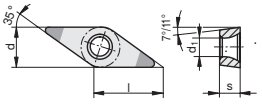


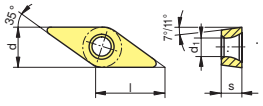
A13 | A32 | A297 | □ A136-A146 **HSK** A193-A196 **UTS** A214-A219 | □ A157-A160 **HSK** A197-A200 **UTS** A225-A227 | ⌀ A237-A243 **HSK** A258-A259 **UTS** A264-A266 | ⌀ A247-A250 **HSK** A260 **UTS** A268-A269

# MaxiLock S

CC.. DC.. VC.. (sonstige Schneidstoffe)

| | | | P | M | K | N | S | H | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | CTBK104 | CTD4110 | CTL6115 | | | | | | |
| -R41 |  | VCUT 160408FL-R41 | | | ● | | | | | ● | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUT 160408FN-R41 | | | ● | | | | | ● | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUT 160408FR-R41 | | | ● | | | | | ● | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUT 160408TL-R41 | | | ● | | | | | ● | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUT 160408TN-R41 | | | ● | | | | | ● | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUT 160408TR-R41 | | | ● | | | | | ● | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCUT 160412FL-R41 | | | ● | | | | | ● | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUT 160412FN-R41 | | | ● | | | | | ● | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUT 160412FR-R41 | | | ● | | | | | ● | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUT 160412TL-R41 | | | ● | | | | | ● | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUT 160412TR-R41 | | | ● | | | | | ● | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUT 220530FL-R41 | | | ● | | | | | ● | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCUT 220530FN-R41 | | | ● | | | | | ● | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCUT 220530FR-R41 | | | ● | | | | | ● | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCUT 220530TL-R41 | | | ● | | | | | ● | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCUT 220530TN-R41 | | | ● | | | | | ● | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VCUT 220530TR-R41 | | | ● | | | | | ● | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | VPUT 220516FL-R41 | | | ● | | | | | ● | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPUT 220516FN-R41 | | | ● | | | | | ● | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPUT 220516FR-R41 | | | ● | | | | | ● | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPUT 220516TL-R41 | | | ● | | | | | ● | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPUT 220516TN-R41 | | | ● | | | | | ● | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| | | VPUT 220516TR-R41 | | | ● | | | | | ● | | 12,70 | 22,10 | 5,56 | 1,60 | 5,50 |
| VC..W-B |  | VBGW 160404SN-013E-B3 | | | | | | | | | ● | 9,52 | 16,60 | 4,76 | 0,40 | 4,40 |
| | | VCGW 110302SN-010E_B3 | | | | | | | | | ● | 6,35 | 11,10 | 3,18 | 0,20 | 2,80 |
| | | VCGW 110304FN_B3 | | | | | | | ● | | | 6,35 | 11,10 | 3,18 | 0,40 | 2,90 |
| | | VCGW 110304TN-020D_B3 | | | | | | | ● | | | 6,35 | 11,10 | 3,18 | 0,40 | 2,90 |
| | | VCGW 160408FN_B3 | | | | | | | ● | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| | | VCGW 160408TN-020D_B3 | | | | | | | ● | | | 9,52 | 16,60 | 4,76 | 0,80 | 4,40 |
| FN |  | VCUW 160404FN | | | ● | | | | | ● | | 9,52 | 16,60 | 4,76 | 0,40 | 4,40 |
| | | VCUW 160412FN | | | ● | | | | | ● | | 9,52 | 16,60 | 4,76 | 1,20 | 4,40 |
| | | VCUW 160416FN | | | ● | | | | | ● | | 9,52 | 16,60 | 4,76 | 1,60 | 4,40 |
| | | VCUW 220530FN-F4 | | | ● | | | | | ● | | 12,70 | 22,10 | 5,56 | 3,00 | 5,50 |
| | | | | | | | | | CTBK104 | CTD4110 | CTL6115 | d | l | s | r | $d_1$ |

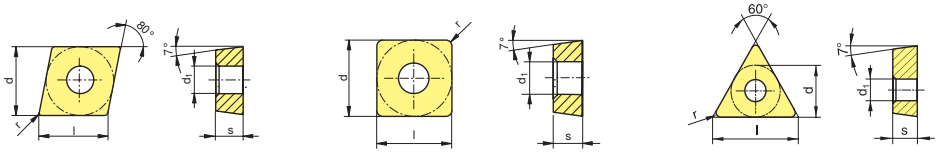





A13
A32
A297
□ A136-A146
**HSK** A193-A196
**UTS** A214-A219
□ A157-A160
**HSK** A197-A200
**UTS** A225-A227
⌀ A237-A243
**HSK** A258-A259
**UTS** A264-A266
⌀ A247-A250
**HSK** A260
**UTS** A268-A269

| | | | P | M | K | N | S | H | CTCP115 | CTCP125 | CTCP135 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CC..X |  | CCMX 120408EN | | | ● | | | | | ● | | 12,70 | 12,90 | 4,76 | 0,80 | 5,16 |
| SC..X |  | SCMX 120408EN | | | ● | | | | | ● | ● | 12,70 | 12,70 | 4,76 | 0,80 | 5,16 |
| | | SCMX 190616EN | | | ● | | | | | | ● | 19,05 | 19,05 | 6,35 | 1,60 | 7,93 |
| TC..X |  | TCMX 160404EN | ● | ● | ● | | | | ● | ● | ● | 9,52 | 16,50 | 4,76 | 0,40 | 3,81 |
| | | TCMX 160408EN | ● | ● | ● | | | | ● | ● | ● | 9,52 | 16,50 | 4,76 | 0,80 | 3,81 |
| | | TCMX 160412EN | | ● | | | | | | ● | | 9,52 | 16,50 | 4,76 | 1,20 | 3,81 |
| | | TCMX 220404EN | | | ● | | | | | | ● | 12,70 | 22,00 | 4,76 | 0,40 | 5,16 |
| | | TCMX 220408EN | | | ● | | | | | | ● | 12,70 | 22,00 | 4,76 | 0,80 | 5,16 |
| | | TCMX 220412EN | | | ● | | | | | ● | | 12,70 | 22,00 | 4,76 | 1,20 | 5,16 |
| | | | | | | | | | CTCP115 | CTCP125 | CTCP135 | d | l | s | r | $d_1$ |

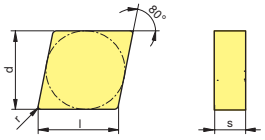



A13 | A36 | A297 | □ A161-A166 | ⌀ A251-A252

# Simplex N

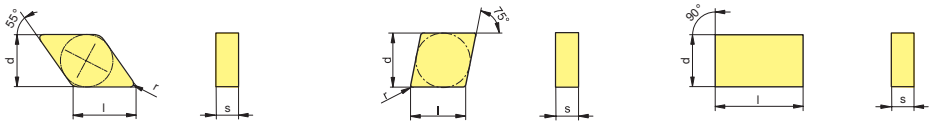
CN..

| | | CTWK601 | CTS3105 | CTBK102 | CTM3110 | CTN3110 | CTC3110 | CTCK120 | d [mm] | l [mm] | s [mm] | r [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CN..N |  | | | | | | | | | | | |
| | CNGN 090308TN-020D | | | ● | | | | | 9,52 | 9,70 | 3,18 | 0,80 |
| | CNGN 090316TN-020D | | | ● | | | | | 9,52 | 9,70 | 3,18 | 1,60 |
| | CNGN 120404TN-020D | | ● | | | | | | 12,70 | 12,90 | 4,76 | 0,40 |
| | CNGN 120408TN-020D | | ● | | | | | | 12,70 | 12,90 | 4,76 | 0,80 |
| | CNGN 120416TN-020D | | | ● | | | | | 12,70 | 12,90 | 4,76 | 1,60 |
| | CNGN 120712PN-100CF | | ● | | | | | | 12,70 | 12,90 | 7,94 | 1,20 |
| | CNGN 120712SN-025C | | | | | ● | | | 12,70 | 12,90 | 7,94 | 1,20 |
| | CNGN 120716PN-100CF | | ● | | | | | | 12,70 | 12,90 | 7,94 | 1,60 |
| | CNGN 120716SN-025C | | | | | ● | | | 12,70 | 12,90 | 7,94 | 1,60 |
| | CNGN 160716SN-025C | | | | | ● | | | 15,88 | 16,10 | 7,94 | 1,60 |
| | CNGN 160716SN-200C | | ● | | | | | | 15,88 | 16,10 | 7,94 | 1,60 |
| | | CTWK601 | CTS3105 | CTBK102 | CTM3110 | CTN3110 | CTC3110 | CTCK120 | d | l | s | r |




A13 A36 A297 □ A167

| | | | CTWK601 | CTS3105 | CTBK102 | CTM3110 | CTN3110 | CTC3110 | CTCK120 | d [mm] | l [mm] | s [mm] | r [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | | | | | | ○ | ○ | | | | |
| M | | | | | | | | | | | | | |
| K | | | ● | ● | ● | ● | ● | ● | ● | | | | |
| N | | | | | | | | | | | | | |
| S | | | | | | | | | | | | | |
| H | | | | ● | ● | | | | | | | | |
| DN..N |  | DNGN 150704TN-020D | | ● | | | | | | 12,70 | 15,50 | 7,94 | 0,40 |
| | | DNGN 150708TN-020D | | ● | | | | | | 12,70 | 15,50 | 7,94 | 0,80 |
| | | DNGN 150712SN-200C | | ● | | | | | | 12,70 | 15,50 | 7,94 | 1,20 |
| | | DNGN 150712TN-020D | | ● | | | | | | 12,70 | 15,50 | 7,94 | 1,20 |
| | | DNGN 150716PN-100CF | | ● | | | | | | 12,70 | 15,50 | 7,94 | 1,60 |
| | | DNGN 150716SN-200C | | ● | | | | | | 12,70 | 15,50 | 7,94 | 1,60 |
| | | DNGN 150716TN-020D | | ● | | | | | | 12,70 | 15,50 | 7,94 | 1,60 |
| EN..N |  | ENGN 130704TN-020D | | ● | | | | | | 12,70 | 13,20 | 7,94 | 0,40 |
| | | ENGN 130708TN-020D | | ● | | | | | | 12,70 | 13,20 | 7,94 | 0,80 |
| | | ENGN 130712TN-020D | | ● | | | | | | 12,70 | 13,20 | 7,94 | 1,20 |
| | | ENGN 130716SN-200C | | ● | | | | | | 12,70 | 13,20 | 7,94 | 1,60 |
| | | ENGN 130732TN-020D | | ● | | | | | | 12,70 | 13,20 | 7,94 | 3,20 |
| LN..N |  | LNMN 6688PN-150CE | | | | | ● | | | 19,05 | 38,10 | 12,70 | 3,00 |
| | | LNMN 6688PN-200CE | | ● | | | | | | 19,05 | 38,10 | 12,70 | 3,00 |
| | | LNMN 6688SN-040D | ● | | | | | | | 19,05 | 38,10 | 12,70 | 3,00 |
| | | LNMN 6688SN-100B | ● | | | | | | | 19,05 | 38,10 | 12,70 | 3,00 |
| | | | CTWK601 | CTS3105 | CTBK102 | CTM3110 | CTN3110 | CTC3110 | CTCK120 | d | l | s | r |





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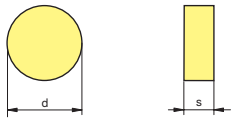
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# Simplex N

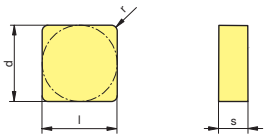
RN..

| | | | CTWK601 | CTS3105 | CTBK102 | CTM3110 | CTN3110 | CTC3110 | CTCK120 | d [mm] | s [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P | | | | | | ○ | ○ | | |
| | | M | | | | | | | | | |
| | | K | ● | ● | ● | ● | ● | ● | ● | | |
| | | N | | | | | | | | | |
| | | S | | | | | | | | | |
| | | H | | ● | ● | | | | | | |
| RN..N |  | RNGN 060400TN-020D | | ● | | | | | | 6,35 | 4,76 |
| | | RNGN 090300TN-020D | | | ● | | | | | 9,52 | 3,18 |
| | | RNGN 090400TN-020D | | ● | | | | | | 9,52 | 4,76 |
| | | RNGN 120300TN-020D | | | ● | | | | | 12,70 | 3,18 |
| | | RNGN 120400PN-150CF | | | | ● | ● | | | 12,70 | 4,76 |
| | | RNGN 120400TN-020D | | | ● | | | | | 12,70 | 4,76 |
| | | RNGN 120700PN-100CF | | ● | | | | | | 12,70 | 7,94 |
| | | RNGN 120700SN-200C | | ● | | | | | | 12,70 | 7,94 |
| | | RNGN 120700TN-020D | | ● | | | | | | 12,70 | 7,94 |
| | | RNGN 150700PN-150CE | | | | | ● | | | 15,80 | 7,94 |
| | | RNGN 150700SN-200C | | ● | | | | | | 15,80 | 7,94 |
| | | RNGN 190700PN-100CF | | ● | | | | | | 19,00 | 7,94 |
| | | RNGN 190700TN-020D | | ● | | | | | | 19,00 | 7,94 |
| | | RNGN 250700PN-100CF | | ● | | | | | | 25,40 | 7,94 |
| | | RNGN 250700PN-200CE | | ● | | ● | ● | | | 25,40 | 7,94 |
| | | RNGN 250700TN-020D | | ● | | | | | | 25,40 | 7,94 |
| | | RNGN 310900PN-100CF | | ● | | | | | | 31,75 | 9,52 |
| | | | CTWK601 | CTS3105 | CTBK102 | CTM3110 | CTN3110 | CTC3110 | CTCK120 | d | s |




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| | | | P | | | | | ○ | ○ | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | M | | | | | | | | | | | | | | | | | | | | | | |
| | | | K | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | |
| | | | N | | | | | | | | | | | | | | | | | | | | | | |
| | | | S | | | | | | | | | | | | | | | | | | | | | | |
| | | | H | | ● | ● | | | | | | | | | | | | | | | | | | | |
| | | | | CTWK601 | CTS3105 | CTBK102 | CTM3110 | CTN3110 | CTC3110 | CTCK120 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | d | l | s | r |
| | | | | | | | | | | | | | | | | | | | | | | | | [mm] | [mm] | [mm] | [mm] |
| SN..N | | SNGN 090312TN-020D | | | ● | | | | | | | | | | | | | | | | | | | 9,52 | 9,52 | 3,18 | 1,20 |
| | | SNGN 120316TN-020D | | | ● | | | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 3,18 | 1,60 |
| | | SNGN 120408SN-015D | | | | | ● | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 0,80 |
| | | SNGN 120408TN-020D | | ● | | | | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 0,80 |
| | | SNGN 120412PN-150CF | | | | | ● | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,20 |
| | | SNGN 120412SN-015D | | | | | ● | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,20 |
| | | SNGN 120412TN-020D | | ● | | | | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,20 |
| | | SNGN 120416TN-020D | | | ● | | | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,60 |
| | | SNGN 120704TN-020D | | ● | | | | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 0,40 |
| | | SNGN 120716PN-100CF | | ● | | | | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 7,94 | 1,60 |
| | | SNGN 120716PN-150CF | | | | | ● | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 7,94 | 1,60 |
| | | SNGN 120716SN-025C | | | | | ● | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 7,94 | 1,60 |
| | | SNGN 120716SN-200C | | ● | | | | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 7,94 | 1,60 |
| | | SNGN 120716TN-020D | | ● | | | | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 7,94 | 1,60 |
| | | SNGN 120720PN-100CF | | ● | | | | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 7,94 | 2,00 |
| | | SNGN 120720SN-200C | | ● | | | | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 7,94 | 2,00 |
| | | SNGN 150712TN-020D | | ● | | | | | | | | | | | | | | | | | | | | 15,80 | 15,80 | 7,94 | 1,20 |
| | | SNGN 150716PN-150CF | | | | | ● | | | | | | | | | | | | | | | | | 15,80 | 15,80 | 7,94 | 1,60 |
| | | SNGN 150720SN-200C | | ● | | | | | | | | | | | | | | | | | | | | 15,80 | 15,80 | 7,94 | 2,00 |
| | | SNGN 190716PN-150CF | | | | | ● | | | | | | | | | | | | | | | | | 19,00 | 19,00 | 7,94 | 1,60 |
| | | SNGN 190716TN-020D | | ● | | | | | | | | | | | | | | | | | | | | 19,00 | 19,00 | 7,94 | 1,60 |
| | | SNGN 190720PN-100CF | | ● | | | | | | | | | | | | | | | | | | | | 19,00 | 19,00 | 7,94 | 2,00 |
| | | SNGN 190720SN-200C | | ● | | | | | | | | | | | | | | | | | | | | 19,00 | 19,00 | 7,94 | 2,00 |
| | | SNGN 190720TN-020D | | ● | | | | | | | | | | | | | | | | | | | | 19,00 | 19,00 | 7,94 | 2,00 |
| | | SNGN 250724PN-100CF | | ● | | | | | | | | | | | | | | | | | | | | 25,40 | 25,40 | 7,94 | 2,40 |
| | | SNGN 250724PN-150CE | | | | | ● | | | | | | | | | | | | | | | | | 25,40 | 25,40 | 7,94 | 2,40 |
| | | SNGN 250724PN-200CE | | ● | | | | | | | | | | | | | | | | | | | | 25,40 | 25,40 | 7,94 | 2,40 |
| | | SNGN 250724SN-050C | | ● | | | | | | | | | | | | | | | | | | | | 25,40 | 25,40 | 7,94 | 2,40 |
| | | SNGN 250724SN-200C | | ● | | | | | | | | | | | | | | | | | | | | 25,40 | 25,40 | 7,94 | 2,40 |
| | | SNGN 250924PN-100CF | | ● | | | | | | | | | | | | | | | | | | | | 25,40 | 25,40 | 9,52 | 2,40 |
| | | SNGN 250924PN-150CE | | | | | ● | | | | | | | | | | | | | | | | | 25,40 | 25,40 | 9,52 | 2,40 |
| | | SNGN 250924SN-030E | | | | | ● | | | | | | | | | | | | | | | | | 25,40 | 25,40 | 9,52 | 2,40 |
| | | SNGN 250924SN-200C | | ● | | | | | | | | | | | | | | | | | | | | 25,40 | 25,40 | 9,52 | 2,40 |
| | | SNGN 250924TN-020D | | ● | | | | | | | | | | | | | | | | | | | | 25,40 | 25,40 | 9,52 | 2,40 |
| SNUN | | SNUN 120412EN | | | | | | | ● | | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,20 |
| | | SNUN 120416EN | | | | | | | ● | ● | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,60 |
| SN..N | | SNUN 250724TN-100C | | ● | | | | | | | | | | | | | | | | | | | | 25,40 | 25,40 | 7,94 | 2,40 |
| | | SNUN 250924TN-100C | | ● | | | | | | | | | | | | | | | | | | | | 25,40 | 25,40 | 9,52 | 2,40 |
| | | | | CTWK601 | CTS3105 | CTBK102 | CTM3110 | CTN3110 | CTC3110 | CTCK120 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | d | l | s | r |





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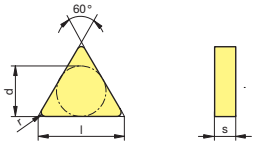

A297


□ A171-A172

# Simplex N

TN..

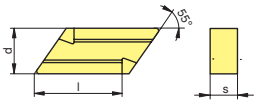
| | | CTWK601 | CTS3105 | CTBK102 | CTM3110 | CTN3110 | CTC3110 | CTCK120 | d [mm] | l [mm] | s [mm] | r [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | | | | | ○ | ○ | | | | |
| M | | | | | | | | | | | | |
| K | | ● | ● | ● | ● | ● | ● | ● | | | | |
| N | | | | | | | | | | | | |
| S | | | | | | | | | | | | |
| H | | | ● | ● | | | | | | | | |
| TN..N |  | | | | | | | | | | | |
| | TNGN 110308TN-020D | | ● | ● | | | | | 6,35 | 11,00 | 3,18 | 0,80 |
| | TNGN 160408TN-020D | | ● | | | | | | 9,52 | 16,50 | 4,76 | 0,80 |
| | TNGN 220408TN-020D | | ● | | | | | | 12,70 | 22,00 | 4,76 | 0,80 |
| TNUN |  | | | | | | | | | | | |
| | TNUN 160412EN | | | | | | ● | | 9,52 | 16,50 | 4,76 | 1,20 |
| | TNUN 160416EN | | | | | | ● | | 9,52 | 16,50 | 4,76 | 1,60 |
| | | CTWK601 | CTS3105 | CTBK102 | CTM3110 | CTN3110 | CTC3110 | CTCK120 | d | l | s | r |






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A36
A297
□ A173-A176

| | | | CTCP125 | CTCP135 | CTS3105 | CTBK102 | CTN3110 | CTC3110 | CTD4110 | CTD4125 | H10T | d [mm] | l [mm] | s [mm] | r [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -11 |  | KNUX 160405EL-11 | ● | ● | | | | ● | | | | 9,52 | 16,00 | 4,76 | 0,50 |
| | | KNUX 160405ER-11 | ● | ● | | | | ● | | | | 9,52 | 16,00 | 4,76 | 0,50 |
| | | KNUX 160410EL-11 | | ● | | | | | | | | 9,52 | 16,00 | 4,76 | 1,00 |
| | | KNUX 160410ER-11 | ● | ● | | | | | | | | 9,52 | 16,00 | 4,76 | 1,00 |
| -12 |  | KNUX 160405EL-12 | | ● | | | | | | | | 9,52 | 16,00 | 4,76 | 0,50 |
| | | KNUX 160405ER-12 | | ● | | | | | | | | 9,52 | 16,00 | 4,76 | 0,50 |
| | | KNUX 160410EL-12 | | ● | | | | | | | | 9,52 | 16,00 | 4,76 | 1,00 |
| | | KNUX 160410ER-12 | | ● | | | | | | | | 9,52 | 16,00 | 4,76 | 1,00 |
| | | | CTCP125 | CTCP135 | CTS3105 | CTBK102 | CTN3110 | CTC3110 | CTD4110 | CTD4125 | H10T | d | l | s | r |

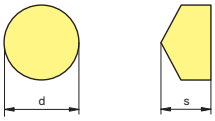



A13 | A36 | A297 | □ A168

# Simplex P

RC..

| | | CTCP125 | CTCP135 | CTS3105 | CTBK102 | CTN3110 | CTC3110 | CTD4110 | CTD4125 | H10T | d [mm] | s [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RC..X |  | | | ● | ● | | | | | | 6,00 | 6,20 |
| | | | | ● | | | | | | | 7,00 | 4,76 |
| | | | | | | ● | | | | | 9,52 | 7,70 |
| | | | | ● | | | | | | | 9,52 | 7,70 |
| | | | | ● | | | | | | | 9,52 | 7,70 |
| | | | | ● | ● | | | | | | 9,52 | 7,70 |
| | | | | ● | | | | | | | 12,70 | 7,70 |
| | | | | | | ● | | | | | 12,70 | 7,70 |
| | | | | ● | | | | | | | 12,70 | 7,70 |
| | | | | ● | ● | | | | | | 12,70 | 7,70 |
| | | | | ● | | | | | | | 15,80 | 10,00 |
| | | | | ● | | | | | | | 15,80 | 10,00 |
| | | | | ● | | | | | | | 19,05 | 10,00 |
| | | | | ● | | | | | | | 19,05 | 10,00 |
| | | | | ● | | | | | | | 25,40 | 12,00 |
| | | | | ● | | | | | | | 25,40 | 12,00 |
| | | | | | | ● | | | | | 25,40 | 12,00 |
| | | | | ● | | | | | | | 25,40 | 12,00 |





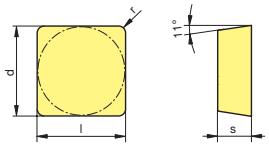
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| | | | CTCP125 | CTCP135 | CTS3105 | CTBK102 | CTN3110 | CTC3110 | CTD4110 | CTD4125 | H10T | d [mm] | l [mm] | s [mm] | r [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -57 |  | SPMR 090308EN-57 | | ● | | | | | | | | 9,52 | 9,52 | 3,18 | 0,80 |
| SPMR |  | SPMR 090304EN | | ● | | | | | | | | 9,52 | 9,52 | 3,18 | 0,40 |
| | | SPMR 120304EN | | ● | | | | | | | | 12,70 | 12,70 | 3,18 | 0,40 |
| | | SPMR 120308EN | ● | ● | | | | | | | | 12,70 | 12,70 | 3,18 | 0,80 |
| SPMR-R |  | SPMR 120308ER | | ● | | | | | | | | 12,70 | 12,70 | 3,18 | 0,80 |
| SP..N |  | SPUN 120308EN | | ● | | | | ● | | | | 12,70 | 12,70 | 3,18 | 0,80 |

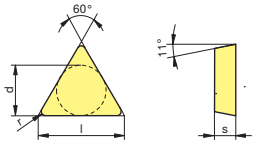



A13 A36 A297

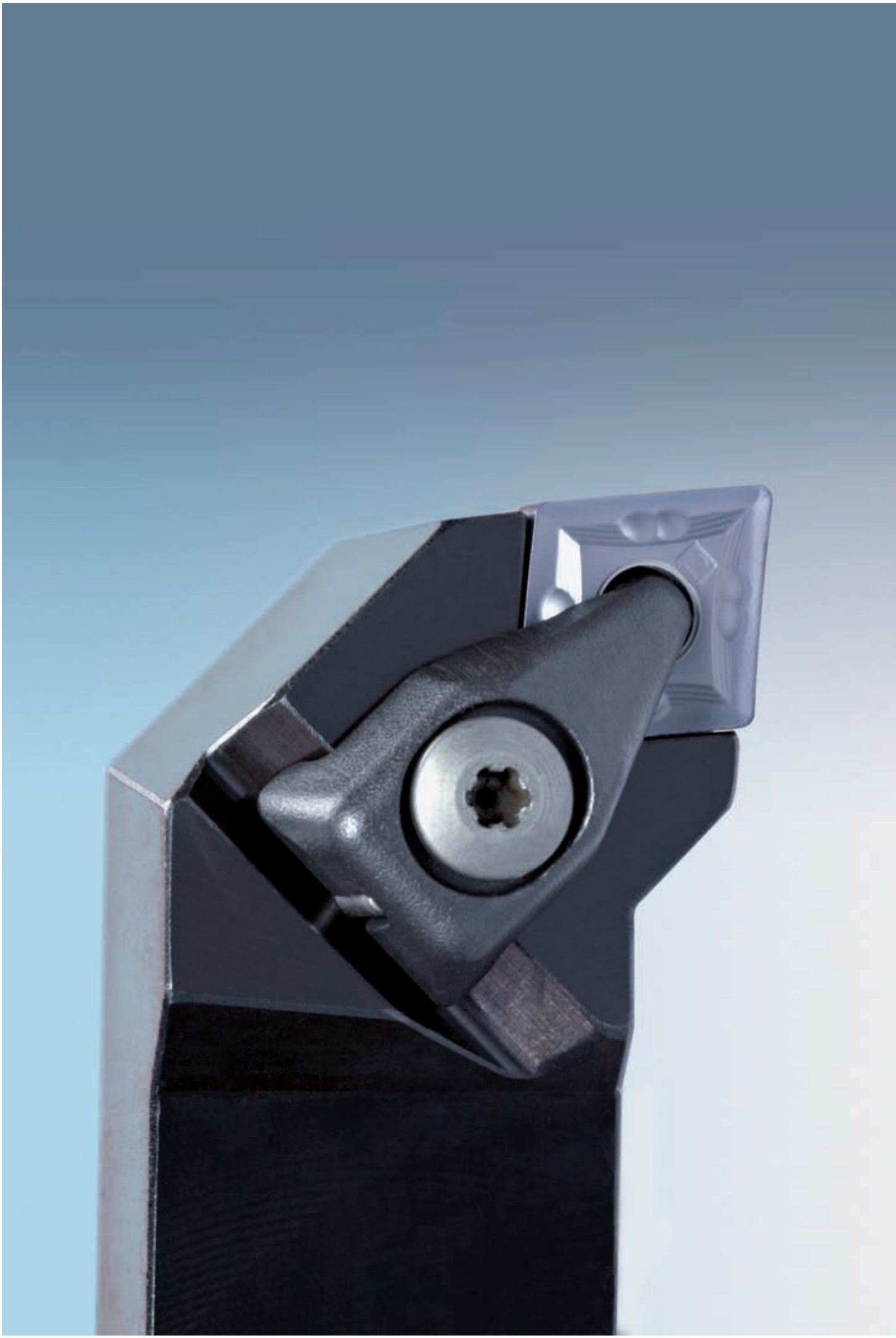
# Simplex P

TP..

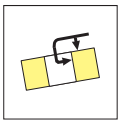
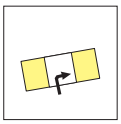
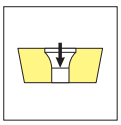
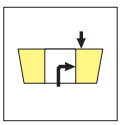
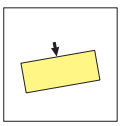
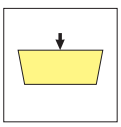
| | | CTCP125 | CTCP135 | CTS3105 | CTBK102 | CTN3110 | CTC3110 | CTD4110 | CTD4125 | H10T | d [mm] | l [mm] | s [mm] | r [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -D | TPUN 160304FN | | | | | | | ● | | | 9,52 | 16,50 | 3,18 | 0,40 |
| -57 | TPMR 160308EN-57 | | ● | | | | | | | | 9,52 | 16,50 | 3,18 | 0,80 |
| TPGN | TPGN 160304TN-020D | | | ● | | | | | | | 9,52 | 16,50 | 3,18 | 0,40 |
| TP..N | TPUN 110304EN | | ● | | | | | | | | 6,35 | 11,00 | 3,18 | 0,40 |
| | TPUN 110304FN | | | | | | | | | ● | 6,35 | 11,00 | 3,18 | 0,40 |
| | TPUN 110308EN | | | | | | ● | | | | 6,35 | 11,00 | 3,18 | 0,80 |
| | TPUN 160304EN | ● | ● | | | | ● | | | | 9,52 | 16,50 | 3,18 | 0,40 |
| | TPUN 160304FN | | | | | | | | | ● | 9,52 | 16,50 | 3,18 | 0,40 |
| | TPUN 160308EN | ● | ● | | | | | | | | 9,52 | 16,50 | 3,18 | 0,80 |
| | TPUN 160308FN | | | | | | | | | ● | 9,52 | 16,50 | 3,18 | 0,80 |
| | TPUN 160312EN | | ● | | | | | | | | 9,52 | 16,50 | 3,18 | 1,20 |
| | TPUN 220408EN | | ● | | | | | | | | 12,70 | 22,00 | 4,76 | 0,80 |
| | TPUN 220412EN | | ● | | | | | | | | 12,70 | 22,00 | 4,76 | 1,20 |
| TPMR | TPMR 110304EN | ● | ● | | | | | | | | 6,35 | 11,00 | 3,18 | 0,40 |
| | TPMR 110308EN | | ● | | | | | | | | 6,35 | 11,00 | 3,18 | 0,80 |
| | TPMR 160304EN | ● | ● | | | | | | | | 9,52 | 16,50 | 3,18 | 0,40 |
| | TPMR 160308EN | ● | ● | | | | ● | | | | 9,52 | 16,50 | 3,18 | 0,80 |
| TPMR-RL | TPMR 110304EL | | ● | | | | | | | | 6,35 | 11,00 | 3,18 | 0,40 |
| | TPMR 110304ER | | ● | | | | | | | | 6,35 | 11,00 | 3,18 | 0,40 |
| | TPMR 160304EL | | ● | | | | | | | | 9,52 | 16,50 | 3,18 | 0,40 |
| | TPMR 160304ER | | ● | | | | | | | | 9,52 | 16,50 | 3,18 | 0,40 |
| | TPMR 160308EL | | ● | | | | | | | | 9,52 | 16,50 | 3,18 | 0,80 |
| | TPMR 160308ER | | ● | | | | | | | | 9,52 | 16,50 | 3,18 | 0,80 |



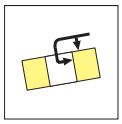
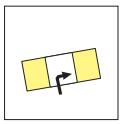
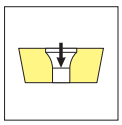
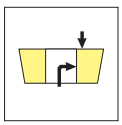
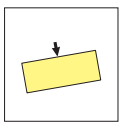
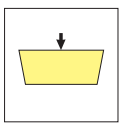

A13 A36 A297 □ A177-A180 ⌀ A254



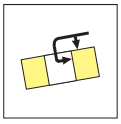
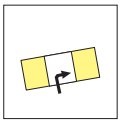
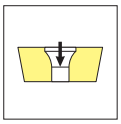
## Außenbearbeitung Vierkantschaft


| | | |
|---|---|---|
|  | MaxiLock D | A109-A120 |
|  | MaxiLock N | A121-A135 |
|  | MaxiLock S | A136-A160 |
|  | MaxiLock P | A161-A166 |
|  | Simplex N | A167-A176 |
|  | Simplex P | A177-A180 |

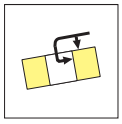
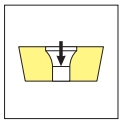

## Innenbearbeitung Rundschaft


| | | |
|---|---|---|
|  | MaxiLock D | A228-A231 |
|  | MaxiLock N | A232-A236 |
|  | MaxiLock S | A237-A250 |
|  | MaxiLock P | A251-A252 |
|  | Simplex N | A253 |
|  | Simplex P | A254 |

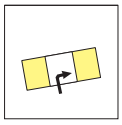
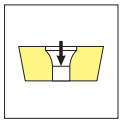

## Außenbearbeitung HSK-T


| | | |
|---|---|---|
|  | MaxiLock D | A181-A190 |
|  | MaxiLock N | A191-A192 |
|  | MaxiLock S | A193-A200 |

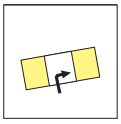
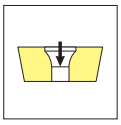

## Innenbearbeitung HSK-T


| | | |
|---|---|---|
|  | MaxiLock D | A255-A257 |
|  | MaxiLock S | A258-A269 |

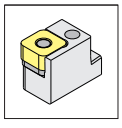

## Innenbearbeitung UTS


| | | |
|---|---|---|
|  | MaxiLock N | A261-A263 |
|  | MaxiLock S | A264-A269 |


## Außenbearbeitung UTS

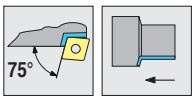

| | | |
|---|---|---|
|  | MaxiLock N | A201-A213 |
|  | MaxiLock S | A214-A227 |


## Radsatzbearbeitung


| | | |
|---|---|---|
|  | Radsatzkassetten | A270 |

# DCBN...

MaxiLock D





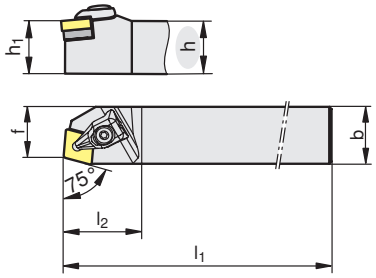
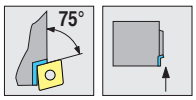




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 25 | DCBNR 2525 M12 | R | 25 | 25 | 150 | 32 | 22 | CN.. 1204.. | E01 |
| 25 | DCBNL 2525 M12 | L | 25 | 25 | 150 | 32 | 22 | CN.. 1204.. | E01 |

| | | | | |
|---|---|---|---|---|
| E01 | 11224545 | 11224494 | 11211558 | 11224503 |

A303 | A63-A66 | A79





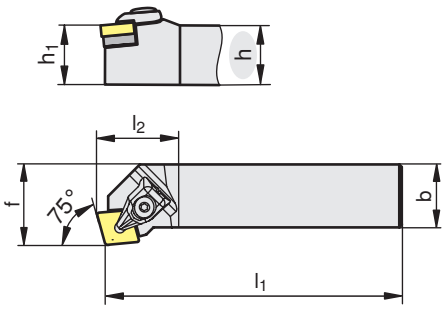




Bild zeigt Rechtsausführung

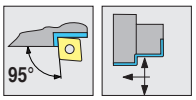
| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 25 | DCKNR 2525 M12 | R | 25 | 25 | 150 | 29,1 | 32 | CN.. 1204.. | E01 |
| 25 | DCKNL 2525 M12 | L | 25 | 25 | 150 | 29,1 | 32 | CN.. 1204.. | E01 |

| | | | | |
|---|---|---|---|---|
| E01 | 11224545 | 11224494 | 11211558 | 11224503 |

A303 | A63-A66 | A79

# DCLN...

MaxiLock D





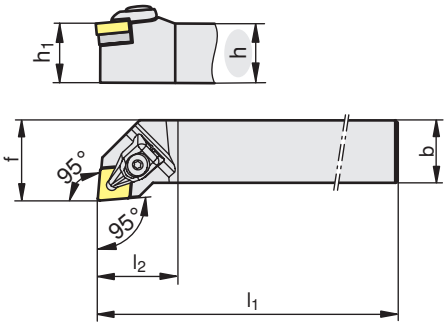




Bild zeigt Rechtsausführung

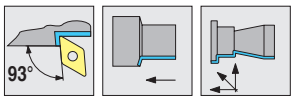
| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | DCLNR 1616 H09 | R | 16 | 16 | 100 | 23 | 20 | CN.. 0903.. | E01 |
| 16 | DCLNL 1616 H09 | L | 16 | 16 | 100 | 23 | 20 | CN.. 0903.. | E01 |
| 20 | DCLNR 2020 K09 | R | 20 | 20 | 125 | 24 | 25 | CN.. 0903.. | E01 |
| 20 | DCLNL 2020 K09 | L | 20 | 20 | 125 | 24 | 25 | CN.. 0903.. | E01 |
| 20 | DCLNR 2020 K12 | R | 20 | 20 | 125 | 32 | 25 | CN.. 1204.. | E02 |
| 20 | DCLNL 2020 K12 | L | 20 | 20 | 125 | 32 | 25 | CN.. 1204.. | E02 |
| 25 | DCLNR 2525 M12 | R | 25 | 25 | 150 | 32 | 32 | CN.. 1204.. | E02 |
| 25 | DCLNL 2525 M12 | L | 25 | 25 | 150 | 32 | 32 | CN.. 1204.. | E02 |
| 32 | DCLNR 3225 P12 | R | 32 | 25 | 170 | 32 | 32 | CN.. 1204.. | E02 |
| 32 | DCLNL 3225 P12 | L | 32 | 25 | 170 | 32 | 32 | CN.. 1204.. | E02 |
| 25 | DCLNR 2525 M16 | R | 25 | 25 | 150 | 38 | 32 | CN.. 1606.. | E03 |
| 25 | DCLNL 2525 M16 | L | 25 | 25 | 150 | 38 | 32 | CN.. 1606.. | E03 |
| 32 | DCLNR 3232 P16 | R | 32 | 32 | 170 | 37 | 40 | CN.. 1606.. | E03 |
| 32 | DCLNL 3232 P16 | L | 32 | 32 | 170 | 37 | 40 | CN.. 1606.. | E03 |
| 32 | DCLNR 3232 P19 | R | 32 | 32 | 170 | 42 | 40 | CN.. 1906.. | E04 |
| 32 | DCLNL 3232 P19 | L | 32 | 32 | 170 | 42 | 40 | CN.. 1906.. | E04 |
| 40 | DCLNR 4040 S19 | R | 40 | 40 | 250 | 42 | 50 | CN.. 1906.. | E04 |
| 40 | DCLNL 4040 S19 | L | 40 | 40 | 250 | 42 | 50 | CN.. 1906.. | E04 |
| 40 | DCLNR 4040 S25 | R | 40 | 40 | 250 | 60 | 50 | CN.. 2509.. | E05 |
| 40 | DCLNL 4040 S25 | L | 40 | 40 | 250 | 60 | 50 | CN.. 2509.. | E05 |

| | | | | |
|---|---|---|---|---|
| E01 | 11227306 | 11227305 | 11577861 | 11227314 |
| E02 | 11224545 | 11224494 | 11211558 | 11224503 |
| E03 | 11227322 | 11227318 | 11227315 | 11227323 |
| E04 | 11227325 | 11227318 | 11227316 | 11227323 |
| E05 | 11227328 | 11227329 | 11579427 | 11227330 |


A303


A63-A66


A79





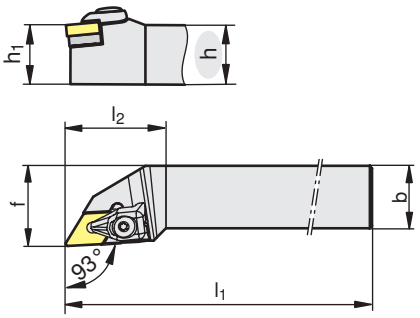




Bild zeigt Rechtsausführung

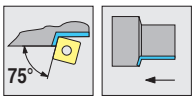
| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | DDJNR 1616 H11 | R | 16 | 16 | 100 | 33 | 20 | DN.. 1104.. | E01 |
| 16 | DDJNL 1616 H11 | L | 16 | 16 | 100 | 33 | 20 | DN.. 1104.. | E01 |
| 20 | DDJNR 2020 K11 | R | 20 | 20 | 125 | 40 | 25 | DN.. 1104.. | E01 |
| 20 | DDJNL 2020 K11 | L | 20 | 20 | 125 | 40 | 25 | DN.. 1104.. | E01 |
| 25 | DDJNR 2525 M11 | R | 25 | 25 | 150 | 40 | 32 | DN.. 1104.. | E01 |
| 25 | DDJNL 2525 M11 | L | 25 | 25 | 150 | 40 | 32 | DN.. 1104.. | E01 |
| 20 | DDJNR 2020 K15 | R | 20 | 20 | 125 | 40 | 25 | DN.. 1506.. | E02 |
| 20 | DDJNL 2020 K15 | L | 20 | 20 | 125 | 40 | 25 | DN.. 1506.. | E02 |
| 25 | DDJNR 2525 M15 | R | 25 | 25 | 150 | 40 | 32 | DN.. 1506.. | E02 |
| 25 | DDJNL 2525 M15 | L | 25 | 25 | 150 | 40 | 32 | DN.. 1506.. | E02 |
| 32 | DDJNR 3225 P15 | R | 32 | 25 | 170 | 40 | 32 | DN.. 1506.. | E02 |
| 32 | DDJNL 3225 P15 | L | 32 | 25 | 170 | 40 | 32 | DN.. 1506.. | E02 |

| | | | | |
|---|---|---|---|---|
| E01 | 11258694 | 11227305 | 11227308 | 11227314 |
| E02 | 11224545 | 11224494 | 11211562 | 11224503 |

A303 A67-A69 A79

# DSBN...

MaxiLock D





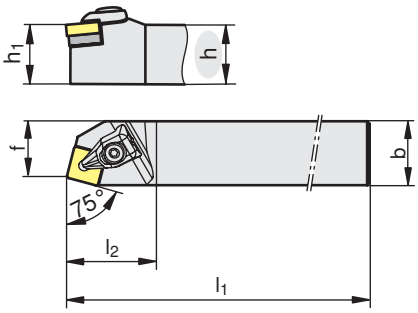
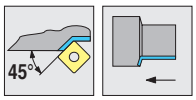




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 20 | DSBNR 2020 K12 | R | 20 | 20 | 125 | 35 | 17 | SN.. 1204.. | E01 |
| 20 | DSBNL 2020 K12 | L | 20 | 20 | 125 | 35 | 17 | SN.. 1204.. | E01 |
| 25 | DSBNR 2525 M12 | R | 25 | 25 | 150 | 35 | 22 | SN.. 1204.. | E01 |
| 25 | DSBNL 2525 M12 | L | 25 | 25 | 150 | 35 | 22 | SN.. 1204.. | E01 |
| 25 | DSBNR 2525 M15 | R | 25 | 25 | 150 | 43 | 22 | SN.. 1506.. | E02 |
| 25 | DSBNL 2525 M15 | L | 25 | 25 | 150 | 43 | 22 | SN.. 1506.. | E02 |
| 32 | DSBNR 3232 P15 | R | 32 | 32 | 170 | 42 | 27 | SN.. 1506.. | E02 |
| 32 | DSBNL 3232 P15 | L | 32 | 32 | 170 | 42 | 27 | SN.. 1506.. | E02 |
| 32 | DSBNR 3232 P19 | R | 32 | 32 | 170 | 48 | 27 | SN.. 1906.. | E03 |
| 32 | DSBNL 3232 P19 | L | 32 | 32 | 170 | 48 | 27 | SN.. 1906.. | E03 |
| 40 | DSBNR 4040 S19 | R | 40 | 40 | 250 | 48 | 35 | SN.. 1906.. | E03 |
| 40 | DSBNL 4040 S19 | L | 40 | 40 | 250 | 48 | 35 | SN.. 1906.. | E03 |
| 40 | DSBNR 4040 S25 | R | 40 | 40 | 250 | 57 | 35 | SN.. 2507.. | E04 |
| 40 | DSBNL 4040 S25 | L | 40 | 40 | 250 | 57 | 35 | SN.. 2507.. | E04 |

| | | | | |
|---|---|---|---|---|
| E01 | 11224545 | 11224494 | 11211561 | 11224503 |
| E02 | 11227322 | 11227318 | 11247269 | 11227323 |
| E03 | 11227325 | 11227318 | 11227317 | 11227323 |
| E04 | 11227328 | 11227329 | 11227319 | 11227330 |

A303 A70-A72 A80





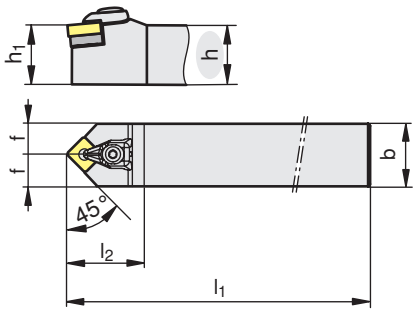




Bild zeigt neutrale Ausführung

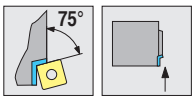
| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 20 | DSDNN 2020 K12 | N | 20 | 20 | 125 | 38 | 10 | SN.. 1204.. | E01 |
| 25 | DSDNN 2525 M12 | N | 25 | 25 | 150 | 38 | 12,5 | SN.. 1204.. | E01 |

| | | | | |
|---|---|---|---|---|
| E01 | 11224545 | 11224494 | 11211561 | 11224503 |

A303 | A70-A72 | A80

# DSKN...

MaxiLock D





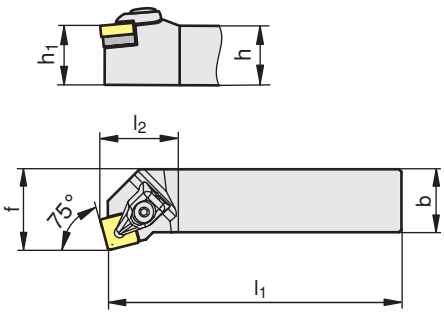
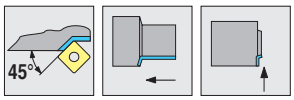




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 25 | DSKNR 2525 M12 | R | 25 | 25 | 150 | 31,0 | 32 | SN.. 1204.. | E01 |
| 25 | DSKNL 2525 M12 | L | 25 | 25 | 150 | 31,0 | 32 | SN.. 1204.. | E01 |

| | | | | |
|---|---|---|---|---|
| E01 | 11224545 | 11224494 | 11211561 | 11224503 |

A303 | A70-A72 | A80





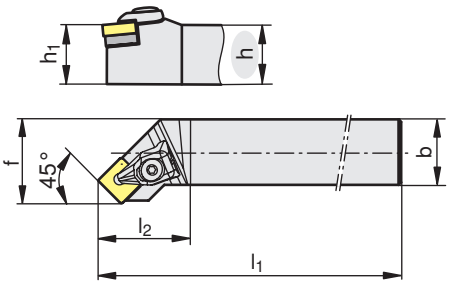




Bild zeigt Rechtsausführung

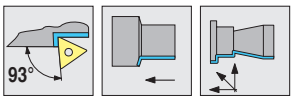
| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 20 | DSSNR 2020 K12 | R | 20 | 20 | 125 | 35 | 25 | SN.. 1204.. | E01 |
| 20 | DSSNL 2020 K12 | L | 20 | 20 | 125 | 35 | 25 | SN.. 1204.. | E01 |
| 25 | DSSNR 2525 M12 | R | 25 | 25 | 150 | 35 | 32 | SN.. 1204.. | E01 |
| 25 | DSSNL 2525 M12 | L | 25 | 25 | 150 | 35 | 32 | SN.. 1204.. | E01 |
| 32 | DSSNR 3225 P12 | R | 32 | 25 | 170 | 35 | 32 | SN.. 1204.. | E01 |
| 32 | DSSNL 3225 P12 | L | 32 | 25 | 170 | 35 | 32 | SN.. 1204.. | E01 |

| | | | | |
|---|---|---|---|---|
| E01 | 11224545 | 11224494 | 11211561 | 11224503 |

A303 A70-A72 A80

# DTJN...

MaxiLock D





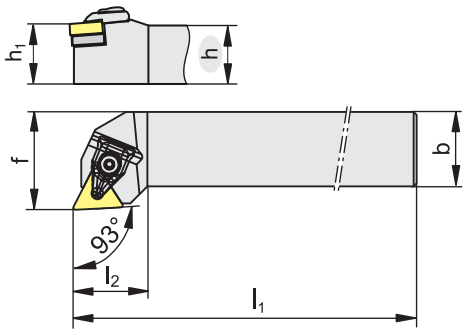
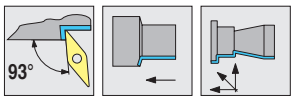




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 20 | DTJNR 2020 K16 | R | 20 | 20 | 125 | 23 | 25 | TN.. 1604.. | E01 |
| 20 | DTJNL 2020 K16 | L | 20 | 20 | 125 | 23 | 25 | TN.. 1604.. | E01 |
| 25 | DTJNR 2525 M16 | R | 25 | 25 | 150 | 24 | 32 | TN.. 1604.. | E01 |
| 25 | DTJNL 2525 M16 | L | 25 | 25 | 150 | 24 | 32 | TN.. 1604.. | E01 |

| | | | | |
|---|---|---|---|---|
| E01 | 11227306 | 11227305 | 11344329 | 11227314 |

A303 A73-A75 A80





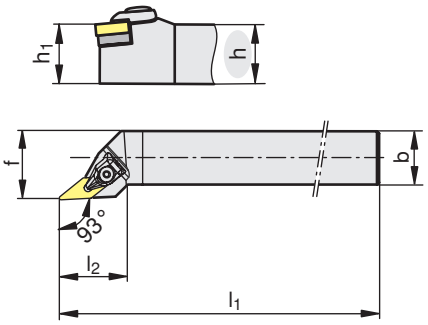




Bild zeigt Rechtsausführung

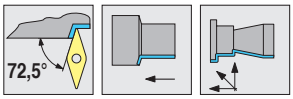
| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 20 | DVJNR 2020 K16 | R | 20 | 20 | 125 | 39 | 25 | VN.. 1604.. | E01 |
| 20 | DVJNL 2020 K16 | L | 20 | 20 | 125 | 39 | 25 | VN.. 1604.. | E01 |
| 25 | DVJNR 2525 M16 | R | 25 | 25 | 150 | 39 | 32 | VN.. 1604.. | E01 |
| 25 | DVJNL 2525 M16 | L | 25 | 25 | 150 | 39 | 32 | VN.. 1604.. | E01 |

| | | | | |
|---|---|---|---|---|
| E01 | 11258694 | 11227305 | 11227311 | 11227314 |

A303 A76 A80

# DVVN...

MaxiLock D





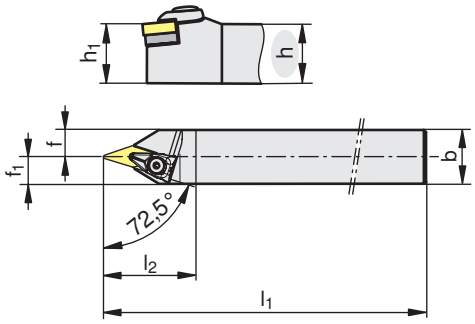
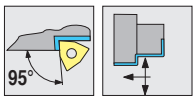




Bild zeigt neutrale Ausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $f_1$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 20 | DVVNN 2020 K16 | N | 20 | 20 | 125 | 43 | 7,5 | 12,5 | VN.. 1604.. | E01 |
| 25 | DVVNN 2525 M16 | N | 25 | 25 | 150 | 43 | 12,5 | 12,5 | VN.. 1604.. | E01 |

| | | | | |
|---|---|---|---|---|
| E01 | 11258694 | 11227305 | 11227311 | 11227314 |

A303 A76 A80





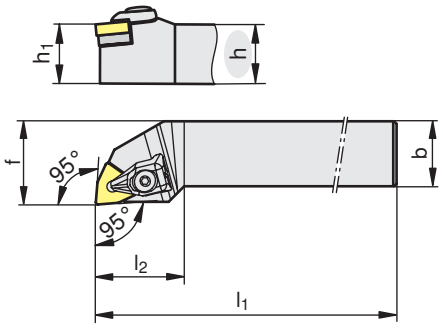




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | DWLNR 1616 H06 | R | 16 | 16 | 100 | 25 | 20 | WN.. 0604.. | E01 |
| 16 | DWLNL 1616 H06 | L | 16 | 16 | 100 | 25 | 20 | WN.. 0604.. | E01 |
| 20 | DWLNR 2020 K06 | R | 20 | 20 | 125 | 27 | 25 | WN.. 0604.. | E01 |
| 20 | DWLNL 2020 K06 | L | 20 | 20 | 125 | 27 | 25 | WN.. 0604.. | E01 |
| 25 | DWLNR 2525 M06 | R | 25 | 25 | 150 | 27 | 32 | WN.. 0604.. | E01 |
| 25 | DWLNL 2525 M06 | L | 25 | 25 | 150 | 27 | 32 | WN.. 0604.. | E01 |
| 20 | DWLNR 2020 K08 | R | 20 | 20 | 125 | 34 | 25 | WN.. 0804.. | E02 |
| 20 | DWLNL 2020 K08 | L | 20 | 20 | 125 | 34 | 25 | WN.. 0804.. | E02 |
| 25 | DWLNR 2525 M08 | R | 25 | 25 | 150 | 34 | 32 | WN.. 0804.. | E02 |
| 25 | DWLNL 2525 M08 | L | 25 | 25 | 150 | 34 | 32 | WN.. 0804.. | E02 |

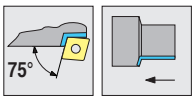
| | | | | |
|---|---|---|---|---|
| E01 | 11227306 | 11227305 | 11227310 | 11227314 |
| E02 | 11224545 | 11224494 | 11211563 | 11224503 |


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A77-A78

# PCBN...

MaxiLock N





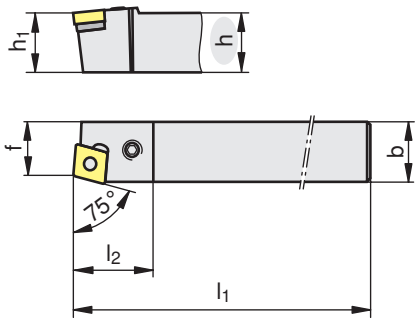
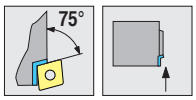




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 25 | PCBNR 2525 M12-T | R | 25 | 25 | 150 | 27,7 | 22 | CN.. 1204.. | E01 |
| 25 | PCBNL 2525 M12-T | L | 25 | 25 | 150 | 27,7 | 22 | CN.. 1204.. | E01 |
| 25 | PCBNR 2525 M16-T | R | 25 | 25 | 150 | 31,8 | 22 | CN.. 1606.. | E02 |
| 25 | PCBNL 2525 M16-T | L | 25 | 25 | 150 | 31,8 | 22 | CN.. 1606.. | E02 |
| 32 | PCBNR 3232 P19-T | R | 32 | 32 | 170 | 38,0 | 27 | CN.. 1906.. | E03 |
| 32 | PCBNL 3232 P19-T | L | 32 | 32 | 170 | 38,0 | 27 | CN.. 1906.. | E03 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 59446 | 59568 | 59437 | 59430 | 86176 | 4771 | 140587 |
| E02 | 59443 | 59451 | 59438 | 59426 | 86177 | 4771 | 140589 |
| E03 | 59448 | 59569 | 59439 | 59434 | 86178 | 4209 | 140590 |

A303 A63-A66 A79





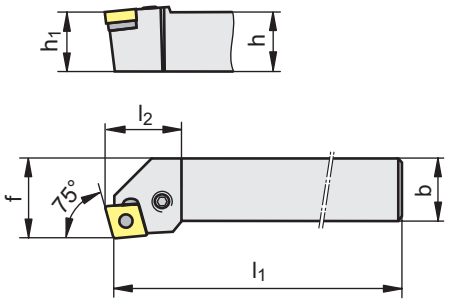




Bild zeigt Rechtsausführung

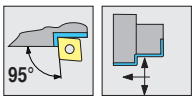
| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 25 | PCKNR 2525 M12-T | R | 25 | 25 | 150 | 31,4 | 32 | CN.. 1204.. | E01 |
| 25 | PCKNL 2525 M12-T | L | 25 | 25 | 150 | 31,4 | 32 | CN.. 1204.. | E01 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 59446 | 59568 | 59437 | 59430 | 86176 | 4771 | 140587 |

| | | |
|---|---|---|
| A303 | A63-A66 | A79 |

# PCLN...

MaxiLock N





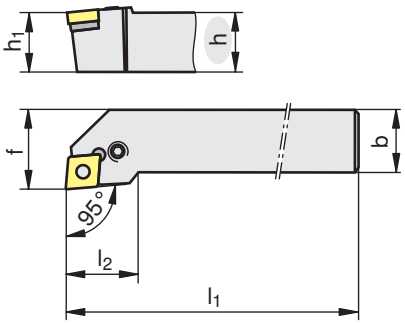
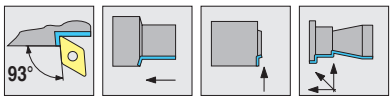




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | PCLNR 1616 H12-T | R | 16 | 16 | 100 | 26,2 | 20 | CN.. 1204.. | E01 |
| 16 | PCLNL 1616 H12-T | L | 16 | 16 | 100 | 26,2 | 20 | CN.. 1204.. | E01 |
| 20 | PCLNR 2020 K12-T | R | 20 | 20 | 125 | 27,4 | 25 | CN.. 1204.. | E02 |
| 20 | PCLNL 2020 K12-T | L | 20 | 20 | 125 | 27,4 | 25 | CN.. 1204.. | E02 |
| 25 | PCLNR 2525 M12-T | R | 25 | 25 | 150 | 28 | 32 | CN.. 1204.. | E02 |
| 25 | PCLNL 2525 M12-T | L | 25 | 25 | 150 | 28 | 32 | CN.. 1204.. | E02 |
| 32 | PCLNR 3225 P12-T | R | 32 | 25 | 170 | 32,6 | 32 | CN.. 1204.. | E02 |
| 32 | PCLNL 3225 P12-T | L | 32 | 25 | 170 | 32,6 | 32 | CN.. 1204.. | E02 |
| 25 | PCLNR 2525 M16-T | R | 25 | 25 | 150 | 32,7 | 32 | CN.. 1606.. | E03 |
| 25 | PCLNL 2525 M16-T | L | 25 | 25 | 150 | 32,7 | 32 | CN.. 1606.. | E03 |
| 32 | PCLNR 3232 P16-T | R | 32 | 32 | 170 | 32,6 | 40 | CN.. 1606.. | E03 |
| 32 | PCLNL 3232 P16-T | L | 32 | 32 | 170 | 32,6 | 40 | CN.. 1606.. | E03 |
| 32 | PCLNR 3232 P19-T | R | 32 | 32 | 170 | 38 | 40 | CN.. 1906.. | E04 |
| 32 | PCLNL 3232 P19-T | L | 32 | 32 | 170 | 38 | 40 | CN.. 1906.. | E04 |
| 40 | PCLNR 4040 S19-T | R | 40 | 40 | 250 | 38 | 50 | CN.. 1906.. | E04 |
| 40 | PCLNL 4040 S19-T | L | 40 | 40 | 250 | 38 | 50 | CN.. 1906.. | E04 |
| 40 | PCLNR 4040 S25 | R | 40 | 40 | 250 | 50 | 50 | CN.. 2509.. | E05 |
| 40 | PCLNL 4040 S25 | L | 40 | 40 | 250 | 50 | 50 | CN.. 2509.. | E05 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 59442 | 59568 | 59437 | 59430 | 86176 | 4771 | 140586 |
| E02 | 59446 | 59568 | 59437 | 59430 | 86176 | 4771 | 140587 |
| E03 | 59443 | 59451 | 59438 | 59426 | 86177 | 4771 | 140589 |
| E04 | 59448 | 59569 | 59439 | 59434 | 86178 | 4209 | 140590 |
| E05 | 59449 | 11294214 | 59440 | 59435 | 86182 | 4496 | |

A303 A63-A66 A79





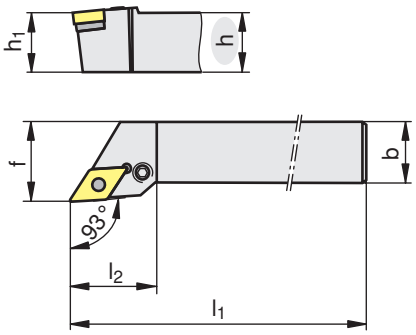




Bild zeigt Rechtsausführung

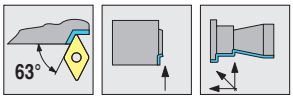
| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | PDJNR 1616 H11 | R | 16 | 16 | 100 | 26 | 20 | DN.. 1104.. | E01 |
| 16 | PDJNL 1616 H11 | L | 16 | 16 | 100 | 26 | 20 | DN.. 1104.. | E01 |
| 20 | PDJNR 2020 K11 | R | 20 | 20 | 125 | 30 | 25 | DN.. 1104.. | E01 |
| 20 | PDJNL 2020 K11 | L | 20 | 20 | 125 | 30 | 25 | DN.. 1104.. | E01 |
| 25 | PDJNR 2525 M11 | R | 25 | 25 | 150 | 30 | 32 | DN.. 1104.. | E01 |
| 25 | PDJNL 2525 M11 | L | 25 | 25 | 150 | 30 | 32 | DN.. 1104.. | E01 |
| 20 | PDJNR 2020 K15-T | R | 20 | 20 | 125 | 34,9 | 25 | DN.. 1506.. | E02 |
| 20 | PDJNL 2020 K15-T | L | 20 | 20 | 125 | 34,9 | 25 | DN.. 1506.. | E02 |
| 25 | PDJNR 2525 M15-T | R | 25 | 25 | 150 | 34,7 | 32 | DN.. 1506.. | E02 |
| 25 | PDJNL 2525 M15-T | L | 25 | 25 | 150 | 34,7 | 32 | DN.. 1506.. | E02 |
| 32 | PDJNR 3225 P15-T | R | 32 | 25 | 170 | 34,7 | 32 | DN.. 1506.. | E02 |
| 32 | PDJNR 3232 P15-T | R | 32 | 32 | 170 | 34,7 | 40 | DN.. 1506.. | E02 |
| 32 | PDJNL 3225 P15-T | L | 32 | 25 | 170 | 34,7 | 32 | DN.. 1506.. | E02 |
| 32 | PDJNL 3232 P15-T | L | 32 | 32 | 170 | 34,7 | 40 | DN.. 1506.. | E02 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 59445 | 293140 | 293147 | 293143 | 86174 | 4770 | 293151 |
| E02 | 59443 | 59570 | 59437 | 59432 | 86176 | 4771 | 140591 |

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# PDNN...

MaxiLock N





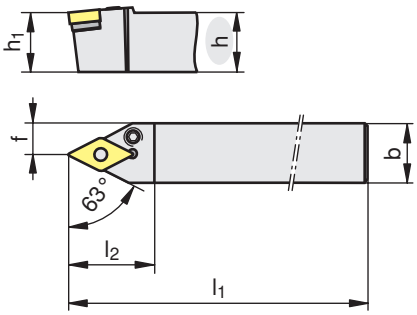




Bild zeigt neutrale Ausführung

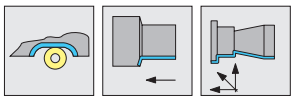
| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 25 | PDNNR 2525 M11 | R | 25 | 25 | 150 | 30 | 12,5 | DN.. 1104.. | E01 |
| 25 | PDNNL 2525 M11 | L | 25 | 25 | 150 | 30 | 12,5 | DN.. 1104.. | E01 |
| 25 | PDNNR 2525 M15-T | R | 25 | 25 | 150 | 37,4 | 12,5 | DN.. 1506.. | E02 |
| 25 | PDNNL 2525 M15-T | L | 25 | 25 | 150 | 37,4 | 12,5 | DN.. 1506.. | E02 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 59445 | 293140 | 293147 | 293143 | 86174 | 4770 | 293151 |
| E02 | 59443 | 59570 | 59437 | 59432 | 86176 | 4771 | 140591 |


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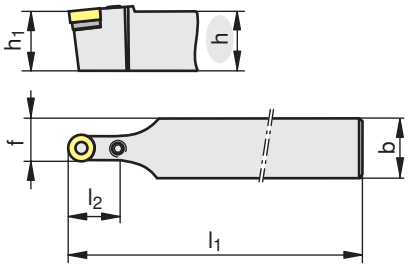
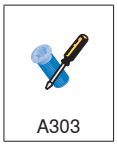
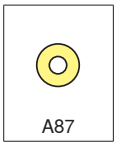



Bild zeigt neutrale Ausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 25 | PRDCN 2525 M12-T | N | 25 | 25 | 150 | 24 | 18,5 | RC.. 1204.. | E01 |
| 32 | PRDCN 3225 P12-T | N | 32 | 25 | 170 | 24 | 18,5 | RC.. 1204.. | E01 |
| 32 | PRDCN 3225 P16-T | N | 32 | 25 | 170 | 28 | 20,5 | RC.. 1606.. | E02 |
| 32 | PRDCN 3232 P20-T | N | 32 | 32 | 170 | 32 | 26 | RC.. 2006.. | E03 |
| 40 | PRDCN 4040 S25-T | N | 40 | 40 | 250 | 42 | 32,5 | RC.. 2507.. | E04 |

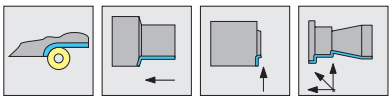
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 59445 | 154563 | 59436 | 154568 | 86174 | 4770 | 154578 |
| E02 | 154575 | 154564 | 154577 | 154570 | 86176 | 4771 | 154579 |
| E03 | 59441 | 154565 | 59438 | 154571 | 86177 | 4773 | 154580 |
| E04 | 154576 | 154566 | 59439 | 154572 | 86178 | 4209 | 154581 |


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# PRGC...

MaxiLock N





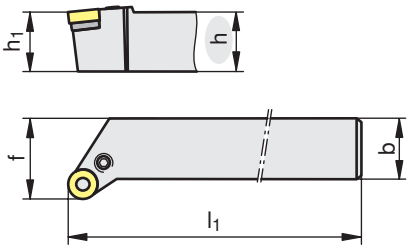


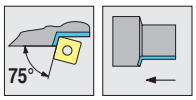

Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 25 | PRGCR 2525 M12-T | R | 25 | 25 | 150 | 32 | RC.. 1204.. | E01 |
| 25 | PRGCL 2525 M12-T | L | 25 | 25 | 150 | 32 | RC.. 1204.. | E01 |
| 32 | PRGCR 3225 P12-T | R | 32 | 25 | 170 | 32 | RC.. 1204.. | E01 |
| 32 | PRGCL 3225 P12-T | L | 32 | 25 | 170 | 32 | RC.. 1204.. | E01 |
| 32 | PRGCR 3225 P16-T | R | 32 | 25 | 170 | 32 | RC.. 1606.. | E02 |
| 32 | PRGCR 3232 P20-T | R | 32 | 32 | 170 | 40 | RC.. 2006.. | E03 |
| 32 | PRGCL 3232 P20-T | L | 32 | 32 | 170 | 40 | RC.. 2006.. | E03 |
| 40 | PRGCR 4040 S25-T | R | 40 | 40 | 250 | 50 | RC.. 2507.. | E04 |
| 40 | PRGCL 4040 S25-T | L | 40 | 40 | 250 | 50 | RC.. 2507.. | E04 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 59445 | 154563 | 59436 | 154568 | 86174 | 4770 | 154578 |
| E02 | 154575 | 154564 | 154577 | 154570 | 86176 | 4771 | 154579 |
| E03 | 59441 | 154565 | 59438 | 154571 | 86177 | 4773 | 154580 |
| E04 | 154576 | 154566 | 59439 | 154572 | 86178 | 4209 | 154581 |


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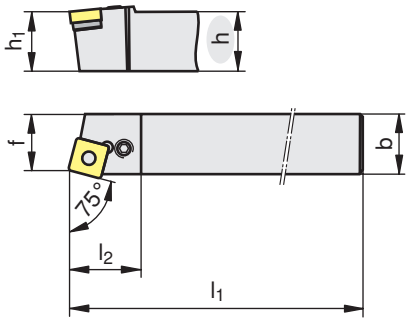




Bild zeigt Rechtsausführung

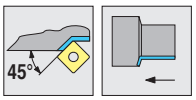
| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 20 | PSBNR 2020 K12-T | R | 20 | 20 | 125 | 27,5 | 17 | SN.. 1204.. | E01 |
| 20 | PSBNL 2020 K12-T | L | 20 | 20 | 125 | 27,5 | 17 | SN.. 1204.. | E01 |
| 25 | PSBNR 2525 M12-T | R | 25 | 25 | 150 | 27,5 | 22 | SN.. 1204.. | E01 |
| 25 | PSBNL 2525 M12-T | L | 25 | 25 | 150 | 27,5 | 22 | SN.. 1204.. | E01 |
| 32 | PSBNR 3225 P12-T | R | 32 | 25 | 170 | 32 | 22 | SN.. 1204.. | E01 |
| 32 | PSBNL 3225 P12-T | L | 32 | 25 | 170 | 32 | 22 | SN.. 1204.. | E01 |
| 25 | PSBNR 2525 M15-T | R | 25 | 25 | 150 | 32,5 | 22 | SN.. 1506.. | E02 |
| 25 | PSBNL 2525 M15-T | L | 25 | 25 | 150 | 32,5 | 22 | SN.. 1506.. | E02 |
| 32 | PSBNR 3232 P15-T | R | 32 | 32 | 170 | 32 | 27 | SN.. 1506.. | E02 |
| 32 | PSBNL 3232 P15-T | L | 32 | 32 | 170 | 32 | 27 | SN.. 1506.. | E02 |
| 32 | PSBNR 3232 P19-T | R | 32 | 32 | 170 | 39,2 | 27 | SN.. 1906.. | E03 |
| 32 | PSBNL 3232 P19-T | L | 32 | 32 | 170 | 39,2 | 27 | SN.. 1906.. | E03 |
| 40 | PSBNR 4040 S19-T | R | 40 | 40 | 250 | 38,5 | 35 | SN.. 1906.. | E03 |
| 40 | PSBNL 4040 S19-T | L | 40 | 40 | 250 | 38,5 | 35 | SN.. 1906.. | E03 |
| 40 | PSBNR 4040 S25-T | R | 40 | 40 | 250 | 48,0 | 35 | SN.. 2507.. | E04 |
| 40 | PSBNL 4040 S25-T | L | 40 | 40 | 250 | 48,0 | 35 | SN.. 2507.. | E04 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 59446 | 59564 / 59547 | 59437 | 59430 | 86176 | 4771 | 140595 |
| E02 | 59443 | 59549 | 59438 | 59426 | 86177 | 4771 | 140596 |
| E03 | 59448 | 59566 | 59439 | 59434 | 86178 | 4209 | 140597 |
| E04 | 59449 | 59567 | 59440 | 59435 | 86182 | 4496 | 140599 |

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# PSDN...

MaxiLock N





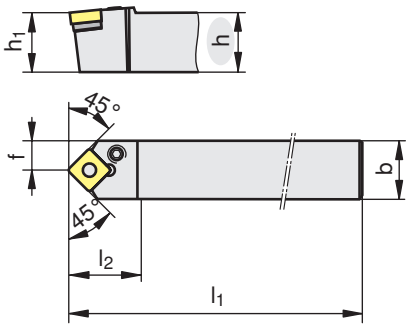
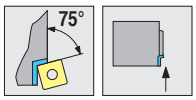




Bild zeigt neutrale Ausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | PSDNN 1616 H09-T | N | 16 | 16 | 100 | 21,5 | 8,0 | SN.. 0903.. | E01 |
| 20 | PSDNN 2020 K12-T | N | 20 | 20 | 125 | 27,6 | 10,0 | SN.. 1204.. | E02 |
| 25 | PSDNN 2525 M12-T | N | 25 | 25 | 150 | 27,6 | 12,5 | SN.. 1204.. | E02 |
| 32 | PSDNN 3225 P19-T | N | 32 | 25 | 170 | 40,4 | 12,5 | SN.. 1906.. | E03 |
| 40 | PSDNN 4040 S25-T | N | 40 | 40 | 250 | 48,8 | 20 | SN.. 2507.. | E04 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 59445 | 59562 | 59436 | 59429 | 86174 | 4770 | 154584 |
| E02 | 59446 | 59564 / 59547 | 59437 | 59430 | 86176 | 4771 | 140595 |
| E03 | 59448 | 59566 | 59439 | 59434 | 86178 | 4209 | 140597 |
| E04 | 59449 | 59567 | 59440 | 59435 | 86182 | 4496 | 140599 |

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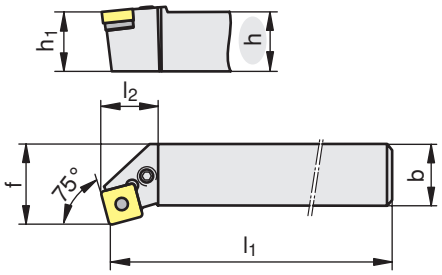
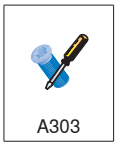
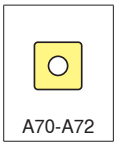



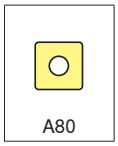

Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | PSKNR 1616 H09-T | R | 16 | 16 | 100 | 18,6 | 20 | SN.. 0903.. | E01 |
| 16 | PSKNL 1616 H09-T | L | 16 | 16 | 100 | 18,6 | 20 | SN.. 0903.. | E01 |
| 20 | PSKNR 2020 K12-T | R | 20 | 20 | 125 | 24,1 | 25 | SN.. 1204.. | E02 |
| 20 | PSKNL 2020 K12-T | L | 20 | 20 | 125 | 24,1 | 25 | SN.. 1204.. | E02 |
| 25 | PSKNR 2525 M12-T | R | 25 | 25 | 150 | 24,1 | 32 | SN.. 1204.. | E02 |
| 25 | PSKNL 2525 M12-T | L | 25 | 25 | 150 | 24,1 | 32 | SN.. 1204.. | E02 |
| 32 | PSKNR 3225 P12-T | R | 32 | 25 | 170 | 24,1 | 32 | SN.. 1204.. | E02 |
| 32 | PSKNL 3225 P12-T | L | 32 | 25 | 170 | 24,1 | 32 | SN.. 1204.. | E02 |
| 40 | PSKNR 4040 S19-T | R | 40 | 40 | 250 | 38,3 | 50 | SN.. 1906.. | E03 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 59445 | 59562 | 59436 | 59429 | 86174 | 4770 | 154584 |
| E02 | 59446 | 59564 / 59547 | 59437 | 59430 | 86176 | 4771 | 140595 |
| E03 | 59448 | 59566 | 59439 | 59434 | 86178 | 4209 | 140597 |

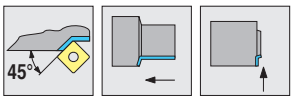

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# PSSN...

MaxiLock N





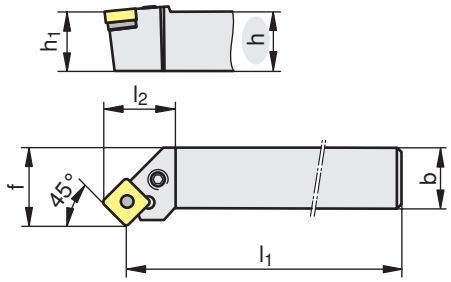




Bild zeigt Rechtsausführung

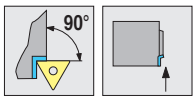
| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | PSSNR 1616 H09-T | R | 16 | 16 | 100 | 23,0 | 20 | SN.. 0903.. | E01 |
| 16 | PSSNL 1616 H09-T | L | 16 | 16 | 100 | 23,0 | 20 | SN.. 0903.. | E01 |
| 20 | PSSNR 2020 K12-T | R | 20 | 20 | 125 | 27,3 | 25 | SN.. 1204.. | E02 |
| 20 | PSSNL 2020 K12-T | L | 20 | 20 | 125 | 27,3 | 25 | SN.. 1204.. | E02 |
| 25 | PSSNR 2525 M12-T | R | 25 | 25 | 150 | 29,3 | 32 | SN.. 1204.. | E02 |
| 25 | PSSNL 2525 M12-T | L | 25 | 25 | 150 | 29,3 | 32 | SN.. 1204.. | E02 |
| 32 | PSSNR 3225 P12-T | R | 32 | 25 | 170 | 29,3 | 32 | SN.. 1204.. | E02 |
| 32 | PSSNL 3225 P12-T | L | 32 | 25 | 170 | 29,3 | 32 | SN.. 1204.. | E02 |
| 25 | PSSNR 2525 M15-T | R | 25 | 25 | 150 | 32,5 | 32 | SN.. 1506.. | E03 |
| 32 | PSSNR 3232 P15-T | R | 32 | 32 | 170 | 37,5 | 40 | SN.. 1506.. | E03 |
| 32 | PSSNR 3232 P19-T | R | 32 | 32 | 170 | 40,2 | 40 | SN.. 1906.. | E04 |
| 32 | PSSNL 3232 P19-T | L | 32 | 32 | 170 | 40,2 | 40 | SN.. 1906.. | E04 |
| 40 | PSSNR 4040 S25-T | R | 40 | 40 | 250 | 48,8 | 50 | SN.. 2507.. | E05 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 59445 | 59562 | 59436 | 59429 | 86174 | 4770 | 154584 |
| E02 | 59446 | 59564 / 59547 | 59437 | 59430 | 86176 | 4771 | 140595 |
| E03 | 59443 | 59549 | 59438 | 59426 | 86177 | 4771 | 140596 |
| E04 | 59448 | 59566 | 59439 | 59434 | 86178 | 4209 | 140597 |
| E05 | 59449 | 59567 | 59440 | 59435 | 86182 | 4496 | 140599 |

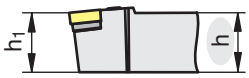

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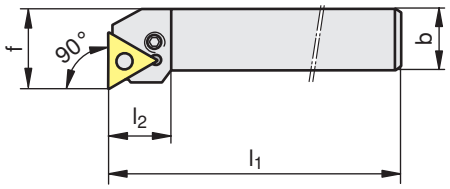




Bild zeigt Rechtsausführung

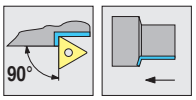
| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | PTFNR 1616 H16-T | R | 16 | 16 | 100 | 20,2 | 20 | TN.. 1604.. | E01 |
| 16 | PTFNL 1616 H16-T | L | 16 | 16 | 100 | 20,2 | 20 | TN.. 1604.. | E01 |
| 20 | PTFNR 2020 K16-T | R | 20 | 20 | 125 | 20,5 | 25 | TN.. 1604.. | E01 |
| 20 | PTFNL 2020 K16-T | L | 20 | 20 | 125 | 20,5 | 25 | TN.. 1604.. | E01 |
| 25 | PTFNR 2525 M16-T | R | 25 | 25 | 150 | 25 | 32 | TN.. 1604.. | E01 |
| 25 | PTFNL 2525 M16-T | L | 25 | 25 | 150 | 25 | 32 | TN.. 1604.. | E01 |
| 25 | PTFNR 2525 M22-T | R | 25 | 25 | 150 | 25,2 | 32 | TN.. 2204.. | E02 |
| 25 | PTFNL 2525 M22-T | L | 25 | 25 | 150 | 25,2 | 32 | TN.. 2204.. | E02 |
| 32 | PTFNR 3225 P22-T | R | 32 | 25 | 170 | 25 | 32 | TN.. 2204.. | E02 |
| 32 | PTFNL 3225 P22-T | L | 32 | 25 | 170 | 25 | 32 | TN.. 2204.. | E02 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 59445 | 59556 | 59436 | 59429 | 86174 | 4770 | 140601 |
| E02 | 59446 | 59557 | 59437 | 59430 | 86176 | 4771 | 140602 |

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# PTGN...

MaxiLock N





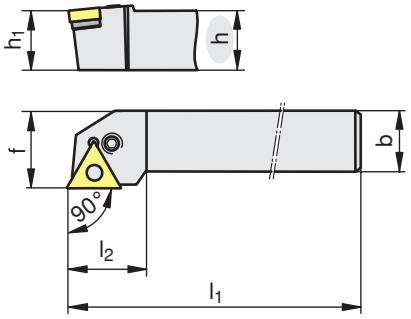
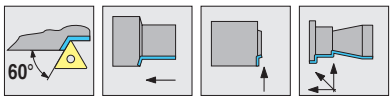




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | PTGNR 1616 H16-T | R | 16 | 16 | 100 | 20 | 20 | TN.. 1604.. | E01 |
| 16 | PTGNL 1616 H16-T | L | 16 | 16 | 100 | 20 | 20 | TN.. 1604.. | E01 |
| 20 | PTGNR 2020 K16-T | R | 20 | 20 | 125 | 20 | 25 | TN.. 1604.. | E01 |
| 20 | PTGNL 2020 K16-T | L | 20 | 20 | 125 | 20 | 25 | TN.. 1604.. | E01 |
| 25 | PTGNR 2525 M16-T | R | 25 | 25 | 150 | 22,2 | 32 | TN.. 1604.. | E01 |
| 25 | PTGNL 2525 M16-T | L | 25 | 25 | 150 | 22,2 | 32 | TN.. 1604.. | E01 |
| 32 | PTGNR 3225 P16-T | R | 32 | 25 | 170 | 22 | 32 | TN.. 1604.. | E01 |
| 32 | PTGNL 3225 P16-T | L | 32 | 25 | 170 | 22 | 32 | TN.. 1604.. | E01 |
| 25 | PTGNR 2525 M22-T | R | 25 | 25 | 150 | 29 | 32 | TN.. 2204.. | E02 |
| 25 | PTGNL 2525 M22-T | L | 25 | 25 | 150 | 29 | 32 | TN.. 2204.. | E02 |
| 32 | PTGNR 3232 P22-T | R | 32 | 32 | 170 | 29 | 40 | TN.. 2204.. | E02 |
| 32 | PTGNL 3232 P22-T | L | 32 | 32 | 170 | 29 | 40 | TN.. 2204.. | E02 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 59445 | 59556 | 59436 | 59429 | 86174 | 4770 | 140601 |
| E02 | 59446 | 59557 | 59437 | 59430 | 86176 | 4771 | 140602 |

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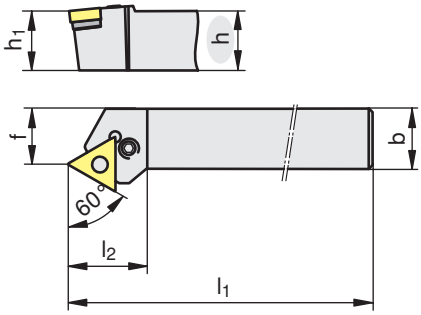



Bild zeigt Rechtsausführung

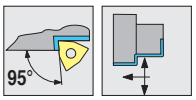
| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 20 | PTTNR 2020 K16-T | R | 20 | 20 | 125 | 25,9 | 17 | TN.. 1604.. | E01 |
| 20 | PTTNL 2020 K16-T | L | 20 | 20 | 125 | 25,9 | 17 | TN.. 1604.. | E01 |
| 25 | PTTNR 2525 M22-T | R | 25 | 25 | 150 | 32,7 | 22 | TN.. 2204.. | E02 |
| 25 | PTTNL 2525 M22-T | L | 25 | 25 | 150 | 32,7 | 22 | TN.. 2204.. | E02 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 59445 | 59556 | 59436 | 59429 | 86174 | 4770 | 140601 |
| E02 | 59446 | 59557 | 59437 | 59430 | 86176 | 4771 | 140602 |

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# PWLN...

MaxiLock N





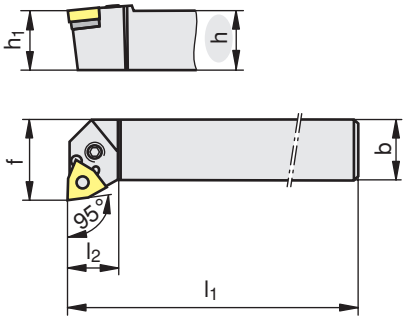
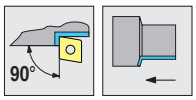




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | PWLNR 1616 H06 | R | 16 | 16 | 100 | 20 | 20 | WN.. 0604.. | E01 |
| 16 | PWLNL 1616 H06 | L | 16 | 16 | 100 | 20 | 20 | WN.. 0604.. | E01 |
| 20 | PWLNR 2020 K06 | R | 20 | 20 | 125 | 25 | 25 | WN.. 0604.. | E01 |
| 20 | PWLNL 2020 K06 | L | 20 | 20 | 125 | 25 | 25 | WN.. 0604.. | E01 |
| 25 | PWLNR 2525 M06 | R | 25 | 25 | 150 | 25 | 32 | WN.. 0604.. | E01 |
| 25 | PWLNL 2525 M06 | L | 25 | 25 | 150 | 25 | 32 | WN.. 0604.. | E01 |
| 20 | PWLNR 2020 K08 | R | 20 | 20 | 125 | 22 | 25 | WN.. 0804.. | E02 |
| 20 | PWLNL 2020 K08 | L | 20 | 20 | 125 | 22 | 25 | WN.. 0804.. | E02 |
| 25 | PWLNR 2525 M08 | R | 25 | 25 | 150 | 22 | 32 | WN.. 0804.. | E02 |
| 25 | PWLNL 2525 M08 | L | 25 | 25 | 150 | 22 | 32 | WN.. 0804.. | E02 |
| 32 | PWLNR 3225 P08 | R | 32 | 25 | 170 | 22 | 32 | WN.. 0804.. | E02 |
| 32 | PWLNL 3225 P08 | L | 32 | 25 | 170 | 22 | 32 | WN.. 0804.. | E02 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 59445 | 293139 | 293147 | 59429 | 86174 | 4770 | 293148 |
| E02 | 59446 | 218151 | 59437 | 59430 | 86176 | 4771 | 222127 |

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A77-A78





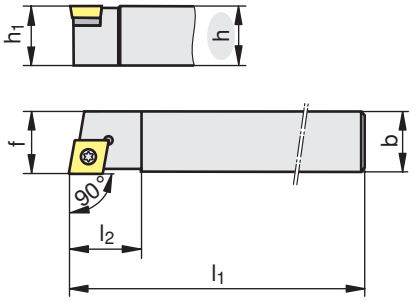




Bild zeigt Rechtsausführung

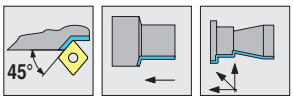
| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 8 | SCACR 0808 D06 | R | 8 | 8 | 60 | 9 | 8 | CC.. 0602.. | E01 |
| 8 | SCACR 0808 K06 | R | 8 | 8 | 125 | 9 | 8 | CC.. 0602.. | E01 |
| 8 | SCACL 0808 D06 | L | 8 | 8 | 60 | 9 | 8 | CC.. 0602.. | E01 |
| 8 | SCACL 0808 K06 | L | 8 | 8 | 125 | 9 | 8 | CC.. 0602.. | E01 |
| 10 | SCACR 1010 E06 | R | 10 | 10 | 70 | 9 | 10 | CC.. 0602.. | E01 |
| 10 | SCACR 1010 M06 | R | 10 | 10 | 150 | 9 | 10 | CC.. 0602.. | E01 |
| 10 | SCACL 1010 E06 | L | 10 | 10 | 70 | 9 | 10 | CC.. 0602.. | E01 |
| 10 | SCACL 1010 M06 | L | 10 | 10 | 150 | 9 | 10 | CC.. 0602.. | E01 |
| 12 | SCACR 1212 F09 | R | 12 | 12 | 80 | 13 | 12 | CC.. 09T3.. | E02 |
| 12 | SCACR 1212 M09 | R | 12 | 12 | 150 | 13 | 12 | CC.. 09T3.. | E02 |
| 12 | SCACL 1212 F09 | L | 12 | 12 | 80 | 13 | 12 | CC.. 09T3.. | E02 |
| 12 | SCACL 1212 M09 | L | 12 | 12 | 150 | 13 | 12 | CC.. 09T3.. | E02 |
| 14 | SCACR 1414 M09 | R | 14 | 14 | 150 | 13 | 14 | CC.. 09T3.. | E02 |
| 14 | SCACL 1414 M09 | L | 14 | 14 | 150 | 13 | 14 | CC.. 09T3.. | E02 |
| 16 | SCACR 1616 H09 | R | 16 | 16 | 100 | 13 | 16 | CC.. 09T3.. | E03 |
| 16 | SCACL 1616 H09 | L | 16 | 16 | 100 | 13 | 16 | CC.. 09T3.. | E03 |
| 20 | SCACR 2020 K12 | R | 20 | 20 | 125 | 17 | 20 | CC.. 1204.. | E04 |
| 20 | SCACL 2020 K12 | L | 20 | 20 | 125 | 17 | 20 | CC.. 1204.. | E04 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24645 | | | | 8095010200 | 29280 |
| E02 | 24647 | | | | 8095010500 | 82271 |
| E03 | 24647 | 69216 | 69294 | 69293 | | 82756 |
| E04 | 54981 | 61006 | 69296 | 69293 | | 74208 |

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# SCDC...

MaxiLock S





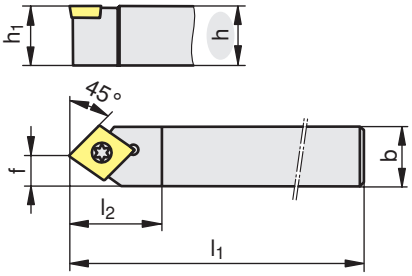
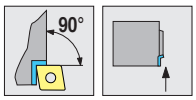




Bild zeigt neutrale Ausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 8 | SCDCL 0808 K06 | L | 8 | 8 | 125 | 13 | 4 | CC.. 0602.. | E01 |
| 10 | SCDCL 1010 M06 | L | 10 | 10 | 150 | 13 | 5 | CC.. 0602.. | E01 |
| 12 | SCDCL 1212 M09 | L | 12 | 12 | 150 | 18 | 6 | CC.. 09T3.. | E02 |
| 14 | SCDCL 1414 M09 | L | 14 | 14 | 150 | 18 | 7 | CC.. 09T3.. | E02 |

| | | | |
|---|---|---|---|
| E01 | 24645 | 8095010200 | 29280 |
| E02 | 24647 | 8095010500 | 82271 |

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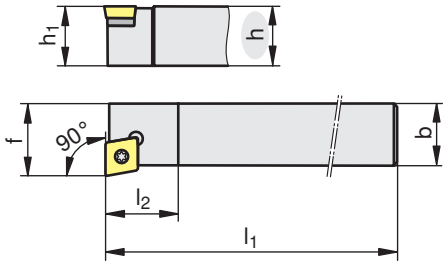
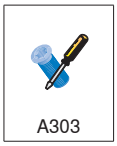
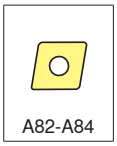



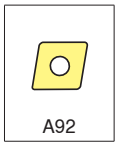

Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 8 | SCFCR 0808 D06 | R | 8 | 8 | 60 | 10 | 10 | CC.. 0602.. | E01 |
| 8 | SCFCL 0808 D06 | L | 8 | 8 | 60 | 10 | 10 | CC.. 0602.. | E01 |
| 10 | SCFCR 1010 E06 | R | 10 | 10 | 70 | 10 | 12 | CC.. 0602.. | E01 |
| 10 | SCFCL 1010 E06 | L | 10 | 10 | 70 | 10 | 12 | CC.. 0602.. | E01 |
| 12 | SCFCR 1212 F09 | R | 12 | 12 | 80 | 13 | 16 | CC.. 09T3.. | E02 |
| 12 | SCFCL 1212 F09 | L | 12 | 12 | 80 | 13 | 16 | CC.. 09T3.. | E02 |
| 16 | SCFCR 1616 H09 | R | 16 | 16 | 100 | 13 | 20 | CC.. 09T3.. | E03 |
| 16 | SCFCL 1616 H09 | L | 16 | 16 | 100 | 13 | 20 | CC.. 09T3.. | E03 |
| 20 | SCFCR 2020 K12 | R | 20 | 20 | 125 | 17 | 25 | CC.. 1204.. | E04 |
| 20 | SCFCL 2020 K12 | L | 20 | 20 | 125 | 17 | 25 | CC.. 1204.. | E04 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24645 | | | | 8095010200 | 29280 |
| E02 | 24647 | | | | 8095010500 | 82271 |
| E03 | 24647 | 69216 | 69294 | 69293 | | 82756 |
| E04 | 54981 | 61006 | 69296 | 69293 | | 74208 |

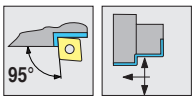

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# SCLC...

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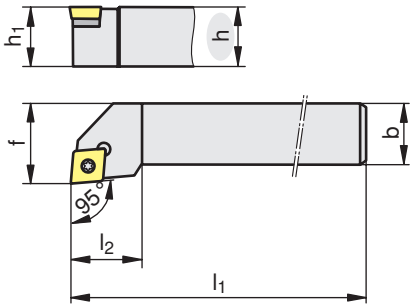
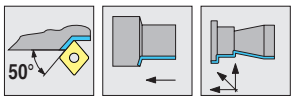




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 8 | SCLCR 0808 D06 | R | 8 | 8 | 60 | 9 | 10 | CC.. 0602.. | E01 |
| 8 | SCLCL 0808 D06 | L | 8 | 8 | 60 | 9 | 10 | CC.. 0602.. | E01 |
| 10 | SCLCR 1010 E06 | R | 10 | 10 | 70 | 9 | 12 | CC.. 0602.. | E01 |
| 10 | SCLCL 1010 E06 | L | 10 | 10 | 70 | 9 | 12 | CC.. 0602.. | E01 |
| 12 | SCLCR 1212 F09 | R | 12 | 12 | 80 | 15 | 16 | CC.. 09T3.. | E02 |
| 12 | SCLCL 1212 F09 | L | 12 | 12 | 80 | 15 | 16 | CC.. 09T3.. | E02 |
| 16 | SCLCR 1616 H09 | R | 16 | 16 | 100 | 17 | 20 | CC.. 09T3.. | E03 |
| 16 | SCLCL 1616 H09 | L | 16 | 16 | 100 | 17 | 20 | CC.. 09T3.. | E03 |
| 20 | SCLCR 2020 K09 | R | 20 | 20 | 125 | 17 | 25 | CC.. 09T3.. | E03 |
| 20 | SCLCL 2020 K09 | L | 20 | 20 | 125 | 17 | 25 | CC.. 09T3.. | E03 |
| 16 | SCLCR 1616 H12 | R | 16 | 16 | 100 | 20 | 20 | CC.. 1204.. | E04 |
| 16 | SCLCL 1616 H12 | L | 16 | 16 | 100 | 20 | 20 | CC.. 1204.. | E04 |
| 20 | SCLCR 2020 K12 | R | 20 | 20 | 125 | 20 | 25 | CC.. 1204.. | E04 |
| 20 | SCLCL 2020 K12 | L | 20 | 20 | 125 | 20 | 25 | CC.. 1204.. | E04 |
| 25 | SCLCR 2525 M12 | R | 25 | 25 | 150 | 20 | 32 | CC.. 1204.. | E04 |
| 25 | SCLCL 2525 M12 | L | 25 | 25 | 150 | 20 | 32 | CC.. 1204.. | E04 |
| 32 | SCLCR 3225 P12 | R | 32 | 25 | 170 | 20 | 32 | CC.. 1204.. | E04 |
| 32 | SCLCL 3225 P12 | L | 32 | 25 | 170 | 20 | 32 | CC.. 1204.. | E04 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24645 | | | | 8095010200 | 29280 |
| E02 | 24647 | | | | 8095010500 | 82271 |
| E03 | 24647 | 69216 | 69294 | 69293 | | 82756 |
| E04 | 54981 | 61006 | 69296 | 69293 | | 74208 |

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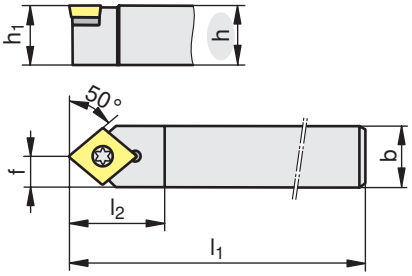



Bild zeigt neutrale Ausführung

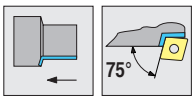
| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | SCMCN 1616 H12 | N | 16 | 16 | 100 | 25 | 8 | CC.. 1204.. | E01 |
| 20 | SCMCN 2020 K12 | N | 20 | 20 | 125 | 25 | 10 | CC.. 1204.. | E01 |
| 25 | SCMCN 2525 M12 | N | 25 | 25 | 150 | 25 | 12,5 | CC.. 1204.. | E01 |
| 32 | SCMCN 3225 P12 | N | 32 | 25 | 170 | 25 | 12,5 | CC.. 1204.. | E01 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 54981 | 61006 | 69296 | 69293 | 74208 |

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# SCRC...

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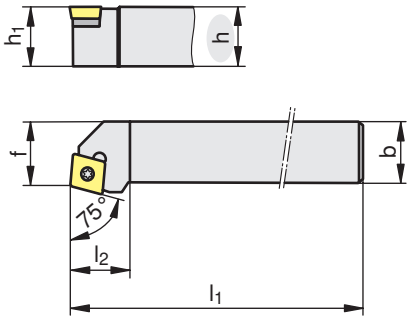
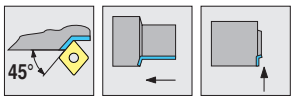




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 10 | SCRCR 1010 E06 | R | 10 | 10 | 70 | 10 | 11 | CC.. 0602.. | E01 |
| 12 | SCRCR 1212 F09 | R | 12 | 12 | 80 | 16 | 13 | CC.. 09T3.. | E02 |
| 12 | SCRCL 1212 F09 | L | 12 | 12 | 80 | 16 | 13 | CC.. 09T3.. | E02 |
| 16 | SCRCR 1616 H09 | R | 16 | 16 | 100 | 17 | 17 | CC.. 09T3.. | E03 |
| 16 | SCRCL 1616 H09 | L | 16 | 16 | 100 | 17 | 17 | CC.. 09T3.. | E03 |
| 20 | SCRCR 2020 K09 | R | 20 | 20 | 125 | 17 | 22 | CC.. 09T3.. | E03 |
| 20 | SCRCL 2020 K09 | L | 20 | 20 | 125 | 17 | 22 | CC.. 09T3.. | E03 |
| 16 | SCRCR 1616 H12 | R | 16 | 16 | 100 | 20 | 17 | CC.. 1204.. | E04 |
| 20 | SCRCR 2020 K12 | R | 20 | 20 | 125 | 20 | 22 | CC.. 1204.. | E04 |
| 20 | SCRCL 2020 K12 | L | 20 | 20 | 125 | 20 | 22 | CC.. 1204.. | E04 |
| 25 | SCRCR 2525 M12 | R | 25 | 25 | 150 | 20 | 27 | CC.. 1204.. | E04 |
| 25 | SCRCL 2525 M12 | L | 25 | 25 | 150 | 20 | 27 | CC.. 1204.. | E04 |
| 32 | SCRCR 3225 P12 | R | 32 | 25 | 170 | 20 | 27 | CC.. 1204.. | E04 |
| 32 | SCRCL 3225 P12 | L | 32 | 25 | 170 | 20 | 27 | CC.. 1204.. | E04 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24645 | | | | 8095010200 | 29280 |
| E02 | 24647 | | | | 8095010500 | 82271 |
| E03 | 24647 | 69216 | 69294 | 69293 | | 82756 |
| E04 | 54981 | 61006 | 69296 | 69293 | | 74208 |

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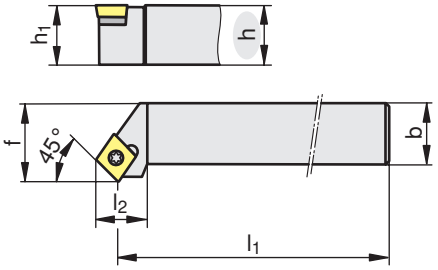




Bild zeigt Rechtsausführung

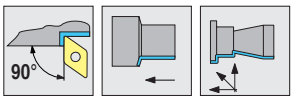
| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | SCSCR 1616 H12 | R | 16 | 16 | 100 | 20 | 20 | CC.. 1204.. | E01 |
| 20 | SCSCR 2020 K12 | R | 20 | 20 | 125 | 20 | 25 | CC.. 1204.. | E01 |
| 20 | SCSCL 2020 K12 | L | 20 | 20 | 125 | 20 | 25 | CC.. 1204.. | E01 |
| 25 | SCSCR 2525 M12 | R | 25 | 25 | 150 | 20 | 32 | CC.. 1204.. | E01 |
| 25 | SCSCL 2525 M12 | L | 25 | 25 | 150 | 20 | 32 | CC.. 1204.. | E01 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 54981 | 61006 | 69296 | 69293 | 74208 |

| | | |
|---|---|---|
| A303 | A82-A84 | A92 |

# SDAC...

MaxiLock S





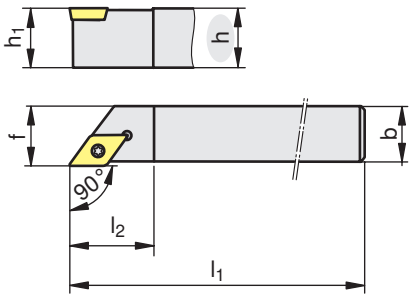
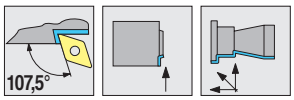




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 8 | SDACR 0808 K07 | R | 8 | 8 | 125 | 14 | 8 | DC.. 0702.. | E01 |
| 8 | SDACL 0808 K07 | L | 8 | 8 | 125 | 14 | 8 | DC.. 0702.. | E01 |
| 10 | SDACR 1010 M07 | R | 10 | 10 | 150 | 14 | 10 | DC.. 0702.. | E01 |
| 10 | SDACL 1010 M07 | L | 10 | 10 | 150 | 14 | 10 | DC.. 0702.. | E01 |
| 12 | SDACR 1212 M07 | R | 12 | 12 | 150 | 14 | 12 | DC.. 0702.. | E01 |
| 12 | SDACL 1212 M07 | L | 12 | 12 | 150 | 14 | 12 | DC.. 0702.. | E01 |
| 12 | SDACR 1212 M11 | R | 12 | 12 | 150 | 21 | 12 | DC.. 11T3.. | E02 |
| 12 | SDACL 1212 M11 | L | 12 | 12 | 150 | 21 | 12 | DC.. 11T3.. | E02 |
| 14 | SDACR 1414 M11 | R | 14 | 14 | 150 | 21 | 14 | DC.. 11T3.. | E02 |
| 14 | SDACL 1414 M11 | L | 14 | 14 | 150 | 21 | 14 | DC.. 11T3.. | E02 |

| | | | |
|---|---|---|---|
| E01 | 24645 | 8095010200 | 29280 |
| E02 | 24647 | 8095010500 | 82271 |

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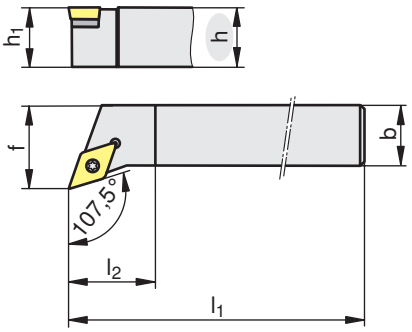




Bild zeigt Rechtsausführung

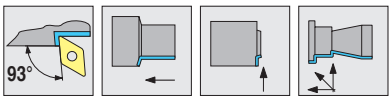
| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 10 | SDHCR 1010 E07 | R | 10 | 10 | 70 | 7,6 | 12 | DC.. 0702.. | E01 |
| 10 | SDHCL 1010 E07 | L | 10 | 10 | 70 | 7,6 | 12 | DC.. 0702.. | E01 |
| 12 | SDHCR 1212 F07 | R | 12 | 12 | 80 | 12,2 | 16 | DC.. 0702.. | E01 |
| 12 | SDHCL 1212 F07 | L | 12 | 12 | 80 | 12,2 | 16 | DC.. 0702.. | E01 |
| 16 | SDHCR 1616 H11 | R | 16 | 16 | 100 | 11,6 | 20 | DC.. 11T3.. | E02 |
| 16 | SDHCL 1616 H11 | L | 16 | 16 | 100 | 11,6 | 20 | DC.. 11T3.. | E02 |
| 20 | SDHCR 2020 K11 | R | 20 | 20 | 125 | 14,1 | 25 | DC.. 11T3.. | E02 |
| 20 | SDHCL 2020 K11 | L | 20 | 20 | 125 | 14,1 | 25 | DC.. 11T3.. | E02 |
| 25 | SDHCR 2525 M11 | R | 25 | 25 | 150 | 20,5 | 32 | DC.. 11T3.. | E02 |
| 25 | SDHCL 2525 M11 | L | 25 | 25 | 150 | 20,5 | 32 | DC.. 11T3.. | E02 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24645 | | | | 8095010200 | 29280 |
| E02 | 24647 | 26146 | 69294 | 69293 | | 29278 |

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# SDJC...

MaxiLock S





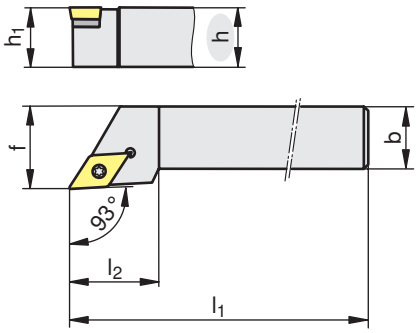
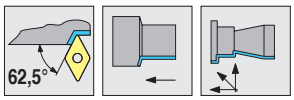




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 8 | SDJCR 0808 D07 | R | 8 | 8 | 60 | 13 | 10 | DC.. 0702.. | E01 |
| 8 | SDJCL 0808 D07 | L | 8 | 8 | 60 | 13 | 10 | DC.. 0702.. | E01 |
| 10 | SDJCR 1010 E07 | R | 10 | 10 | 70 | 13 | 12 | DC.. 0702.. | E01 |
| 10 | SDJCL 1010 E07 | L | 10 | 10 | 70 | 13 | 12 | DC.. 0702.. | E01 |
| 12 | SDJCR 1212 F07 | R | 12 | 12 | 80 | 14,3 | 16 | DC.. 0702.. | E01 |
| 12 | SDJCL 1212 F07 | L | 12 | 12 | 80 | 14,3 | 16 | DC.. 0702.. | E01 |
| 16 | SDJCR 1616 H11 | R | 16 | 16 | 100 | 19,3 | 20 | DC.. 11T3.. | E02 |
| 16 | SDJCL 1616 H11 | L | 16 | 16 | 100 | 19,3 | 20 | DC.. 11T3.. | E02 |
| 20 | SDJCR 2020 K11 | R | 20 | 20 | 125 | 19,9 | 25 | DC.. 11T3.. | E02 |
| 20 | SDJCL 2020 K11 | L | 20 | 20 | 125 | 19,9 | 25 | DC.. 11T3.. | E02 |
| 25 | SDJCR 2525 M11 | R | 25 | 25 | 150 | 21,2 | 32 | DC.. 11T3.. | E02 |
| 25 | SDJCL 2525 M11 | L | 25 | 25 | 150 | 21,2 | 32 | DC.. 11T3.. | E02 |
| 32 | SDJCR 3225 P11 | R | 32 | 25 | 170 | 21,2 | 32 | DC.. 11T3.. | E02 |
| 32 | SDJCL 3225 P11 | L | 32 | 25 | 170 | 21,2 | 32 | DC.. 11T3.. | E02 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24645 | | | | 8095010200 | 29280 |
| E02 | 24647 | 26146 | 69294 | 69293 | | 29278 |

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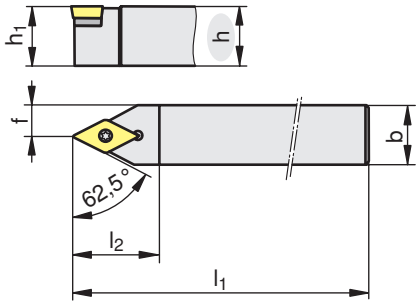
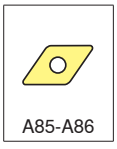



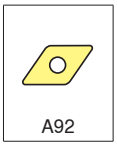

Bild zeigt neutrale Ausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 8 | SDNCN 0808 D07 | N | 8 | 8 | 60 | 4 | DC.. 0702.. | E01 |
| 8 | SDNCN 0808 K07 | N | 8 | 8 | 125 | 4 | DC.. 0702.. | E01 |
| 10 | SDNCN 1010 E07 | N | 10 | 10 | 70 | 5 | DC.. 0702.. | E01 |
| 10 | SDNCN 1010 M07 | N | 10 | 10 | 150 | 5 | DC.. 0702.. | E01 |
| 12 | SDNCN 1212 F07 | N | 12 | 12 | 80 | 6 | DC.. 0702.. | E01 |
| 12 | SDNCN 1212 M07 | N | 12 | 12 | 150 | 6 | DC.. 0702.. | E01 |
| 12 | SDNCN 1212 M11 | N | 12 | 12 | 150 | 6 | DC.. 11T3.. | E02 |
| 14 | SDNCN 1414 M11 | N | 14 | 14 | 150 | 7 | DC.. 11T3.. | E02 |
| 16 | SDNCN 1616 H11 | N | 16 | 16 | 100 | 8 | DC.. 11T3.. | E03 |
| 20 | SDNCN 2020 K11 | N | 20 | 20 | 125 | 10 | DC.. 11T3.. | E03 |
| 25 | SDNCN 2525 M11 | N | 25 | 25 | 150 | 12,5 | DC.. 11T3.. | E03 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24645 | | | | 8095010200 | 29280 |
| E02 | 24647 | | | | 8095010500 | 82271 |
| E03 | 24647 | 26146 | 69294 | 69293 | | 29278 |

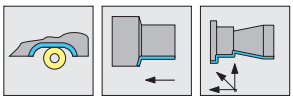

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# SRDC...

MaxiLock S





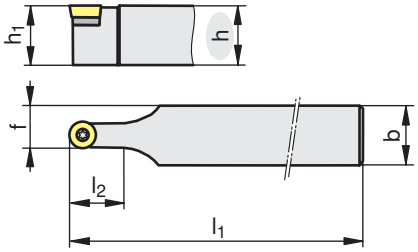


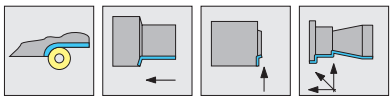

Bild zeigt neutrale Ausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | SRDCN 1212 F06 | N | 12 | 12 | 80 | 12 | 9 | RC.. 0602.. | E01 |
| 16 | SRDCN 1616 H06 | N | 16 | 16 | 100 | 12 | 11 | RC.. 0602.. | E01 |
| 20 | SRDCN 2020 K06 | N | 20 | 20 | 125 | 12 | 13 | RC.. 0602.. | E01 |
| 25 | SRDCN 2525 M06 | N | 25 | 25 | 150 | 12,4 | 15,5 | RC.. 0602.. | E01 |
| 16 | SRDCN 1616 H08 | N | 16 | 16 | 100 | 16 | 12 | RC.. 0803.. | E02 |
| 20 | SRDCN 2020 K08 | N | 20 | 20 | 125 | 16,5 | 14 | RC.. 0803.. | E02 |
| 25 | SRDCN 2525 M08 | N | 25 | 25 | 150 | 16,5 | 16,5 | RC.. 0803.. | E02 |
| 16 | SRDCN 1616 H10 | N | 16 | 16 | 100 | 20,9 | 13 | RC.. 1003.. | E03 |
| 20 | SRDCN 2020 K10 | N | 20 | 20 | 125 | 20 | 15 | RC.. 1003.. | E03 |
| 25 | SRDCN 2525 M10 | N | 25 | 25 | 150 | 20,9 | 17,5 | RC.. 1003.. | E03 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24645 | | | | 8095010200 | 29280 |
| E02 | 77613 | | | | 8095010200 | 82272 |
| E03 | 24647 | 24838 | 69294 | 69293 | | 36305 |


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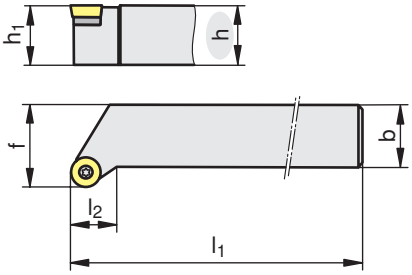
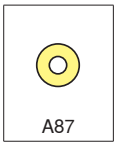



Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | SRGCR 1212 F06 | R | 12 | 12 | 80 | 12,5 | 16 | RC.. 0602.. | E01 |
| 12 | SRGCL 1212 F06 | L | 12 | 12 | 80 | 12,5 | 16 | RC.. 0602.. | E01 |
| 16 | SRGCR 1616 H06 | R | 16 | 16 | 100 | 12,5 | 20 | RC.. 0602.. | E01 |
| 20 | SRGCR 2020 K06 | R | 20 | 20 | 125 | 15,0 | 25 | RC.. 0602.. | E01 |
| 20 | SRGCL 2020 K06 | L | 20 | 20 | 125 | 15,0 | 25 | RC.. 0602.. | E01 |
| 25 | SRGCR 2525 M06 | R | 25 | 25 | 150 | 18,5 | 32 | RC.. 0602.. | E01 |
| 25 | SRGCL 2525 M06 | L | 25 | 25 | 150 | 18,5 | 32 | RC.. 0602.. | E01 |
| 16 | SRGCR 1616 H08 | R | 16 | 16 | 100 | 13,6 | 20 | RC.. 0803.. | E02 |
| 16 | SRGCL 1616 H08 | L | 16 | 16 | 100 | 13,6 | 20 | RC.. 0803.. | E02 |
| 20 | SRGCR 2020 K08 | R | 20 | 20 | 125 | 16,1 | 25 | RC.. 0803.. | E02 |
| 25 | SRGCR 2525 M08 | R | 25 | 25 | 150 | 19,6 | 32 | RC.. 0803.. | E02 |
| 25 | SRGCL 2525 M08 | L | 25 | 25 | 150 | 19,6 | 32 | RC.. 0803.. | E02 |
| 16 | SRGCR 1616 H10 | R | 16 | 16 | 100 | 13,6 | 20 | RC.. 1003.. | E03 |
| 16 | SRGCL 1616 H10 | L | 16 | 16 | 100 | 13,6 | 20 | RC.. 1003.. | E03 |
| 20 | SRGCR 2020 K10 | R | 20 | 20 | 125 | 16,1 | 25 | RC.. 1003.. | E03 |
| 20 | SRGCL 2020 K10 | L | 20 | 20 | 125 | 16,1 | 25 | RC.. 1003.. | E03 |
| 25 | SRGCR 2525 M10 | R | 25 | 25 | 150 | 19,6 | 32 | RC.. 1003.. | E03 |
| 25 | SRGCL 2525 M10 | L | 25 | 25 | 150 | 19,6 | 32 | RC.. 1003.. | E03 |

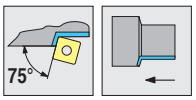
| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24645 | | | | 8095010200 | 29280 |
| E02 | 77613 | | | | 8095010200 | 82272 |
| E03 | 24647 | 24838 | 69294 | 69293 | | 36305 |


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# SSBC...

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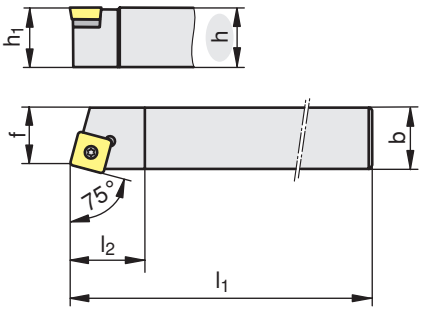



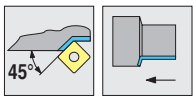

Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | SSBCR 1616 H09 | R | 16 | 16 | 100 | 20 | 13 | SC.. 09T3.. | E01 |
| 16 | SSBCL 1616 H09 | L | 16 | 16 | 100 | 20 | 13 | SC.. 09T3.. | E01 |
| 20 | SSBCR 2020 K09 | R | 20 | 20 | 125 | 20 | 17 | SC.. 09T3.. | E01 |
| 20 | SSBCR 2020 K12 | R | 20 | 20 | 125 | 20 | 17 | SC.. 1204.. | E02 |
| 20 | SSBCL 2020 K12 | L | 20 | 20 | 125 | 20 | 17 | SC.. 1204.. | E02 |
| 25 | SSBCR 2525 M12 | R | 25 | 25 | 150 | 20 | 22 | SC.. 1204.. | E02 |
| 25 | SSBCL 2525 M12 | L | 25 | 25 | 150 | 20 | 22 | SC.. 1204.. | E02 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 24647 | 69214 | 69294 | 69293 | 82757 |
| E02 | 54981 | 69199 | 69296 | 69293 | 82270 |


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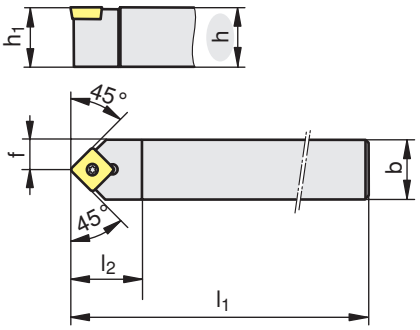
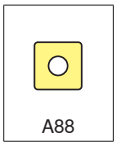




Bild zeigt neutrale Ausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | SSDCN 1212 F09 | N | 12 | 12 | 80 | 16 | 6 | SC.. 09T3.. | E01 |
| 16 | SSDCN 1616 H09 | N | 16 | 16 | 100 | 20 | 8 | SC.. 09T3.. | E02 |
| 20 | SSDCN 2020 K09 | N | 20 | 20 | 125 | 20 | 10 | SC.. 09T3.. | E02 |
| 16 | SSDCN 1616 H12 | N | 16 | 16 | 100 | 25 | 8 | SC.. 1204.. | E03 |
| 20 | SSDCN 2020 K12 | N | 20 | 20 | 125 | 25 | 10 | SC.. 1204.. | E03 |
| 25 | SSDCN 2525 M12 | N | 25 | 25 | 150 | 25 | 12,5 | SC.. 1204.. | E03 |

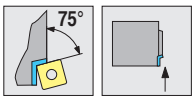
| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24647 | | | | 8095010500 | 82271 |
| E02 | 24647 | 69214 | 69294 | 69293 | | 82757 |
| E03 | 54981 | 69199 | 69296 | 69293 | | 82270 |


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# SSKC...

MaxiLock S





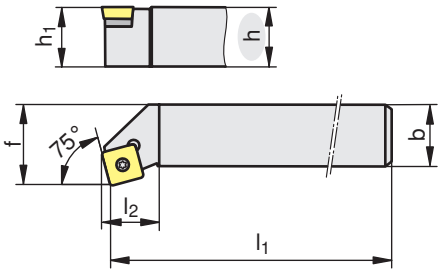



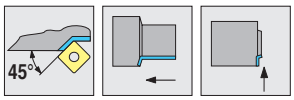

Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | SSKCR 1616 H09 | R | 16 | 16 | 100 | 17,5 | 20 | SC.. 09T3.. | E01 |
| 16 | SSKCL 1616 H09 | L | 16 | 16 | 100 | 17,5 | 20 | SC.. 09T3.. | E01 |
| 20 | SSKCR 2020 K09 | R | 20 | 20 | 125 | 22,5 | 25 | SC.. 09T3.. | E01 |
| 20 | SSKCL 2020 K09 | L | 20 | 20 | 125 | 22,5 | 25 | SC.. 09T3.. | E01 |
| 20 | SSKCR 2020 K12 | R | 20 | 20 | 125 | 23,5 | 25 | SC.. 1204.. | E02 |
| 25 | SSKCR 2525 M12 | R | 25 | 25 | 150 | 23,5 | 32 | SC.. 1204.. | E02 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 24647 | 69214 | 69294 | 69293 | 82757 |
| E02 | 54981 | 69199 | 69296 | 69293 | 82270 |


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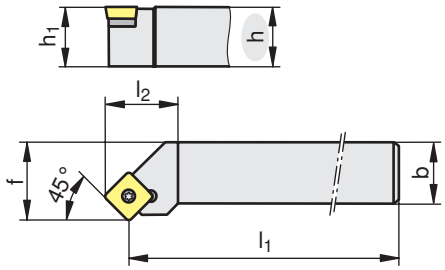
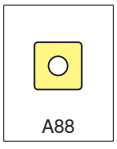




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | SSSCR 1212 F09 | R | 12 | 12 | 80 | 18 | 16 | SC.. 09T3.. | E01 |
| 12 | SSSCL 1212 F09 | L | 12 | 12 | 80 | 18 | 16 | SC.. 09T3.. | E01 |
| 16 | SSSCR 1616 H09 | R | 16 | 16 | 100 | 20 | 20 | SC.. 09T3.. | E02 |
| 16 | SSSCL 1616 H09 | L | 16 | 16 | 100 | 20 | 20 | SC.. 09T3.. | E02 |
| 20 | SSSCR 2020 K09 | R | 20 | 20 | 125 | 20 | 25 | SC.. 09T3.. | E02 |
| 20 | SSSCL 2020 K09 | L | 20 | 20 | 125 | 20 | 25 | SC.. 09T3.. | E02 |
| 16 | SSSCR 1616 H12 | R | 16 | 16 | 100 | 25 | 20 | SC.. 1204.. | E03 |
| 16 | SSSCL 1616 H12 | L | 16 | 16 | 100 | 25 | 20 | SC.. 1204.. | E03 |
| 20 | SSSCR 2020 K12 | R | 20 | 20 | 125 | 25 | 25 | SC.. 1204.. | E03 |
| 20 | SSSCL 2020 K12 | L | 20 | 20 | 125 | 25 | 25 | SC.. 1204.. | E03 |
| 25 | SSSCR 2525 M12 | R | 25 | 25 | 150 | 25 | 32 | SC.. 1204.. | E03 |
| 25 | SSSCL 2525 M12 | L | 25 | 25 | 150 | 25 | 32 | SC.. 1204.. | E03 |
| 32 | SSSCR 3225 P12 | R | 32 | 25 | 170 | 25 | 32 | SC.. 1204.. | E03 |

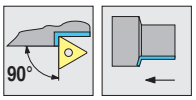
| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24647 | | | | 8095010500 | 82271 |
| E02 | 24647 | 69214 | 69294 | 69293 | | 82757 |
| E03 | 54981 | 69199 | 69296 | 69293 | | 82270 |


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# STAC...

MaxiLock S





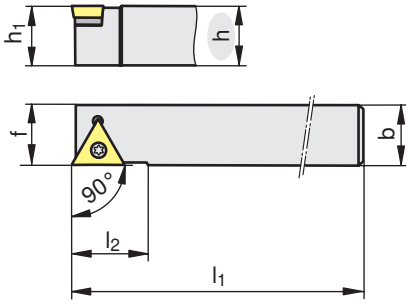
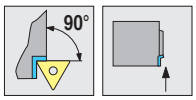




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 10 | STACR 1010 K09 | R | 10 | 10 | 125 | 12 | 10 | TC.. 0902.. | E01 |
| 10 | STACL 1010 K09 | L | 10 | 10 | 125 | 12 | 10 | TC.. 0902.. | E01 |
| 12 | STACR 1212 K11 | R | 12 | 12 | 125 | 15 | 12 | TC.. 1102.. | E02 |
| 12 | STACL 1212 K11 | L | 12 | 12 | 125 | 15 | 12 | TC.. 1102.. | E02 |
| 14 | STACR 1414 K11 | R | 14 | 14 | 125 | 15 | 14 | TC.. 1102.. | E02 |

| | | | |
|---|---|---|---|
| E01 | 56652 | 8095010100 | 82273 |
| E02 | 24645 | 8095010200 | 29280 |

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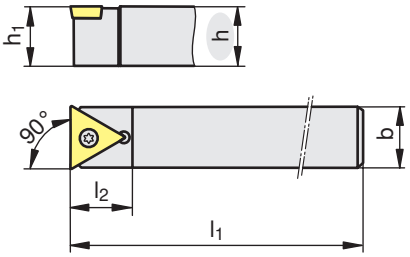




Bild zeigt neutrale Ausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 8 | STCCN 0808 K09 | N | 8 | 8 | 125 | 11 | 0 | TC.. 0902.. | E01 |
| 10 | STCCN 1010 K11 | N | 10 | 10 | 125 | 15 | 0 | TC.. 1102.. | E02 |
| 12 | STCCN 1212 K11 | N | 12 | 12 | 125 | 15 | 0 | TC.. 1102.. | E02 |
| 14 | STCCN 1414 K11 | N | 14 | 14 | 125 | 21 | 0 | TC.. 1102.. | E02 |
| 16 | STCCN 1616 K11 | N | 16 | 16 | 125 | 24 | 0 | TC.. 1102.. | E02 |

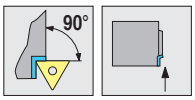
| | | | |
|---|---|---|---|
| E01 | 56652 | 8095010100 | 82273 |
| E02 | 24645 | 8095010200 | 29280 |






# STFC...

MaxiLock S





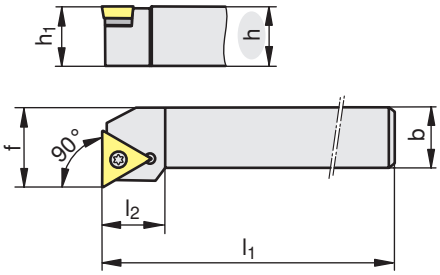
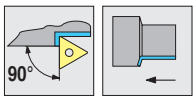




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | STFCR 1212 F11 | R | 12 | 12 | 80 | 15 | 16 | TC.. 1102.. | E01 |
| 12 | STFCL 1212 F11 | L | 12 | 12 | 80 | 15 | 16 | TC.. 1102.. | E01 |
| 16 | STFCR 1616 H16 | R | 16 | 16 | 100 | 20 | 20 | TC.. 16T3.. | E02 |
| 16 | STFCL 1616 H16 | L | 16 | 16 | 100 | 20 | 20 | TC.. 16T3.. | E02 |
| 20 | STFCR 2020 K16 | R | 20 | 20 | 125 | 20 | 25 | TC.. 16T3.. | E02 |
| 20 | STFCL 2020 K16 | L | 20 | 20 | 125 | 20 | 25 | TC.. 16T3.. | E02 |
| 25 | STFCR 2525 M16 | R | 25 | 25 | 150 | 20 | 32 | TC.. 16T3.. | E02 |
| 25 | STFCL 2525 M16 | L | 25 | 25 | 150 | 20 | 32 | TC.. 16T3.. | E02 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24645 | | | | 8095010200 | 29280 |
| E02 | 24647 | 69209 | 69294 | 69293 | | 82758 |

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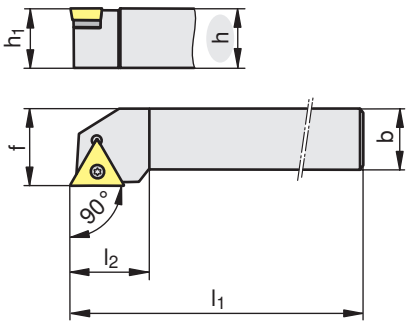




Bild zeigt Rechtsausführung

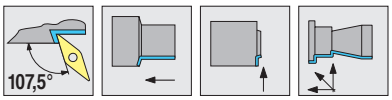
| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 10 | STGCR 1010 E09 | R | 10 | 10 | 70 | 12 | 12 | TC.. 0902.. | E01 |
| 10 | STGCL 1010 E09 | L | 10 | 10 | 70 | 12 | 12 | TC.. 0902.. | E01 |
| 12 | STGCR 1212 F11 | R | 12 | 12 | 80 | 15 | 16 | TC.. 1102.. | E02 |
| 12 | STGCL 1212 F11 | L | 12 | 12 | 80 | 15 | 16 | TC.. 1102.. | E02 |
| 16 | STGCR 1616 H16 | R | 16 | 16 | 100 | 22 | 20 | TC.. 16T3.. | E03 |
| 16 | STGCL 1616 H16 | L | 16 | 16 | 100 | 22 | 20 | TC.. 16T3.. | E03 |
| 20 | STGCR 2020 K16 | R | 20 | 20 | 125 | 22 | 25 | TC.. 16T3.. | E03 |
| 20 | STGCL 2020 K16 | L | 20 | 20 | 125 | 22 | 25 | TC.. 16T3.. | E03 |
| 25 | STGCR 2525 M16 | R | 25 | 25 | 150 | 22 | 32 | TC.. 16T3.. | E03 |
| 25 | STGCL 2525 M16 | L | 25 | 25 | 150 | 22 | 32 | TC.. 16T3.. | E03 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 56652 | | | | 8095010100 | 82273 |
| E02 | 24645 | | | | 8095010200 | 29280 |
| E03 | 24647 | 69209 | 69294 | 69293 | | 82758 |

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# SVHC...

MaxiLock S





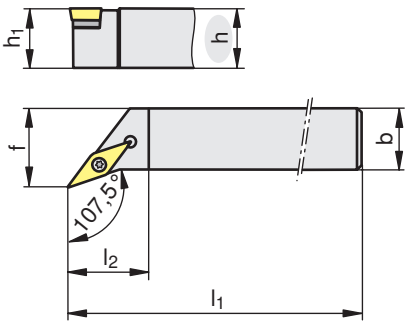
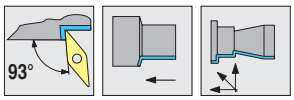




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | SVHCR 1212 F11 | R | 12 | 12 | 80 | 11,9 | 16 | VC.. 1103.. | E01 |
| 12 | SVHCL 1212 F11 | L | 12 | 12 | 80 | 11,9 | 16 | VC.. 1103.. | E01 |
| 16 | SVHCR 1616 H11 | R | 16 | 16 | 100 | 11,9 | 20 | VC.. 1103.. | E01 |
| 16 | SVHCL 1616 H11 | L | 16 | 16 | 100 | 11,9 | 20 | VC.. 1103.. | E01 |
| 20 | SVHCR 2020 K11 | R | 20 | 20 | 125 | 14,7 | 25 | VC.. 1103.. | E01 |
| 20 | SVHCL 2020 K11 | L | 20 | 20 | 125 | 14,7 | 25 | VC.. 1103.. | E01 |
| 25 | SVHCR 2525 M11 | R | 25 | 25 | 150 | 20,1 | 32 | VC.. 1103.. | E01 |
| 25 | SVHCL 2525 M11 | L | 25 | 25 | 150 | 20,1 | 32 | VC.. 1103.. | E01 |
| 20 | SVHCR 2020 K16 | R | 20 | 20 | 125 | 13,7 | 25 | VC.. 1604.. | E02 |
| 20 | SVHCL 2020 K16 | L | 20 | 20 | 125 | 13,7 | 25 | VC.. 1604.. | E02 |
| 25 | SVHCR 2525 M16 | R | 25 | 25 | 150 | 20,0 | 32 | VC.. 1604.. | E02 |
| 25 | SVHCL 2525 M16 | L | 25 | 25 | 150 | 20,0 | 32 | VC.. 1604.. | E02 |
| 32 | SVHCR 3225 P16 | R | 32 | 25 | 170 | 20,0 | 32 | VC.. 1604.. | E02 |
| 32 | SVHCL 3225 P16 | L | 32 | 25 | 170 | 20,0 | 32 | VC.. 1604.. | E02 |
| 25 | SVHCR 2525 M22 | R | 25 | 25 | 150 | 21,9 | 32 | VC.. 2205.. | E03 |
| 25 | SVHCL 2525 M22 | L | 25 | 25 | 150 | 21,9 | 32 | VC.. 2205.. | E03 |
| 32 | SVHCR 3225 P22 | R | 32 | 25 | 170 | 21,9 | 32 | VC.. 2205.. | E03 |
| 32 | SVHCL 3225 P22 | L | 32 | 25 | 170 | 21,9 | 32 | VC.. 2205.. | E03 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24645 | | | | 8095010200 | 29280 |
| E02 | 24647 | 26147 | 69294 | 69293 | | 29279 |
| E03 | 54981 | 119008 | 69296 | 69293 | | 118849 |

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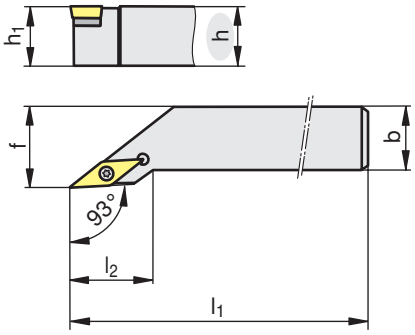



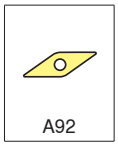

Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | SVJCR 1212 F11 | R | 12 | 12 | 80 | 21,6 | 16 | VC.. 1103.. | E01 |
| 12 | SVJCL 1212 F11 | L | 12 | 12 | 80 | 21,6 | 16 | VC.. 1103.. | E01 |
| 16 | SVJCR 1616 H11 | R | 16 | 16 | 100 | 21,6 | 20 | VC.. 1103.. | E01 |
| 16 | SVJCL 1616 H11 | L | 16 | 16 | 100 | 21,6 | 20 | VC.. 1103.. | E01 |
| 20 | SVJCR 2020 K11 | R | 20 | 20 | 125 | 23 | 25 | VC.. 1103.. | E01 |
| 20 | SVJCL 2020 K11 | L | 20 | 20 | 125 | 23 | 25 | VC.. 1103.. | E01 |
| 25 | SVJCR 2525 M11 | R | 25 | 25 | 150 | 25,5 | 32 | VC.. 1103.. | E01 |
| 25 | SVJCL 2525 M11 | L | 25 | 25 | 150 | 25,5 | 32 | VC.. 1103.. | E01 |
| 20 | SVJCR 2020 K16 | R | 20 | 20 | 125 | 29,4 | 25 | VC.. 1604.. | E02 |
| 20 | SVJCL 2020 K16 | L | 20 | 20 | 125 | 29,4 | 25 | VC.. 1604.. | E02 |
| 25 | SVJCR 2525 M16 | R | 25 | 25 | 150 | 32,5 | 32 | VC.. 1604.. | E02 |
| 25 | SVJCL 2525 M16 | L | 25 | 25 | 150 | 32,5 | 32 | VC.. 1604.. | E02 |
| 32 | SVJCR 3225 P16 | R | 32 | 25 | 170 | 32,5 | 32 | VC.. 1604.. | E02 |
| 32 | SVJCL 3225 P16 | L | 32 | 25 | 170 | 32,5 | 32 | VC.. 1604.. | E02 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24645 | | | | 8095010200 | 29280 |
| E02 | 24647 | 26147 | 69294 | 69293 | | 29279 |

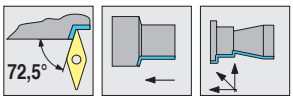

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# SVVC...

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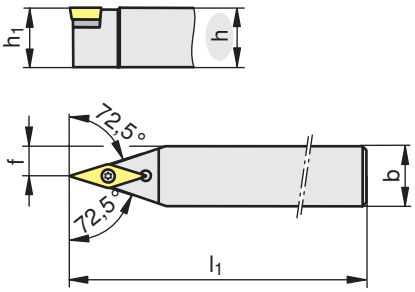
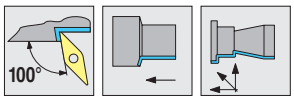




Bild zeigt neutrale Ausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 12 | SVVCN 1212 F11 | N | 12 | 12 | 80 | 6 | VC.. 1103.. | E01 |
| 16 | SVVCN 1616 H11 | N | 16 | 16 | 100 | 8 | VC.. 1103.. | E01 |
| 20 | SVVCN 2020 K11 | N | 20 | 20 | 125 | 10 | VC.. 1103.. | E01 |
| 25 | SVVCN 2525 M11 | N | 25 | 25 | 150 | 12,5 | VC.. 1103.. | E01 |
| 20 | SVVCN 2020 K16 | N | 20 | 20 | 125 | 10 | VC.. 1604.. | E02 |
| 25 | SVVCN 2525 M16 | N | 25 | 25 | 150 | 12,5 | VC.. 1604.. | E02 |
| 32 | SVVCN 3225 P16 | N | 32 | 25 | 170 | 12,5 | VC.. 1604.. | E02 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24645 | | | | 8095010200 | 29280 |
| E02 | 24647 | 26147 | 69294 | 69293 | | 29279 |

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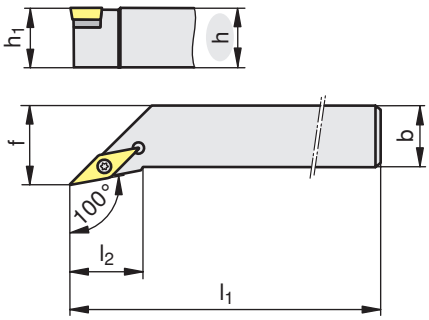
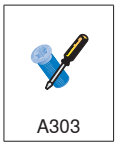



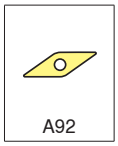

Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 25 | SVZCR 2525 M16 | R | 25 | 25 | 150 | 27,3 | 32 | VC.. 1604.. | E01 |
| 25 | SVZCL 2525 M16 | L | 25 | 25 | 150 | 27,3 | 32 | VC.. 1604.. | E01 |
| 25 | SVZPR 2525 M22-16 | R | 25 | 25 | 150 | 32,3 | 32 | VP.. 2205.. | E02 |
| 25 | SVZPL 2525 M22-16 | L | 25 | 25 | 150 | 32,3 | 32 | VP.. 2205.. | E02 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 24647 | 26147 | 69294 | 69293 | 29279 |
| E02 | 54981 | 148206 | 69296 | 69293 | 260199 |

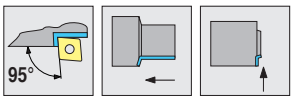

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# MCLC...

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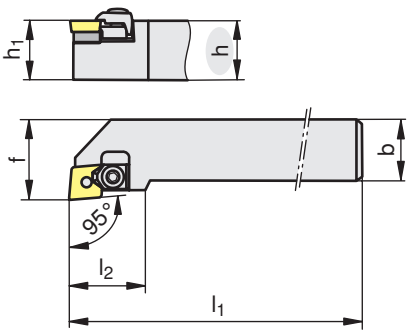



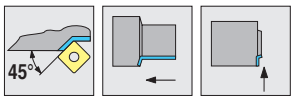

Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 20 | MCLCL 2020 K12 | L | 20 | 20 | 125 | 35 | 25 | CC.. 1204.. | E01 |
| 25 | MCLCR 2525 M12 | R | 25 | 25 | 150 | 35 | 32 | CC.. 1204.. | E01 |
| 25 | MCLCL 2525 M12 | L | 25 | 25 | 150 | 35 | 32 | CC.. 1204.. | E01 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 4726 | 26132 | 4735 | 4740 | 8095010600 | 4746 |


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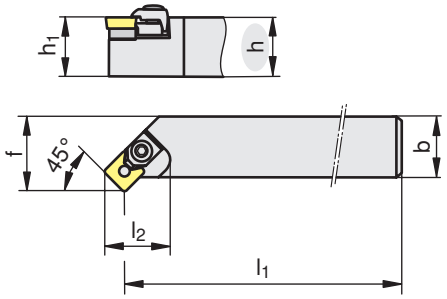




Bild zeigt Rechtsausführung

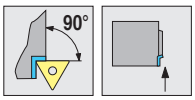
| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 20 | MSSCR 2020 K12 | R | 20 | 20 | 125 | 32 | 25 | SC.. 1204.. | E01 |
| 20 | MSSCL 2020 K12 | L | 20 | 20 | 125 | 32 | 25 | SC.. 1204.. | E01 |
| 25 | MSSCR 2525 M12 | R | 25 | 25 | 150 | 28 | 32 | SC.. 1204.. | E01 |
| 25 | MSSCL 2525 M12 | L | 25 | 25 | 150 | 28 | 32 | SC.. 1204.. | E01 |
| 32 | MSSCR 3225 P12 | R | 32 | 25 | 170 | 28 | 32 | SC.. 1204.. | E01 |
| 32 | MSSCL 3225 P12 | L | 32 | 25 | 170 | 28 | 32 | SC.. 1204.. | E01 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 4726 | 26111 | 4735 | 4740 | 8095010600 | 4745 |

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# MTFC...

MaxiLock P





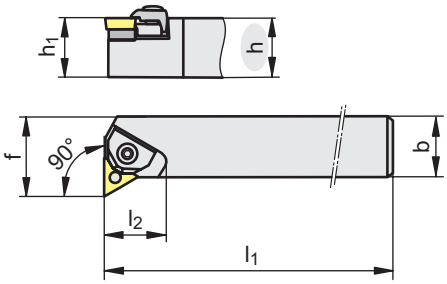
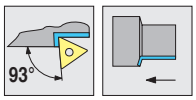




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 25 | MTFCR 2525 M16 | R | 25 | 25 | 150 | 25 | 32 | TC.. 1604.. | E01 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 4724 | 26123 | 4734 | 4738 | 8095010600 | 4743 |

| | |
|---|---|
| A303 | A96 |





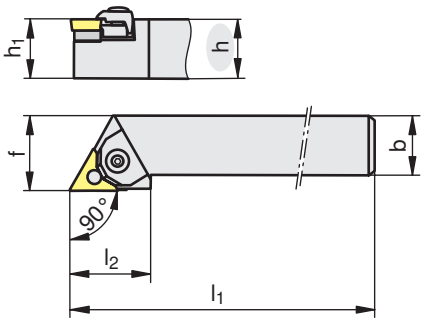




Bild zeigt Rechtsausführung

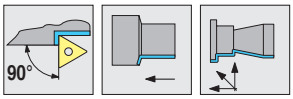
| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 20 | MTGCR 2020 K16 | R | 20 | 20 | 125 | 32 | 25 | TC.. 1604.. | E01 |
| 20 | MTGCL 2020 K16 | L | 20 | 20 | 125 | 32 | 25 | TC.. 1604.. | E01 |
| 25 | MTGCR 2525 M16 | R | 25 | 25 | 150 | 32 | 32 | TC.. 1604.. | E01 |
| 25 | MTGCL 2525 M16 | L | 25 | 25 | 150 | 32 | 32 | TC.. 1604.. | E01 |
| 25 | MTGCR 2525 M22 | R | 25 | 25 | 150 | 35 | 32 | TC.. 2204.. | E02 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 4724 | 26123 | 4734 | 4738 | 8095010600 | 4743 |
| E02 | 4725 | 4719 | 4735 | 4739 | 8095010600 | 4744 |

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A96

# MTJC...

MaxiLock P





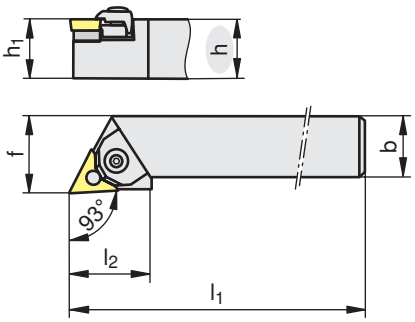
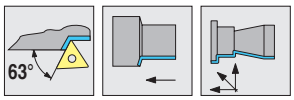




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 20 | MTJCR 2020 K16 | R | 20 | 20 | 125 | 32 | 25 | TC.. 1604.. | E01 |
| 20 | MTJCL 2020 K16 | L | 20 | 20 | 125 | 32 | 25 | TC.. 1604.. | E01 |
| 25 | MTJCR 2525 M16 | R | 25 | 25 | 150 | 32 | 32 | TC.. 1604.. | E01 |
| 25 | MTJCL 2525 M16 | L | 25 | 25 | 150 | 32 | 32 | TC.. 1604.. | E01 |
| 32 | MTJCR 3225 P16 | R | 32 | 25 | 170 | 32 | 32 | TC.. 1604.. | E01 |
| 32 | MTJCL 3225 P16 | L | 32 | 25 | 170 | 32 | 32 | TC.. 1604.. | E01 |
| 25 | MTJCR 2525 M22 | R | 25 | 25 | 150 | 35 | 32 | TC.. 2204.. | E02 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 4724 | 26123 | 4734 | 4738 | 8095010600 | 4743 |
| E02 | 4725 | 4719 | 4735 | 4739 | 8095010600 | 4744 |

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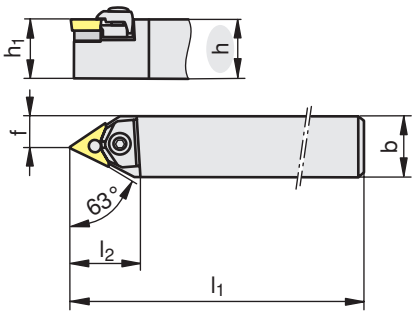




Bild zeigt neutrale Ausführung

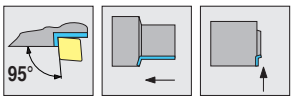
| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 20 | MTNCR 2020 K16 | R | 20 | 20 | 125 | 26 | 10 | TC.. 1604.. | E01 |
| 25 | MTNCR 2525 M16 | R | 25 | 25 | 150 | 26 | 12,5 | TC.. 1604.. | E01 |
| 25 | MTNCL 2525 M16 | L | 25 | 25 | 150 | 26 | 12,5 | TC.. 1604.. | E01 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 4724 | 26123 | 4734 | 4738 | 8095010600 | 4743 |

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# CCLN...

Simplex N





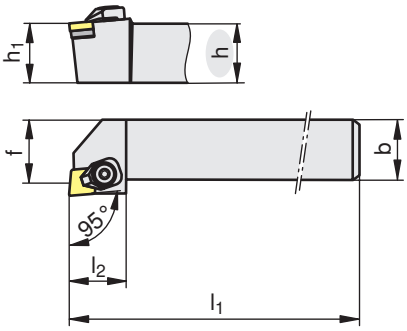
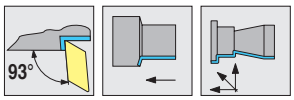




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 25 | CCLNR 2525 M09 | R | 25 | 25 | 150 | 26 | 32 | CN.. 0903.. | E01 |
| 25 | CCLNR 2525 M12 | R | 25 | 25 | 150 | 27 | 32 | CN.. 1204.. | E02 |
| 25 | CCLNL 2525 M12 | L | 25 | 25 | 150 | 27 | 32 | CN.. 1204.. | E02 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| E01 | 4259 | 54742 | 4211 | 4261 | | 8095010600 | | 71533 |
| E02 | | | | | 4209 | | 220985 | |

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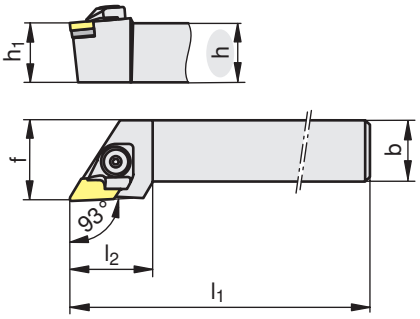
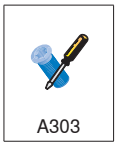
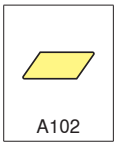




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 25 | CKJNR 2525 M16 | R | 25 | 25 | 150 | 35 | 32 | KN.. 1604R.. | E01 |
| 25 | CKJNL 2525 M16 | L | 25 | 25 | 150 | 35 | 32 | KN.. 1604L.. | E02 |

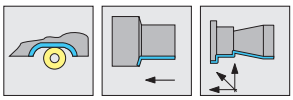
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 149397 | 106014 | 4210 | 149395 | 149400 | 149399 | 4209 |
| E02 | 149397 | 106009 | 4210 | 149396 | 149400 | 149399 | 4209 |



# CRDN...

Simplex N





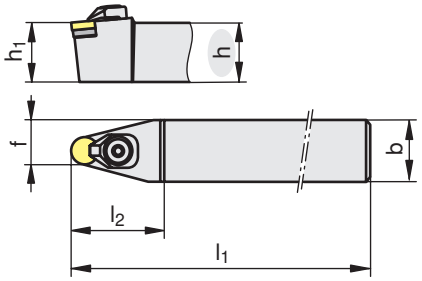
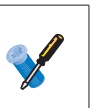


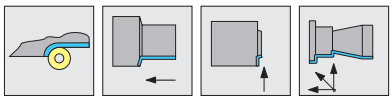

Bild zeigt neutrale Ausführung

| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 25 | CRDNN 2525 M09 | N | 25 | 25 | 150 | 35 | 12,5 | RN.. 0903.. | E01 |
| 32 | CRDNN 3232 P09 | N | 32 | 32 | 170 | 35 | 16 | RN.. 0903.. | E01 |
| 25 | CRDNN 2525 M12 | N | 25 | 25 | 150 | 35 | 12,5 | RN.. 1203.. | E02 |
| 32 | CRDNN 3232 P12 | N | 32 | 32 | 170 | 35 | 16 | RN.. 1203.. | E02 |
| 40 | CRDNN 4040 R12 | N | 40 | 40 | 200 | 35 | 20 | RN.. 1203.. | E02 |
| 25 | CRDNN 2525 M12-04 | N | 25 | 25 | 150 | 35 | 12,5 | RN.. 1204.. | E03 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 4259 | 40187 | 4211 | 4261 | 8095010600 | 40505 |
| E02 | 4259 | 40192 | 4210 | 4261 | 8095010600 | 40506 |
| E03 | 4259 | 146066 | 4210 | 4261 | 8095010600 | 146868 |


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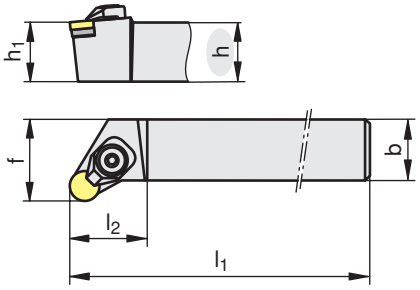
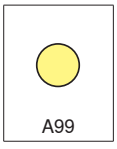



Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 20 | CRGNR 2020 K09 | R | 20 | 20 | 125 | 21 | 25 | RN.. 0903.. | E01 |
| 25 | CRGNR 2525 M09 | R | 25 | 25 | 150 | 21 | 32 | RN.. 0903.. | E01 |
| 25 | CRGNL 2525 M09 | L | 25 | 25 | 150 | 21 | 32 | RN.. 0903.. | E01 |
| 32 | CRGNR 3232 P09 | R | 32 | 32 | 170 | 21 | 40 | RN.. 0903.. | E01 |
| 32 | CRGNL 3232 P09 | L | 32 | 32 | 170 | 21 | 40 | RN.. 0903.. | E01 |
| 25 | CRGNR 2525 M12 | R | 25 | 25 | 150 | 21 | 32 | RN.. 1203.. | E02 |
| 25 | CRGNL 2525 M12 | L | 25 | 25 | 150 | 21 | 32 | RN.. 1203.. | E02 |
| 32 | CRGNR 3232 P12 | R | 32 | 32 | 170 | 21 | 40 | RN.. 1203.. | E02 |
| 32 | CRGNL 3232 P12 | L | 32 | 32 | 170 | 21 | 40 | RN.. 1203.. | E02 |
| 40 | CRGNR 4040 R12 | R | 40 | 40 | 200 | 21 | 50 | RN.. 1203.. | E02 |
| 40 | CRGNL 4040 R12 | L | 40 | 40 | 200 | 21 | 50 | RN.. 1203.. | E02 |
| 25 | CRGNR 2525 M12-04 | R | 25 | 25 | 150 | 21 | 32 | RN.. 1204.. | E03 |
| 25 | CRGNL 2525 M12-04 | L | 25 | 25 | 150 | 21 | 32 | RN.. 1204.. | E03 |

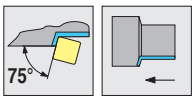
| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 4259 | 40187 | 4211 | 4261 | 8095010600 | 40505 |
| E02 | 4259 | 40192 | 4210 | 4261 | 8095010600 | 40506 |
| E03 | 4259 | 146066 | 4210 | 4261 | 8095010600 | 146868 |


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# CSBN...

Simplex N





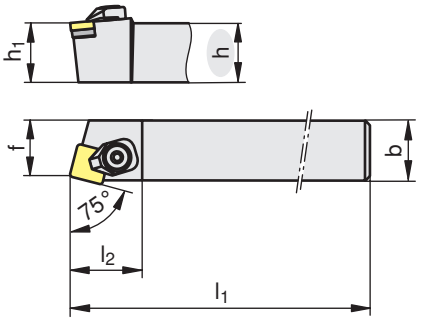
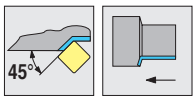




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 25 | CSBNR 2525 M09 | R | 25 | 25 | 150 | 25 | 22 | SN.. 0903.. | E01 |
| 25 | CSBNL 2525 M09 | L | 25 | 25 | 150 | 25 | 22 | SN.. 0903.. | E01 |
| 25 | CSBNR 2525 M12-03 | R | 25 | 25 | 150 | 29 | 22 | SN.. 1203.. | E02 |
| 25 | CSBNL 2525 M12-03 | L | 25 | 25 | 150 | 29 | 22 | SN.. 1203.. | E02 |
| 25 | CSBNR 2525 M12 | R | 25 | 25 | 150 | 32 | 22 | SN.. 1204.. | E03 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| E01 | | | | | | 4209 | 8095008700 | |
| E02 | | | | | | 4209 | 220985 | |
| E03 | 4147 | 26122 | 4210 | 4265 | 4213 | 4209 | | 4283 |

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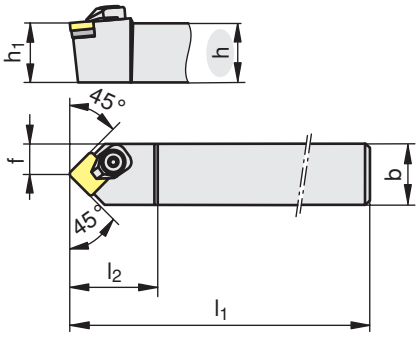




Bild zeigt neutrale Ausführung

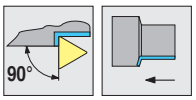
| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 25 | CSDNN 2525 M09 | N | 25 | 25 | 150 | 25 | 12,5 | SN.. 0903.. | E01 |
| 32 | CSDNN 3232 P12-03 | N | 32 | 32 | 170 | 28 | 16 | SN.. 1203.. | E02 |
| 25 | CSDNN 2525 M12 | N | 25 | 25 | 150 | 34 | 12,5 | SN.. 1204.. | E03 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| E01 | 4259 | | 4299 | 4211 | 4261 | | | 8095010600 | 41917 |
| E02 | 4259 | | 26122 | 4210 | 4261 | | | 8095010600 | 11963665 |
| E03 | | 4147 | 26122 | 4210 | 4265 | 4213 | 4209 | | 4283 |

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# CTAN...

Simplex N





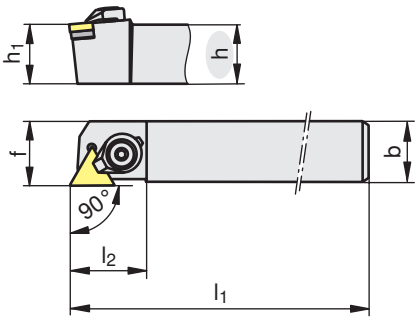
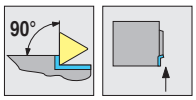




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | △ | |
|---|---|---|---|---|---|---|---|---|---|
| 20 | CTANR 2020 K16 | R | 20 | 20 | 125 | 30 | 20,5 | TN.. 1604.. | E01 |
| 25 | CTANR 2525 M16 | R | 25 | 25 | 150 | 30 | 25,5 | TN.. 1604.. | E01 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 4147 | 26124 | 4210 | 4265 | 4213 | 4209 | 4287 |

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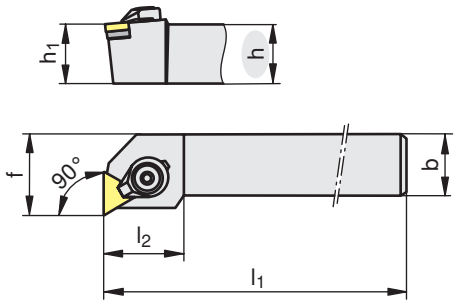




Bild zeigt Rechtsausführung

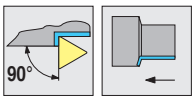
| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | CTFNR 1212 F11 | R | 12 | 12 | 80 | 15 | 16 | TN.. 1103.. | E01 |

| | | | |
|---|---|---|---|
| E01 | 4524 | 4523 | 8095010500 |

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# CTGN...

Simplex N





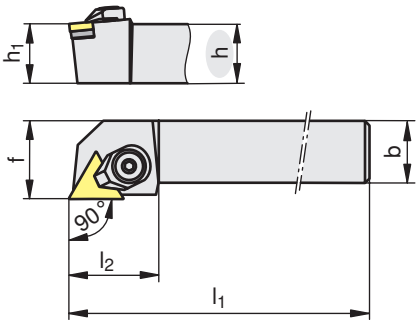
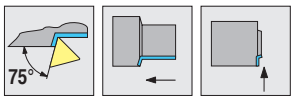




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | △ | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | CTGNR 1212 F11 | R | 12 | 12 | 80 | 16 | 16 | TN.. 1103.. | E01 |
| 12 | CTGNL 1212 F11 | L | 12 | 12 | 80 | 16 | 16 | TN.. 1103.. | E01 |
| 25 | CTGNR 2525 M11 | R | 25 | 25 | 150 | 25 | 32 | TN.. 1103.. | E02 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 4524 | | | 4523 | 8095010500 | |
| E02 | 4259 | 4300 | 4211 | 4261 | 8095010600 | 4288 |

A303 A101





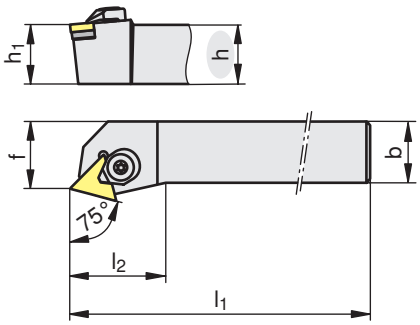




Bild zeigt Rechtsausführung

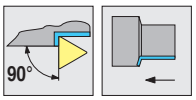
| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | CTRNR 1212 F11 | R | 12 | 12 | 80 | 17,5 | 13 | TN.. 1103.. | E01 |

| | | | |
|---|---|---|---|
| E01 | 4524 | 4523 | 8095010500 |

A303 A101

# CTAP...

Simplex P





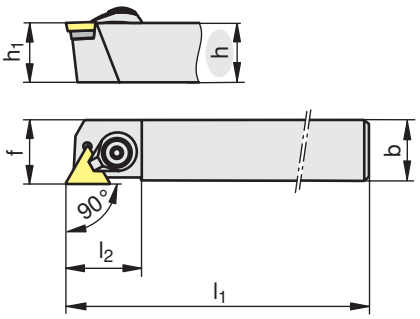
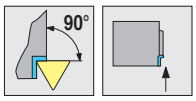




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | △ | |
|---|---|---|---|---|---|---|---|---|---|
| 20 | CTAPR 2020 K16 | R | 20 | 20 | 125 | 30 | 20,5 | TP.. 1603.. | E01 |
| 20 | CTAPL 2020 K16 | L | 20 | 20 | 125 | 30 | 20,5 | TP.. 1603.. | E01 |
| 25 | CTAPR 2525 M16 | R | 25 | 25 | 150 | 30 | 25,5 | TP.. 1603.. | E01 |
| 25 | CTAPL 2525 M16 | L | 25 | 25 | 150 | 30 | 25,5 | TP.. 1603.. | E01 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 4147 | 26126 | 4210 | 4265 | 4213 | 4209 | 4292 |

A303 A105





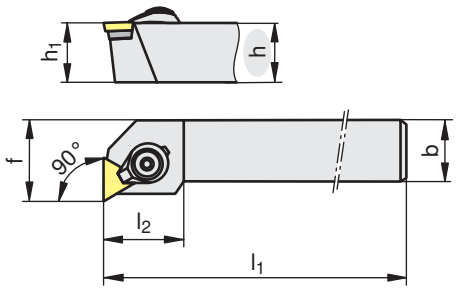




Bild zeigt Rechtsausführung

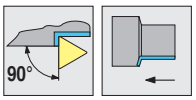
| h [mm] | Type, Bezeichnung | LNR | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | △ | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | CTFPR 1212 F11 | R | 12 | 12 | 80 | 14 | 16 | TP.. 1103.. | E01 |
| 20 | CTFPR 2020 K16 | R | 20 | 20 | 125 | 28 | 25 | TP.. 1603.. | E02 |
| 25 | CTFPR 2525 M16 | R | 25 | 25 | 150 | 32 | 32 | TP.. 1603.. | E02 |
| 25 | CTFPL 2525 M16 | L | 25 | 25 | 150 | 32 | 32 | TP.. 1603.. | E02 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| E01 | 4524 | | | | 4523 | | | 8095010500 | |
| E02 | | 4147 | 26126 | 4210 | 4265 | 4213 | 4209 | | 4292 |

A303 A105

# CTGP...

Simplex P





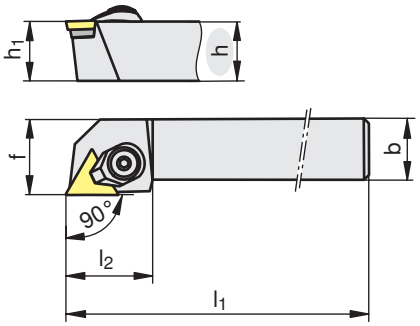



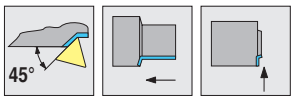

Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | △ | |
|---|---|---|---|---|---|---|---|---|---|
| 10 | CTGPR 1010 E11 | R | 10 | 10 | 70 | 16,5 | 12 | TP.. 1103.. | E01 |
| 12 | CTGPR 1212 F11 | R | 12 | 12 | 80 | 16,5 | 16 | TP.. 1103.. | E01 |
| 12 | CTGPL 1212 F11 | L | 12 | 12 | 80 | 16,5 | 16 | TP.. 1103.. | E01 |

| | | | |
|---|---|---|---|
| E01 | 4524 | 4523 | 8095010500 |


A303


A105





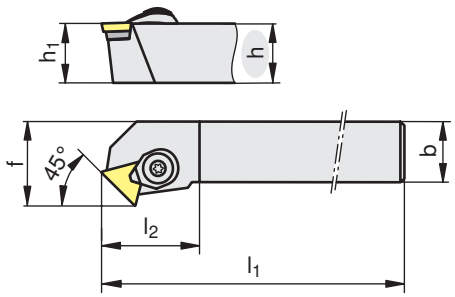




Bild zeigt Rechtsausführung

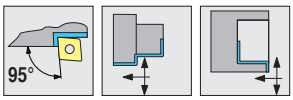
| h [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | △ | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | CTSPR 1212 F11 | R | 12 | 12 | 80 | 16 | 16 | TP.. 1103.. | E01 |

| | | | |
|---|---|---|---|
| E01 | 4524 | 4523 | 8095010500 |

A303 A105

# HSK-T DCLN...

MaxiLock D





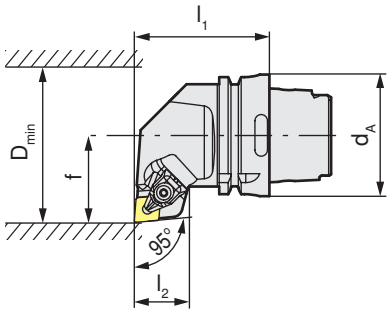
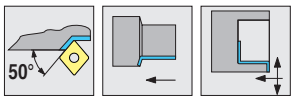




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-DCLNR-12 | R | 70 | 28 | 100 | 45 | CN.. 1204.. | E01 |
| 63 | HSK-T63-DCLNL-12 | L | 70 | 28 | 100 | 45 | CN.. 1204.. | E01 |
| 63 | HSK-T63-DCLNR-16 | R | 70 | 28 | 125 | 45 | CN.. 1606.. | E02 |
| 63 | HSK-T63-DCLNL-16 | L | 70 | 28 | 125 | 45 | CN.. 1606.. | E02 |
| 63 | HSK-T63-DCLNR-19 | R | 70 | 28 | 125 | 45 | CN.. 1906.. | E03 |
| 63 | HSK-T63-DCLNL-19 | L | 70 | 28 | 125 | 45 | CN.. 1906.. | E03 |
| 100 | HSK-T100-DCLNR-12 | R | 80 | 28 | 125 | 55 | CN.. 1204.. | E01 |
| 100 | HSK-T100-DCLNL-12 | L | 80 | 28 | 125 | 55 | CN.. 1204.. | E01 |
| 100 | HSK-T100-DCLNR-19 | R | 80 | 28 | 125 | 55 | CN.. 1906.. | E03 |
| 100 | HSK-T100-DCLNL-19 | L | 80 | 28 | 125 | 55 | CN.. 1906.. | E03 |

| | | | | |
|---|---|---|---|---|
| E01 | 11224545 | 11224494 | 11211558 | 11224503 |
| E02 | 11227322 | 11227318 | 11227315 | 11227323 |
| E03 | 11227325 | 11227318 | 11227316 | 11227323 |

A303 A63-A66 A79





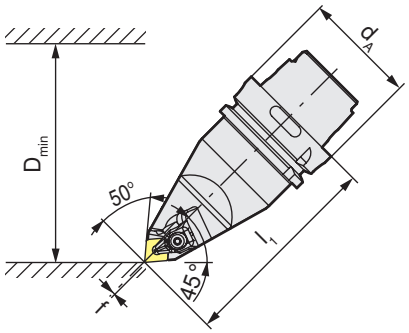




Bild zeigt neutrale Ausführung

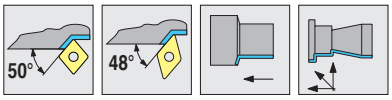
| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-DCMNN-12 | N | 115 | 110 | 0 | CN.. 1204.. | E01 |
| 100 | HSK-T100-DCMNN-12 | N | 150 | 115 | 0 | CN.. 1204.. | E01 |

| | | | | |
|---|---|---|---|---|
| E01 | 11224545 | 11224494 | 11211558 | 11224503 |

A303 A63-A66 A79

# HSK-T DCMN+DDMN...

MaxiLock D





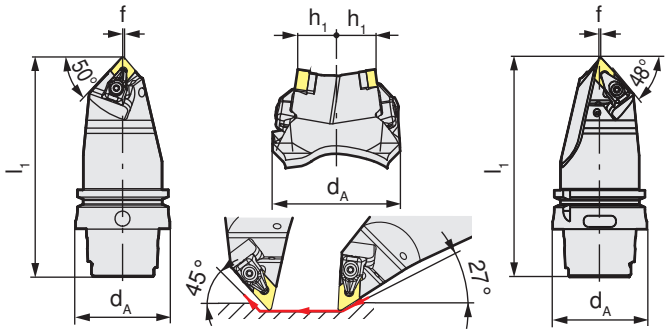



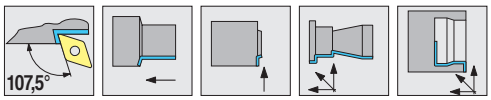

Bild zeigt Linksausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | $h_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-DCMNL12+DDMNL15 | L | 115 | 20 | 0,5 | CN.. 1204.. / DN.. 1506.. | E01 |
| 100 | HSK-T100-DCMNL12+DDMNL15 | L | 150 | 20 | 0,5 | CN.. 1204.. / DN.. 1506.. | E01 |

**Achtung:**
Plandrehen nur bis max. Ø 78 mm möglich

| | | | | | |
|---|---|---|---|---|---|
| E01 | 11224545 | 11224494 | 11211558 | 11211562 | 11224503 |

| | | | | |
|---|---|---|---|---|
| A303 | A63-A66 | A79 | A67-A69 | A79 |





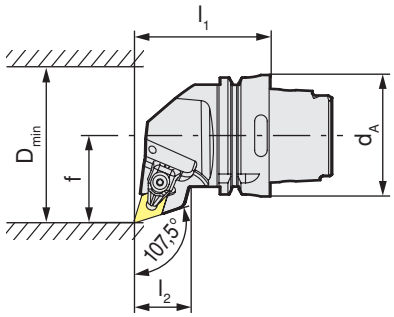




Bild zeigt Rechtsausführung

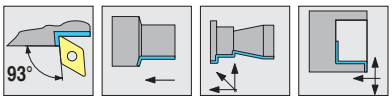
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-DDHNR-15 | R | 70 | 28 | 125 | 45 | DN.. 1506.. | E01 |
| 63 | HSK-T63-DDHNL-15 | L | 70 | 28 | 125 | 45 | DN.. 1506.. | E01 |

| | | | | |
|---|---|---|---|---|
| E01 | 11224545 | 11224494 | 11211562 | 11224503 |

A303 A67-A69 A79

# HSK-T DDJN...

MaxiLock D





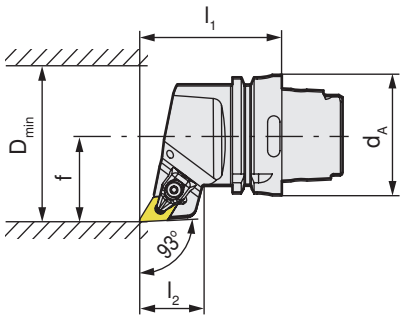
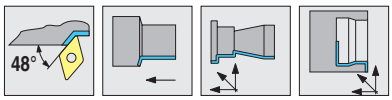




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-DDJNR-15 | R | 75 | 33 | 125 | 45 | DN.. 1506.. | E01 |
| 63 | HSK-T63-DDJNL-15 | L | 75 | 33 | 125 | 45 | DN.. 1506.. | E01 |
| 100 | HSK-T100-DDJNR-15 | R | 85 | 33 | 125 | 55 | DN.. 1506.. | E01 |
| 100 | HSK-T100-DDJNL-15 | L | 85 | 33 | 125 | 55 | DN.. 1506.. | E01 |

| | | | | |
|---|---|---|---|---|
| E01 | 11224545 | 11224494 | 11211562 | 11224503 |

A303 | A67-A69 | A79





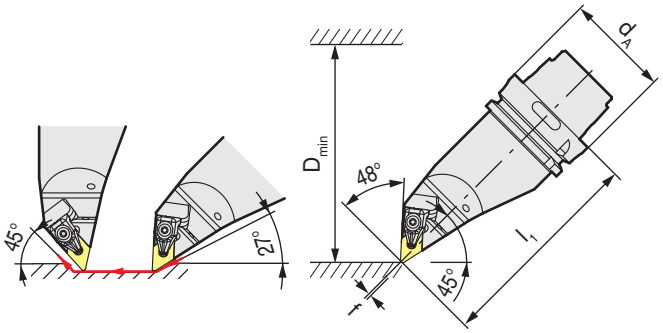




Bild zeigt Rechtsausführung

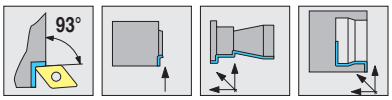
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-DDMNL-15 | L | 130 | 110 | 0 | DN.. 1506.. | E01 |
| 100 | HSK-T100-DDMNL-15 | L | 160 | 120 | 0 | DN.. 1506.. | E01 |

| | | | | |
|---|---|---|---|---|
| E01 | 11224545 | 11224494 | 11211562 | 11224503 |

A303 A67-A69 A79

# HSK-T DDUN...

MaxiLock D





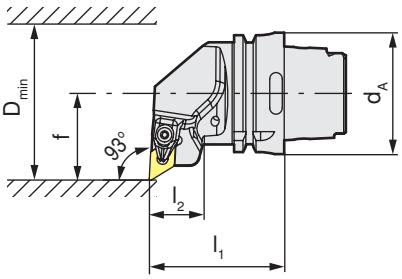
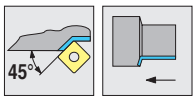




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-DDUNR-15 | R | 70 | 28 | 125 | 45 | DN.. 1506.. | E01 |
| 63 | HSK-T63-DDUNL-15 | L | 70 | 28 | 125 | 45 | DN.. 1506.. | E02 |
| 100 | HSK-T100-DDUNR-15 | R | 80 | 26 | 125 | 55 | DN.. 1506.. | E02 |
| 100 | HSK-T100-DDUNL-15 | L | 80 | 26 | 125 | 55 | DN.. 1506.. | E02 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 11224545 | | 11211562 | 11211563 | 11224503 |
| E02 | 11224545 | 11224494 | 11211562 | | 11224503 |

A303 A67-A69 A79





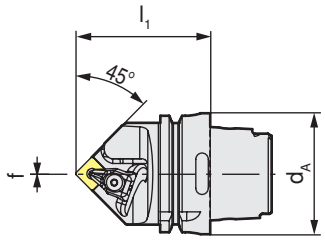




Bild zeigt neutrale Ausführung

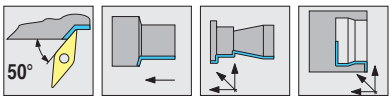
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|
| 63 | HSK-T63-DSDNN-12 | N | 70 | 0 | SN.. 1204.. | E01 |
| 63 | HSK-T63-DSDNN-15 | N | 75 | 0 | SN.. 1506.. | E02 |
| 100 | HSK-T100-DSDNN-12 | N | 80 | 0 | SN.. 1204.. | E01 |
| 100 | HSK-T100-DSDNN-19 | N | 85 | 0 | SN.. 1906.. | E03 |

| | | | | |
|---|---|---|---|---|
| E01 | 11224545 | 11224494 | 11211561 | 11224503 |
| E02 | 11227322 | 11227318 | 11247269 | 11227323 |
| E03 | 11227325 | 11227318 | 11227317 | 11227323 |

A303 A70-A72 A80

# HSK-T DVMN...

MaxiLock D





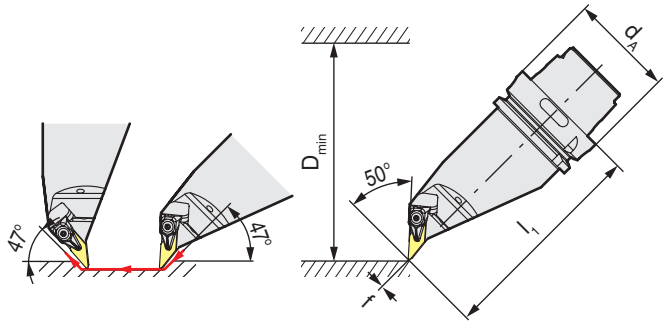
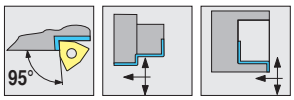




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-DVMNL-16 | L | 130 | 110 | 0 | VN.. 1604.. | E01 |
| 100 | HSK-T100-DVMNL-16 | L | 160 | 120 | 0 | VN.. 1604.. | E01 |

| | | | | |
|---|---|---|---|---|
| E01 | 11258694 | 11227305 | 11227311 | 11227314 |

| | | |
|---|---|---|
| A303 | A76 | A80 |





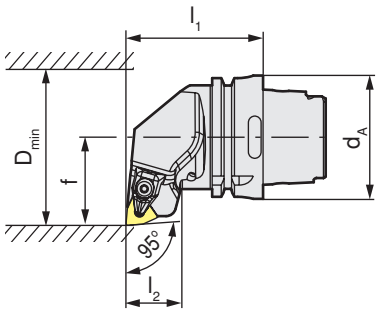




Bild zeigt Rechtsausführung

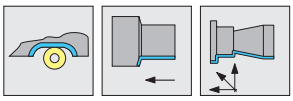
| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-DWLNR-08 | R | 70 | 28 | 125 | 45 | WN.. 0804.. | E01 |
| 63 | HSK-T63-DWLNL-08 | L | 70 | 28 | 125 | 45 | WN.. 0804.. | E01 |
| 100 | HSK-T100-DWLNR-08 | R | 80 | 28 | 125 | 55 | WN.. 0804.. | E01 |
| 100 | HSK-T100-DWLNL-08 | L | 80 | 28 | 125 | 55 | WN.. 0804.. | E01 |

| | | | | |
|---|---|---|---|---|
| E01 | 11224545 | 11224494 | 11211563 | 11224503 |

A303
A77-A78

# HSK-T PRDC...

MaxiLock N





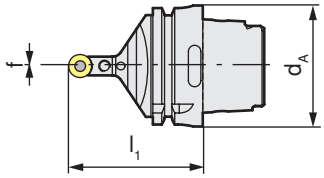


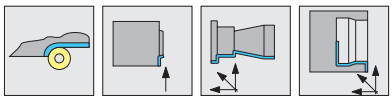

Bild zeigt neutrale Ausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|
| 63 | HSK-T63-PRDCN-12 | N | 70 | 0 | RC.. 1204.. | E01 |
| 100 | HSK-T100-PRDCN-12 | N | 80 | 0 | RC.. 1204.. | E01 |
| 100 | HSK-T100-PRDCN-16 | N | 80 | 0 | RC.. 1606.. | E02 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 59445 | 154563 | 59436 | 154568 | 86174 | 4770 | 154578 |
| E02 | 154575 | 154564 | 154577 | 154570 | 86176 | 4771 | 154579 |

A303

A87





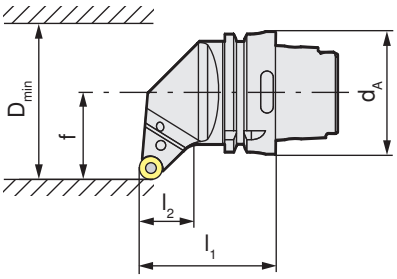



Bild zeigt Rechtsausführung

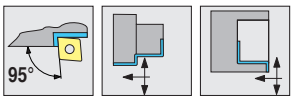
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-PRSCR-12 | R | 70 | 26 | 100 | 45 | RC.. 1204.. | E01 |
| 63 | HSK-T63-PRSCL-12 | L | 70 | 26 | 100 | 45 | RC.. 1204.. | E01 |
| 100 | HSK-T100-PRSCR-12 | R | 80 | 19 | 106 | 55 | RC.. 1204.. | E01 |
| 100 | HSK-T100-PRSCL-12 | L | 80 | 19 | 106 | 55 | RC.. 1204.. | E01 |
| 100 | HSK-T100-PRSCR-16 | R | 80 | 25 | 125 | 55 | RC.. 1606.. | E02 |
| 100 | HSK-T100-PRSCL-16 | L | 80 | 25 | 125 | 55 | RC.. 1606.. | E02 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 59445 | 154563 | 59436 | 154568 | 86174 | 4770 | 154578 |
| E02 | 154575 | 154564 | 154577 | 154570 | 86176 | 4771 | 154579 |

A303 A87

# HSK-T SCLC...

MaxiLock S





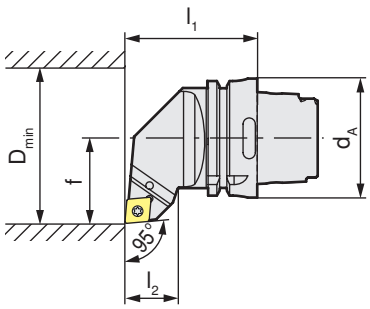
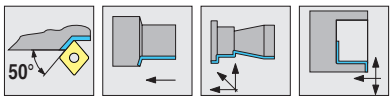




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-SCLCR-12 | R | 70 | 28 | 100 | 45 | CC.. 1204.. | E01 |
| 63 | HSK-T63-SCLCL-12 | L | 70 | 28 | 100 | 45 | CC.. 1204.. | E01 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 54981 | 61006 | 69296 | 69293 | 74208 |

A303 A82-A84 A92





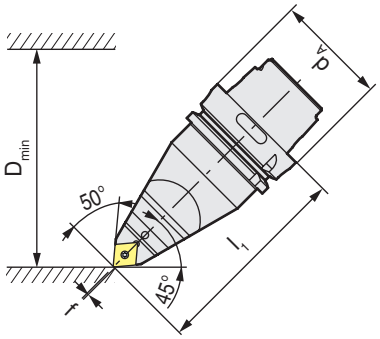




Bild zeigt neutrale Ausführung

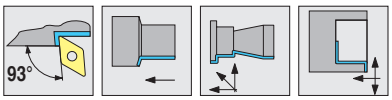
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-SCMCN-12 | N | 115 | 110 | 0 | CC.. 1204.. | E01 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 54981 | 61006 | 69296 | 69293 | 74208 |

| | | |
|---|---|---|
| A303 | A82-A84 | A92 |

# HSK-T SDJC...

MaxiLock S





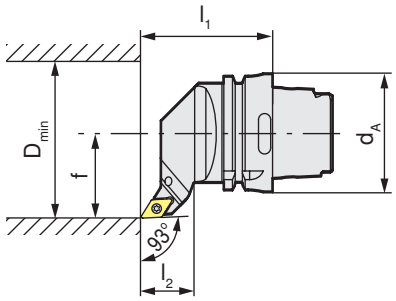
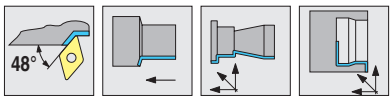




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-SDJCR-11 | R | 70 | 28 | 100 | 45 | DC.. 11T3.. | E01 |
| 63 | HSK-T63-SDJCL-11 | L | 70 | 28 | 100 | 45 | DC.. 11T3.. | E01 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 24647 | 26146 | 69294 | 69293 | 29278 |

A303 A85-A86 A92





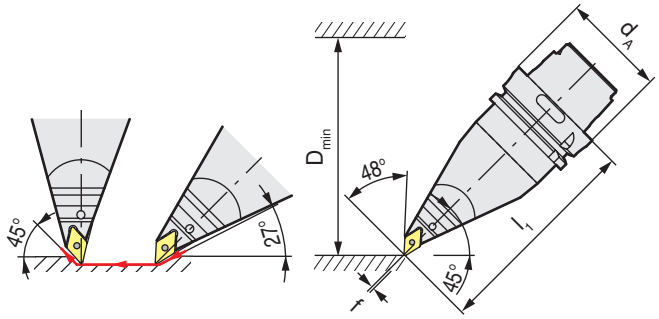




Bild zeigt Linksausführung

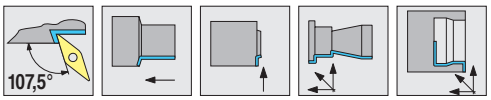
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-SDMCL-11 | L | 130 | 110 | 0 | DC.. 11T3.. | E01 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 24647 | 26146 | 69294 | 69293 | 29278 |

| | | |
|---|---|---|
| A303 | A85-A86 | A92 |

# HSK-T SVHC...

MaxiLock S





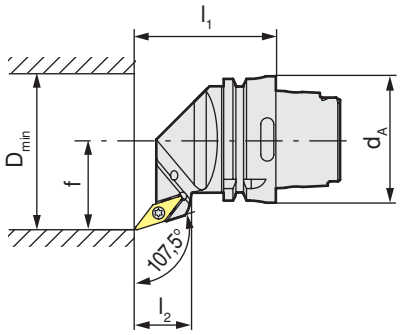
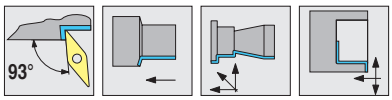




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-SVHCR-16 | R | 70 | 28 | 100 | 45 | VC.. 1604.. | E01 |
| 63 | HSK-T63-SVHCL-16 | L | 70 | 28 | 100 | 45 | VC.. 1604.. | E01 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 24647 | 26147 | 69294 | 69293 | 29279 |

A303 A90-A91 A92





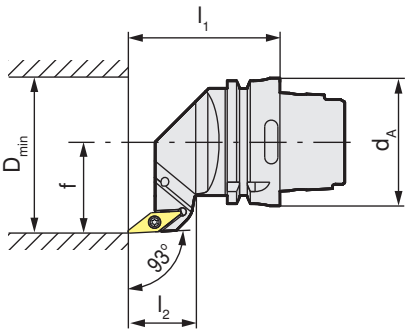




Bild zeigt Rechtsausführung

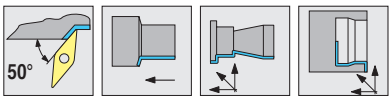
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-SVJCR-16 | R | 75 | 33 | 100 | 45 | VC.. 1604.. | E01 |
| 63 | HSK-T63-SVJCL-16 | L | 75 | 33 | 100 | 45 | VC.. 1604.. | E01 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 24647 | 26147 | 69294 | 69293 | 29279 |

A303 | A90-A91 | A92

# HSK-T SVMC...

MaxiLock S





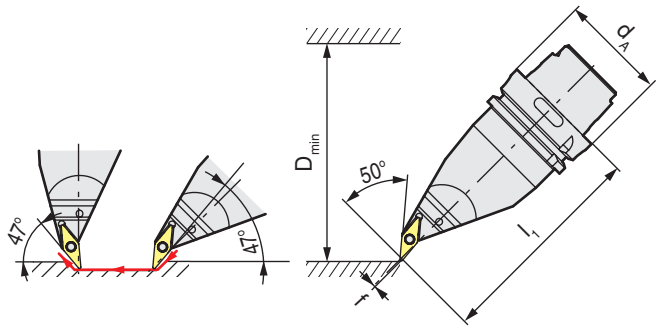
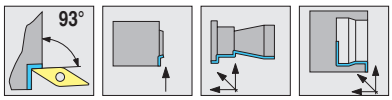




Bild zeigt Linksausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-SVMCL-16 | L | 130 | 110 | 0 | VC.. 1604.. | E01 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 24647 | 26147 | 69294 | 69293 | 29279 |

| | | |
|---|---|---|
| A303 | A90-A91 | A92 |





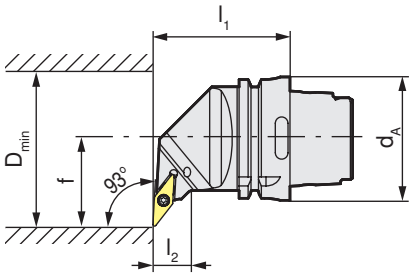




Bild zeigt Rechtsausführung

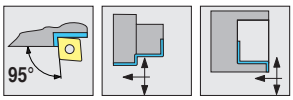
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-SVUCR-16 | R | 70 | 20 | 100 | 45 | VC.. 1604.. | E01 |
| 63 | HSK-T63-SVUCL-16 | L | 70 | 20 | 100 | 45 | VC.. 1604.. | E01 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 24647 | 26147 | 69294 | 69293 | 29279 |

| | | |
|---|---|---|
| A303 | A90-A91 | A92 |

# UTS PCLN...

MaxiLock N





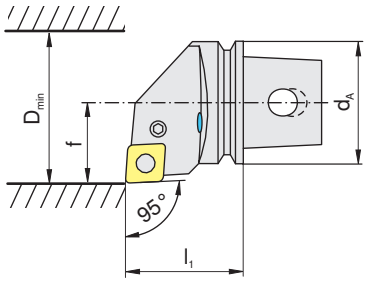
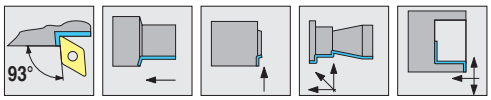




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|
| 40 | UT40-PCLNR-12 | R | 40 | 54 | 27 | CN.. 1204.. | E01 |
| 40 | UT40-PCLNL-12 | L | 40 | 54 | 27 | CN.. 1204.. | E01 |
| 50 | UT50-PCLNR-12 | R | 50 | 70 | 35 | CN.. 1204.. | E02 |
| 50 | UT50-PCLNL-12 | L | 50 | 70 | 35 | CN.. 1204.. | E02 |
| 50 | UT50-PCLNR-16 | R | 50 | 70 | 35 | CN.. 1606.. | E03 |
| 50 | UT50-PCLNL-16 | L | 50 | 70 | 35 | CN.. 1606.. | E03 |
| 63 | UT63-PCLNR-12 | R | 60 | 86 | 43 | CN.. 1204.. | E04 |
| 63 | UT63-PCLNL-12 | L | 60 | 86 | 43 | CN.. 1204.. | E04 |
| 63 | UT63-PCLNR-16 | R | 60 | 86 | 43 | CN.. 1606.. | E05 |
| 63 | UT63-PCLNL-16 | L | 60 | 86 | 43 | CN.. 1606.. | E05 |
| 63 | UT63-PCLNR-19 | R | 60 | 86 | 43 | CN.. 1906.. | E06 |
| 63 | UT63-PCLNL-19 | L | 60 | 86 | 43 | CN.. 1906.. | E06 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| E01 | 59446 | 59568 | 59437 | 59430 | 86176 | 194263 | 4771 | 140587 |
| E02 | 59446 | 59568 | 59437 | 59430 | 86176 | 225429 | 4771 | 140587 |
| E03 | 59443 | 59451 | 59438 | 59426 | 86177 | 225429 | 4771 | 140589 |
| E04 | 59446 | 59568 | 59437 | 59430 | 86176 | 225430 | 4771 | 140587 |
| E05 | 59443 | 59451 | 59438 | 59426 | 86177 | 225430 | 4771 | 140589 |
| E06 | 59448 | 59569 | 59439 | 59434 | 86178 | 225430 | 4209 | 140590 |

A303 A63-A66 A79





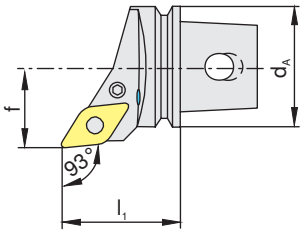




Bild zeigt Rechtsausführung

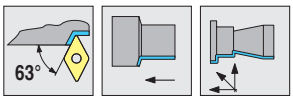
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|
| 40 | UT40-PDJNR-11 | R | 40 | 27 | DN.. 1104.. | E01 |
| 40 | UT40-PDJNL-11 | L | 40 | 27 | DN.. 1104.. | E01 |
| 40 | UT40-PDJNR-15 | R | 40 | 27 | DN.. 1506.. | E02 |
| 40 | UT40-PDJNL-15 | L | 40 | 27 | DN.. 1506.. | E02 |
| 50 | UT50-PDJNR-15 | R | 50 | 35 | DN.. 1506.. | E03 |
| 50 | UT50-PDJNL-15 | L | 50 | 35 | DN.. 1506.. | E03 |
| 63 | UT63-PDJNL-11 | L | 60 | 43 | DN.. 1104.. | E04 |
| 63 | UT63-PDJNR-15 | R | 60 | 43 | DN.. 1506.. | E05 |
| 63 | UT63-PDJNL-15 | L | 60 | 43 | DN.. 1506.. | E05 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| E01 | 59445 | 293140 | 293147 | 293143 | 86174 | 194263 | 4770 | 293151 |
| E02 | 59443 | 59570 | 59437 | 59432 | 86176 | 194263 | 4771 | 140591 |
| E03 | 59443 | 59570 | 59437 | 59432 | 86176 | 225429 | 4771 | 140591 |
| E04 | 59445 | 293140 | 293147 | 293143 | 86174 | 225430 | 4770 | 293151 |
| E05 | 59443 | 59570 | 59437 | 59432 | 86176 | 225430 | 4771 | 140591 |


A303 A67-A69 A79

# UTS PDNN...

MaxiLock N





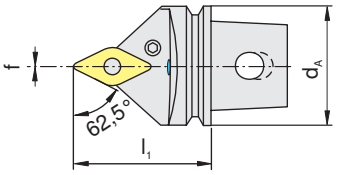
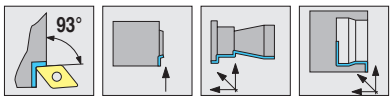




Bild zeigt neutrale Ausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|
| 40 | UT40-PDNNR-15 | R | 45 | 0 | DN.. 1506.. | E01 |
| 40 | UT40-PDNNL-15 | L | 45 | 0 | DN.. 1506.. | E01 |
| 63 | UT63-PDNNR-15 | R | 60 | 0 | DN.. 1506.. | E02 |
| 63 | UT63-PDNNL-15 | L | 60 | 0 | DN.. 1506.. | E02 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| E01 | 59443 | 59570 | 59437 | 59432 | 86176 | 194263 | 4771 | 140591 |
| E02 | 59443 | 59570 | 59437 | 59432 | 86176 | 225430 | 4771 | 140591 |

A303 A67-A69 A79





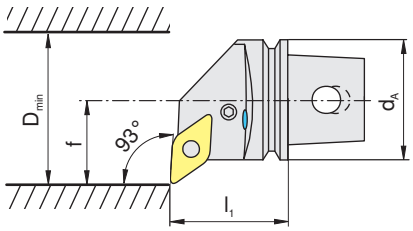
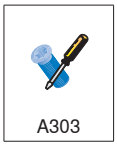



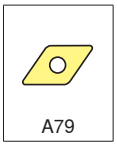

Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|
| 40 | UT40-PDUNR-11 | R | 40 | 49 | 27 | DN.. 1104.. | E01 |
| 40 | UT40-PDUNL-11 | L | 40 | 49 | 27 | DN.. 1104.. | E01 |
| 40 | UT40-PDUNR-15 | R | 40 | 49 | 27 | DN.. 1506.. | E02 |
| 40 | UT40-PDUNL-15 | L | 40 | 49 | 27 | DN.. 1506.. | E02 |
| 50 | UT50-PDUNR-15 | R | 50 | 62 | 35 | DN.. 1506.. | E03 |
| 50 | UT50-PDUNL-15 | L | 50 | 62 | 35 | DN.. 1506.. | E03 |
| 63 | UT63-PDUNR-15 | R | 60 | 77 | 43 | DN.. 1506.. | E04 |
| 63 | UT63-PDUNL-15 | L | 60 | 77 | 43 | DN.. 1506.. | E04 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| E01 | 59445 | 293140 | 293147 | 293143 | 86174 | 194263 | 4770 | 293151 |
| E02 | 59443 | 59570 | 59437 | 59432 | 86176 | 194263 | 4771 | 140591 |
| E03 | 59443 | 59570 | 59437 | 59432 | 86176 | 225429 | 4771 | 140591 |
| E04 | 59443 | 59570 | 59437 | 59432 | 86176 | 225430 | 4771 | 140591 |

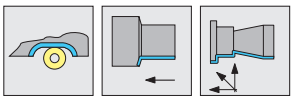

A303


A67-A69


A79

# UTS PRDC...

MaxiLock N





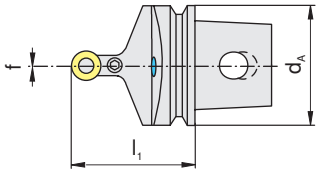
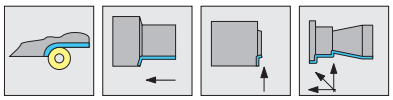



Bild zeigt neutrale Ausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|
| 50 | UT50-PRDCN-12 | N | 50 | 0 | RC.. 1204.. | E01 |
| 63 | UT63-PRDCN-16 | N | 60 | 0 | RC.. 1606.. | E02 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| E01 | 59445 | 154563 | 59436 | 154568 | 86174 | 225429 | 4770 | 154578 |
| E02 | 154575 | 154564 | 154577 | 154570 | 86176 | 225430 | 4771 | 154579 |

A303 A87





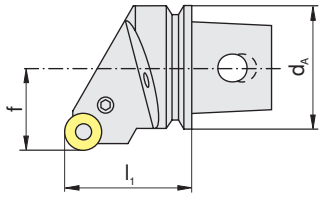



Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|
| 50 | UT50-PRGCR-12 | R | 50 | 35 | RC.. 1204.. | E01 |
| 50 | UT50-PRGCR-16 | R | 50 | 35 | RC.. 1606.. | E02 |
| 63 | UT63-PRGCL-16 | L | 60 | 43 | RC.. 1606.. | E03 |

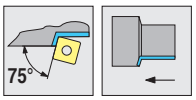
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| E01 | 59445 | 154563 | 59436 | 154568 | 86174 | 225429 | 4770 | 154578 |
| E02 | 154575 | 154564 | 154577 | 154570 | 86176 | 225429 | 4771 | 154579 |
| E03 | 154575 | 154564 | 154577 | 154570 | 86176 | 225430 | 4771 | 154579 |

A303

A87

# UTS PSBN...

MaxiLock N





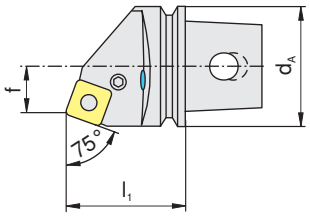
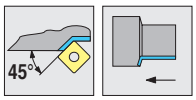




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|
| 40 | UT40-PSBNL-12 | L | 40 | 17 | SN.. 1204.. | E01 |
| 63 | UT63-PSBNL-12 | L | 60 | 27 | SN.. 1204.. | E02 |
| 63 | UT63-PSBNL-15 | L | 60 | 27 | SN.. 1506.. | E03 |
| 63 | UT63-PSBNR-19 | R | 60 | 27 | SN.. 1906.. | E04 |
| 63 | UT63-PSBNL-19 | L | 60 | 27 | SN.. 1906.. | E04 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| E01 | 59446 | 59564 | 59437 | 59430 | 86176 | 194263 | 4771 | 140595 |
| E02 | 59446 | 59564 | 59437 | 59430 | 86176 | 225430 | 4771 | 140595 |
| E03 | 59443 | 59549 | 59438 | 59426 | 86177 | 225430 | 4771 | 140596 |
| E04 | 59448 | 59566 | 59439 | 59434 | 86178 | 225430 | 4209 | 140597 |

A303 A70-A72 A80





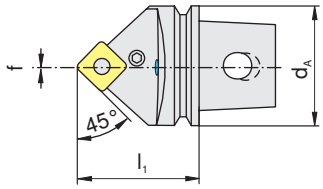




Bild zeigt neutrale Ausführung

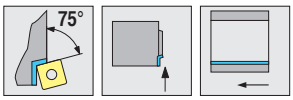
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|
| 40 | UT40-PSDNN-12 | N | 40 | 0 | SN.. 1204.. | E01 |
| 63 | UT63-PSDNN-15 | N | 60 | 0 | SN.. 1506.. | E02 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| E01 | 59446 | 59564 | 59437 | 59430 | 86176 | 194263 | 4771 | 140595 |
| E02 | 59443 | 59549 | 59438 | 59426 | 86177 | 225430 | | |

| | | |
|---|---|---|
| A303 | A70-A72 | A80 |

# UTS PSKN...

MaxiLock N





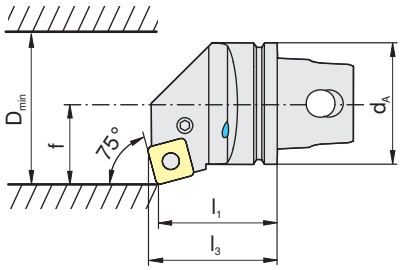
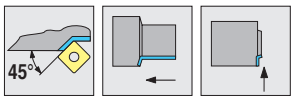




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $l_3$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 40 | UT40-PSKNL-12 | L | 40 | 44,0 | 49 | 27 | SN.. 1204.. | E01 |
| 63 | UT63-PSKNL-19 | L | 60 | 66,0 | 80 | 43 | SN.. 1906.. | E02 |
| 63 | UT63-PSKNR-19 | L | 60 | 66,0 | 80 | 43 | SN.. 1906.. | E02 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| E01 | 59446 | 59564 | 59437 | 59430 | 86176 | 194263 | 4771 | 140595 |
| E02 | 59448 | 59566 | 59439 | 59434 | 86178 | 225430 | 4209 | 140597 |

A303 A70-A72 A80





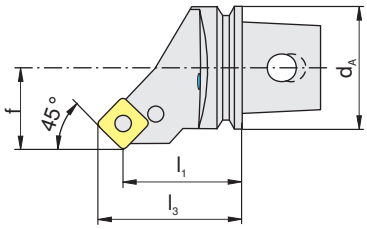




Bild zeigt Rechtsausführung

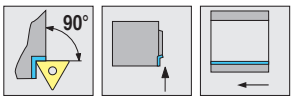
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $l_3$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|
| 40 | UT40-PSSNR-12 | R | 40 | 48,0 | 27 | SN.. 1204.. | E01 |
| 40 | UT40-PSSNL-12 | L | 40 | 48,0 | 27 | SN.. 1204.. | E01 |
| 63 | UT63-PSSNL-12 | L | 60 | 68,0 | 43 | SN.. 1204.. | E02 |
| 63 | UT63-PSSNR-19 | R | 60 | 72,0 | 43 | SN.. 1906.. | E03 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| E01 | 59446 | 59564 | 59437 | 59430 | 86176 | 194263 | 4771 | 140595 |
| E02 | 59446 | 59564 | 59437 | 59430 | 86176 | 225430 | 4771 | 140595 |
| E03 | 59448 | 59566 | 59439 | 59434 | 86178 | 225430 | 4209 | 140597 |


A303 A70-A72 A80

# UTS PTFN...

MaxiLock N





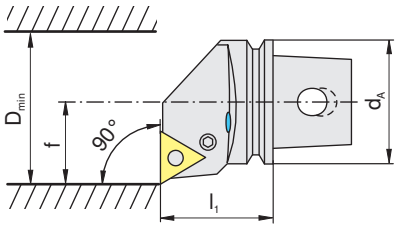
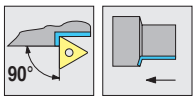




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|
| 40 | UT40-PTFNR-16 | R | 40 | 54 | 27 | TN.. 1604.. | E01 |
| 40 | UT40-PTFNL-16 | L | 40 | 54 | 27 | TN.. 1604.. | E01 |
| 50 | UT50-PTFNL-16 | L | 50 | 63 | 35 | TN.. 1604.. | E02 |
| 63 | UT63-PTFNR-16 | R | 60 | 80 | 43 | TN.. 1604.. | E03 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| E01 | 59445 | 59556 | 59436 | 59429 | 86174 | 194263 | 4770 | 140601 |
| E02 | 59445 | 59556 | 59436 | 59429 | 86174 | 225429 | 4770 | 140601 |
| E03 | 59445 | 59556 | 59436 | 59429 | 86174 | 225430 | 4770 | 140601 |

A303 A73-A75 A80





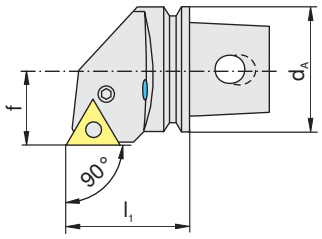




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|
| 40 | UT40-PTGNR-16 | R | 40 | 27 | TN.. 1604.. | E01 |
| 40 | UT40-PTGNL-16 | L | 40 | 27 | TN.. 1604.. | E01 |
| 63 | UT63-PTGNR-16 | R | 60 | 43 | TN.. 1604.. | E02 |

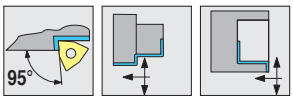
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| E01 | 59445 | 59556 | 59436 | 59429 | 86174 | 194263 | 4770 | 140601 |
| E02 | 59445 | 59556 | 59436 | 59429 | 86174 | 225430 | 4770 | 140601 |


A303 A73-A75 A80

**Drehen** / Werkzeuge außen

# UTS PWLN...

MaxiLock N





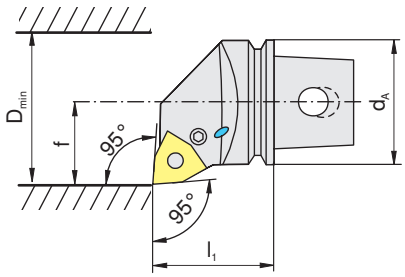



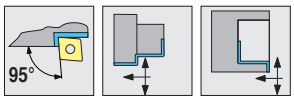

Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|
| 40 | UT40-PWLNR-06 | R | 40 | 49 | 27 | WN.. 0604.. | E01 |
| 40 | UT40-PWLNL-06 | L | 40 | 49 | 27 | WN.. 0604.. | E01 |
| 40 | UT40-PWLNR-08 | R | 40 | 49 | 27 | WN.. 0804.. | E02 |
| 40 | UT40-PWLNL-08 | L | 40 | 49 | 27 | WN.. 0804.. | E02 |
| 50 | UT50-PWLNR-08 | R | 50 | 62 | 35 | WN.. 0804.. | E03 |
| 50 | UT50-PWLNL-08 | L | 50 | 62 | 35 | WN.. 0804.. | E03 |
| 63 | UT63-PWLNR-08 | R | 60 | 77 | 43 | WN.. 0804.. | E04 |
| 63 | UT63-PWLNL-08 | L | 60 | 77 | 43 | WN.. 0804.. | E04 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| E01 | 59445 | 293139 | 293147 | 59429 | 86174 | 194263 | 4770 | 293148 |
| E02 | 59446 | 218151 | 59437 | 59430 | 86176 | 194263 | 4771 | 222127 |
| E03 | 59446 | 218151 | 59437 | 59430 | 86176 | 225429 | 4771 | 222127 |
| E04 | 59446 | 218151 | 59437 | 59430 | 86176 | 225430 | 4771 | 222127 |

A303

A77-A78





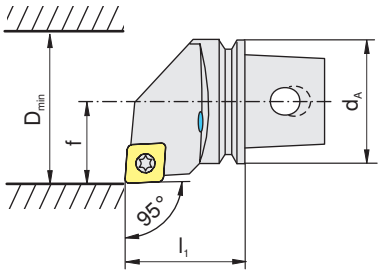




Bild zeigt Rechtsausführung

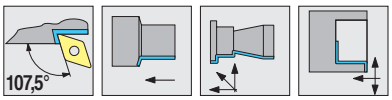
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|
| 40 | UT40-SCLCR-12 | R | 40 | 54 | 27 | CC.. 1204.. | E01 |
| 40 | UT40-SCLCL-12 | L | 40 | 54 | 27 | CC.. 1204.. | E01 |
| 50 | UT50-SCLCR-12 | R | 50 | 64 | 35 | CC.. 1204.. | E02 |
| 50 | UT50-SCLCL-12 | L | 50 | 64 | 35 | CC.. 1204.. | E02 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 54981 | 61006 | 69296 | 194263 | 69293 | 74208 |
| E02 | 54981 | 61006 | 69296 | 225429 | 69293 | 74208 |

A303 A82-A84 A92

# UTS SDHC...

MaxiLock S





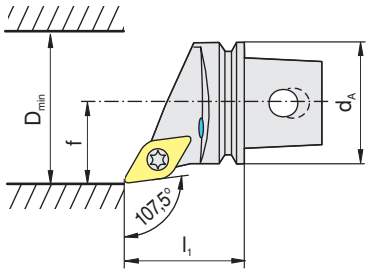
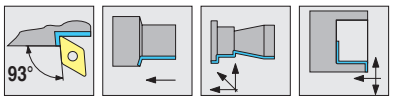




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|
| 40 | UT40-SDHCR-11 | R | 40 | 49 | 27 | DC.. 11T3.. | E01 |
| 40 | UT40-SDHCL-11 | L | 40 | 49 | 27 | DC.. 11T3.. | E01 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24647 | 26146 | 69294 | 194263 | 69293 | 29278 |

A303 | A85-A86 | A92





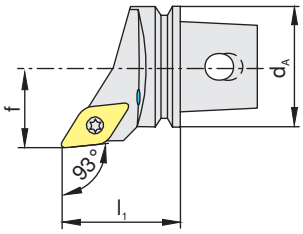




Bild zeigt Rechtsausführung

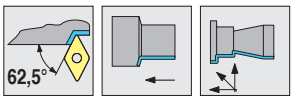
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|
| 40 | UT40-SDJCR-11 | R | 40 | 27 | DC.. 11T3.. | E01 |
| 40 | UT40-SDJCL-11 | L | 40 | 27 | DC.. 11T3.. | E01 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24647 | 26146 | 69294 | 194263 | 69293 | 29278 |

| | | |
|---|---|---|
| A303 | A85-A86 | A92 |

# UTS SDNC...

MaxiLock S





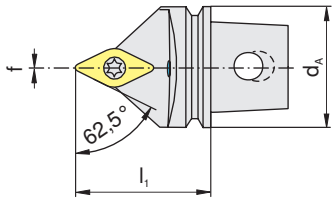
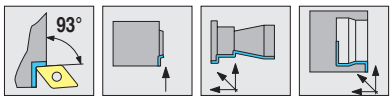




Bild zeigt neutrale Ausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|
| 40 | UT40-SDNCN-11 | N | 40 | 0 | DC.. 11T3.. | E01 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24647 | 26146 | 69294 | 194263 | 69293 | 29278 |

| | | |
|---|---|---|
| A303 | A85-A86 | A92 |





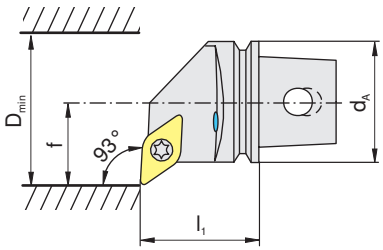




Bild zeigt Rechtsausführung

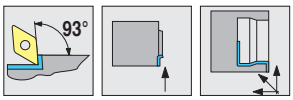
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|
| 40 | UT40-SDUCL-11 | L | 40 | 49 | 27 | DC.. 11T3.. | E01 |
| 50 | UT50-SDUCR-11 | R | 50 | 64 | 35 | DC.. 11T3.. | E02 |
| 50 | UT50-SDUCL-11 | L | 50 | 64 | 35 | DC.. 11T3.. | E02 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24647 | 26146 | 69294 | 194263 | 69293 | 29278 |
| E02 | 54981 | 26146 | 69294 | 225429 | 69293 | 29278 |

A303 A85-A86 A92

# UTS SDXC...

MaxiLock S





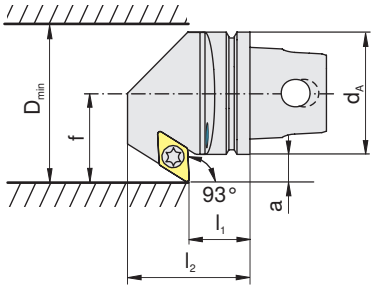
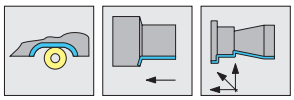




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | f [mm] | a [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 40 | UT40-SDXCR-11 | R | 20 | 40 | 52 | 29 | 9,00 | DC.. 11T3.. | E01 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 54981 | 26146 | 69294 | 194263 | 69293 | 29278 |

| | | |
|---|---|---|
| A303 | A85-A86 | A92 |





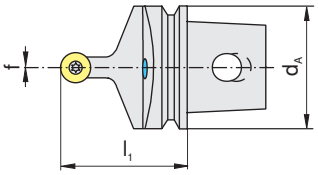



Bild zeigt neutrale Ausführung

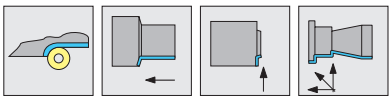
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|
| 40 | UT40-SRDCN-10 | N | 40 | 0 | RC.. 1003.. | E01 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24647 | 24838 | 69294 | 194263 | 69293 | 36305 |

| | |
|---|---|
| A303 | A87 |

# UTS SRGC...

MaxiLock S





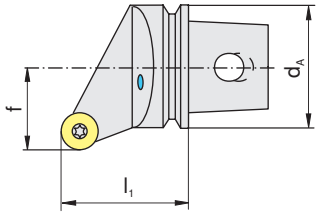


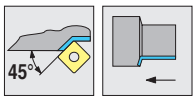

Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|
| 40 | UT40-SRGCR-06 | R | 40 | 27 | RC.. 0602.. | E01 |
| 40 | UT40-SRGCL-06 | L | 40 | 27 | RC.. 0602.. | E01 |
| 40 | UT40-SRGCR-08 | R | 40 | 27 | RC.. 0803.. | E02 |
| 40 | UT40-SRGCL-08 | L | 40 | 27 | RC.. 0803.. | E02 |
| 40 | UT40-SRGCR-10 | R | 40 | 27 | RC.. 1003.. | E03 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 24645 | | | 194263 | | 24643 | 29280 |
| E02 | 77613 | | | 194263 | | 24643 | 82272 |
| E03 | 24647 | 24838 | 69294 | 194263 | 69293 | | 36305 |


A303


A87





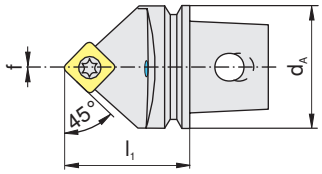




Bild zeigt neutrale Ausführung

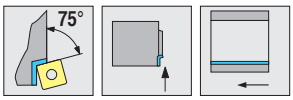
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|
| 40 | UT40-SSDCN-12 | N | 40 | 0 | SC.. 1204.. | E01 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 54981 | 69199 | 69296 | 194263 | 69293 | 82270 |

| | |
|---|---|
| A303 | A88 |

# UTS SSKC...

MaxiLock S





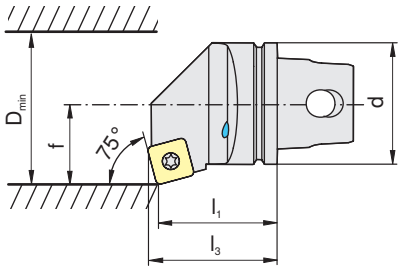
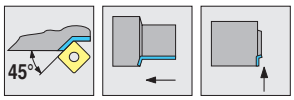




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | $l_3$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 40 | UT40-SSKCL-12 | L | 40 | 44,0 | 54 | 27 | SC.. 1204.. | E01 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 54981 | 69199 | 69296 | 194263 | 69293 | 82270 |

A303 A88





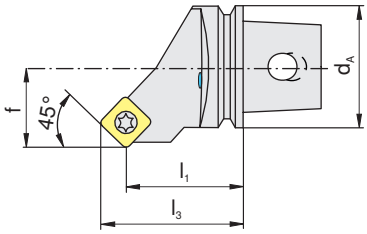




Bild zeigt Rechtsausführung

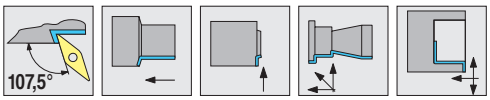
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $l_3$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|
| 40 | UT40-SSSCR-12 | R | 40 | 48,0 | 27 | SC.. 1204.. | E01 |
| 40 | UT40-SSSCL-12 | L | 40 | 48,0 | 27 | SC.. 1204.. | E01 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 54981 | 69199 | 69296 | 194263 | 69293 | 82270 |

A303 A88

# UTS SVHC...

MaxiLock S





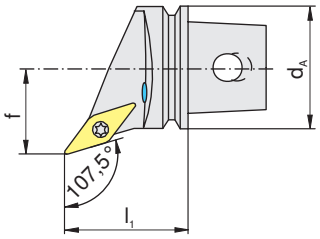
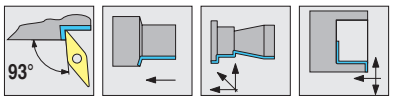




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|
| 40 | UT40-SVHCR-16 | R | 40 | 27 | VC.. 1604.. | E01 |
| 40 | UT40-SVHCL-16 | L | 40 | 27 | VC.. 1604.. | E01 |
| 63 | UT63-SVHCR-16 | R | 60 | 43 | VC.. 1604.. | E02 |
| 63 | UT63-SVHCL-16 | L | 60 | 43 | VC.. 1604.. | E02 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24647 | 37493 / 26147 | 69294 | 194263 | 69293 | 29279 / 83343 |
| E02 | 24647 | 37493 / 26147 | 69294 | 225430 | 69293 | 29279 / 83343 |

A303 A90-A91 A92





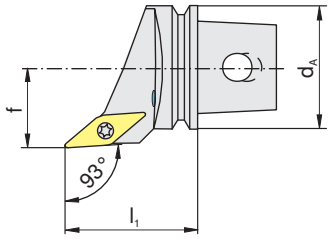
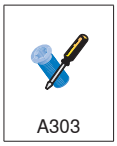



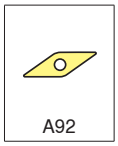

Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|
| 40 | UT40-SVJCR-16 | R | 45 | 27 | VC.. 1604.. | E01 |
| 40 | UT40-SVJCL-16 | L | 45 | 27 | VC.. 1604.. | E01 |
| 50 | UT50-SVJCR-16 | R | 50 | 35 | VC.. 1604.. | E02 |
| 50 | UT50-SVJCL-16 | L | 50 | 35 | VC.. 1604.. | E02 |
| 63 | UT63-SVJCR-16 | R | 60 | 43 | VC.. 1604.. | E03 |
| 63 | UT63-SVJCL-16 | L | 60 | 43 | VC.. 1604.. | E03 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24647 | 26147 / 37493 | 69294 | 194263 | 69293 | 29279 / 83343 |
| E02 | 24647 | 26147 / 37493 | 69294 | 225429 | 69293 | 83343 / 29279 |
| E03 | 24647 | 26147 / 37493 | 69294 | 225430 | 69293 | 29279 / 83343 |

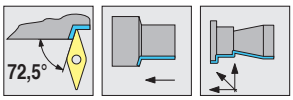

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A90-A91


A92

# UTS SVVC...

MaxiLock S





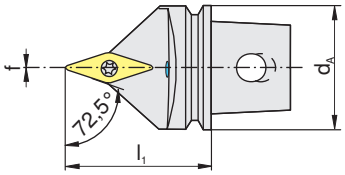
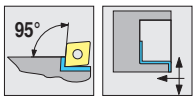




Bild zeigt neutrale Ausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|
| 40 | UT40-SVVCN-16 | N | 45 | 0 | VC.. 1604.. | E01 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24647 | 37493 / 26147 | 69294 | 194263 | 69293 | 83343 |

A303 | A90-A91 | A92





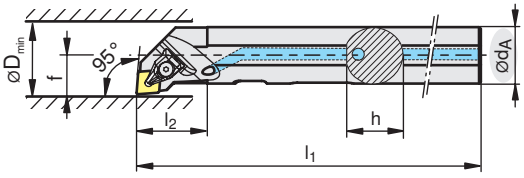



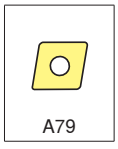

Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 20 | A20Q DCLNL 09 | L | 19 | 180 | 35 | 13 | 25 | CN.. 0903.. | E01 |
| 20 | A20Q DCLNR 09 | R | 19 | 180 | 35 | 13 | 25 | CN.. 0903.. | E01 |
| 25 | A25R DCLNL 12 | L | 24 | 200 | 36 | 17 | 32 | CN.. 1204.. | E02 |
| 25 | A25R DCLNR 12 | R | 24 | 200 | 36 | 17 | 32 | CN.. 1204.. | E02 |
| 32 | A32S DCLNL 12 | L | 31 | 250 | 40 | 22 | 40 | CN.. 1204.. | E03 |
| 32 | A32S DCLNR 12 | R | 31 | 250 | 40 | 22 | 40 | CN.. 1204.. | E03 |
| 40 | A40T DCLNL 12 | L | 39 | 300 | 45 | 27 | 50 | CN.. 1204.. | E03 |
| 40 | A40T DCLNR 12 | R | 39 | 300 | 45 | 27 | 50 | CN.. 1204.. | E03 |
| 50 | A50U DCLNL 16 | L | 47 | 350 | 45 | 35 | 63 | CN.. 1606.. | E04 |

| | | | | |
|---|---|---|---|---|
| E01 | 11227306 | 11227305 | 11577861 | 11227314 |
| E02 | 11224545 | 11224494 | | 11224503 |
| E03 | 11224545 | 11224494 | 11211558 | 11224503 |
| E04 | 11227322 | 11227318 | 11227315 | 11227323 |

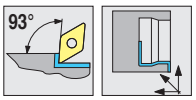

A303


A63-A66


A79

# DDUN...

MaxiLock D





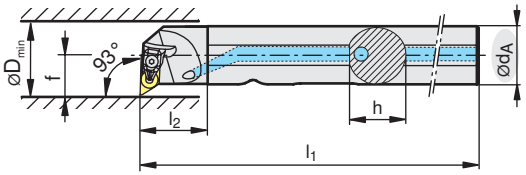
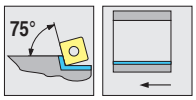




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 25 | A25R DDUNL 11 | L | 24 | 200 | 30 | 17 | 32 | DN.. 1104.. | E01 |
| 25 | A25R DDUNR 11 | R | 24 | 200 | 30 | 17 | 32 | DN.. 1104.. | E01 |
| 32 | A32S DDUNL 11 | L | 31 | 250 | 40 | 22 | 40 | DN.. 1104.. | E01 |
| 32 | A32S DDUNR 11 | R | 31 | 250 | 40 | 22 | 40 | DN.. 1104.. | E01 |
| 40 | A40T DDUNL 15 | L | 39 | 300 | 45 | 27 | 50 | DN.. 1506.. | E02 |
| 40 | A40T DDUNR 15 | R | 39 | 300 | 45 | 27 | 50 | DN.. 1506.. | E02 |

| | | | | |
|---|---|---|---|---|
| E01 | 11258694 | 11227305 | 11227308 | 11227314 |
| E02 | 11224545 | 11224494 | 11211562 | 11224503 |

A303 A67-A69 A79





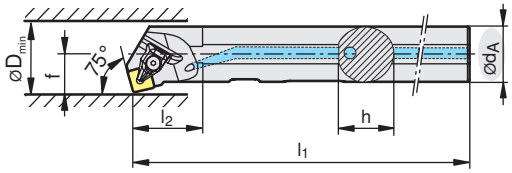




Bild zeigt Rechtsausführung

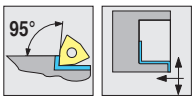
| $d_A$ [mm] | Type, Bezeichnung | LNR | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 32 | A32S DSKNL 12 | L | 31 | 250 | 40 | 22 | 40 | SN.. 1204.. | E01 |
| 32 | A32S DSKNR 12 | R | 31 | 250 | 40 | 22 | 40 | SN.. 1204.. | E01 |

| | | | | |
|---|---|---|---|---|
| E01 | 11224545 | 11224494 | 11211561 | 11224503 |

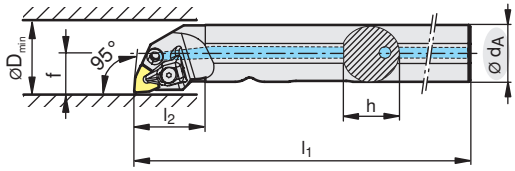
A303 | A70-A72 | A80

# DWLN...

MaxiLock D






Ausführung „A“ mit Kühlkanalbohrung

Ausführung „S“ ohne Kühlkanalbohrung

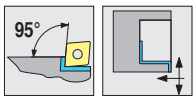
Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 25 | A25R DWLNL 06 | L | 24 | 200 | 32 | 17 | 32 | WN.. 0604.. | E01 |
| 25 | A25R DWLNR 06 | R | 24 | 200 | 32 | 17 | 32 | WN.. 0604.. | E01 |
| 32 | A32S DWLNL 08 | L | 31 | 250 | 40 | 22 | 40 | WN.. 0804.. | E02 |
| 32 | A32S DWLNR 08 | R | 31 | 250 | 40 | 22 | 40 | WN.. 0804.. | E02 |
| 40 | A40T DWLNL 08 | L | 39 | 300 | 45 | 27 | 50 | WN.. 0804.. | E02 |
| 40 | A40T DWLNR 08 | R | 39 | 300 | 45 | 27 | 50 | WN.. 0804.. | E02 |
| 25 | S25T DWLNR 08 | R | 23 | 300 | 40 | 17 | 32 | WN.. 0804.. | E03 |
| 32 | S32U DWLNR 08 | R | 30 | 350 | 40 | 22 | 40 | WN.. 0804.. | E04 |
| 40 | S40V DWLNR 08 | R | 38 | 400 | 45 | 27 | 50 | WN.. 0804.. | E04 |

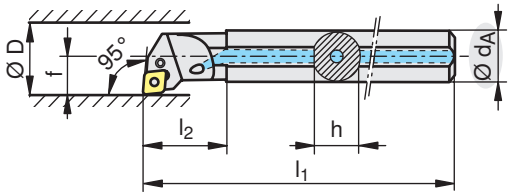
| | | | | | |
|---|---|---|---|---|---|
| E01 | 11227306 | 11232874 | 11227305 | 11227310 | 11227314 |
| E02 | 11224545 | 11232874 | 11224494 | 11211563 | 11224503 |
| E03 | 11224545 | | | | 11224503 |
| E04 | 11224545 | | 11224494 | 11211563 | 11224503 |

A303

A77-A78






Ausführung „A“ mit Kühlkanalbohrung

Ausführung „S“ ohne Kühlkanalbohrung

Bild zeigt Rechtsausführung

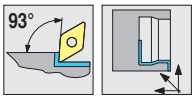
| $d_A$ [mm] | Type, Bezeichnung | L N R | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 25 | A25R PCLNL 12 | L | 23 | 200 | 36 | 17 | 32 | CN.. 1204.. | E01 |
| 25 | A25R PCLNR 12 | R | 23 | 200 | 36 | 17 | 32 | CN.. 1204.. | E01 |
| 32 | A32S PCLNL 12 | L | 30 | 250 | 50 | 22 | 40 | CN.. 1204.. | E01 |
| 32 | A32S PCLNR 12 | R | 30 | 250 | 50 | 22 | 40 | CN.. 1204.. | E01 |
| 40 | A40T PCLNL 12 | L | 38 | 300 | 60 | 27 | 50 | CN.. 1204.. | E02 |
| 40 | A40T PCLNR 12 | R | 38 | 300 | 60 | 27 | 50 | CN.. 1204.. | E02 |
| 25 | S25T PCLNL 12 | L | 23 | 300 | 22 | 17 | 32 | CN.. 1204.. | E01 |
| 25 | S25T PCLNR 12 | R | 23 | 300 | 22 | 17 | 32 | CN.. 1204.. | E01 |
| 32 | S32U PCLNL 12 | L | 30 | 350 | 24,1 | 22 | 40 | CN.. 1204.. | E01 |
| 32 | S32U PCLNR 12 | R | 30 | 350 | 24,1 | 22 | 40 | CN.. 1204.. | E01 |
| 40 | S40V PCLNL 12 | L | 38 | 400 | 24,1 | 27 | 50 | CN.. 1204.. | E02 |
| 40 | S40V PCLNR 12 | R | 38 | 400 | 24,1 | 27 | 50 | CN.. 1204.. | E02 |
| 50 | S50W PCLNL 16 | L | 47 | 450 | 31 | 35 | 63 | CN.. 1606.. | E03 |
| 50 | S50W PCLNR 16 | R | 47 | 450 | 31 | 35 | 63 | CN.. 1606.. | E03 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 59442 | 59568 | 59437 | 59430 | 86176 | 4771 | 140586 |
| E02 | 59446 | 59568 | 59437 | 59430 | 86176 | 4771 | 140587 |
| E03 | 59443 | 59451 | 59438 | 59426 | 86177 | 4771 | 140589 |

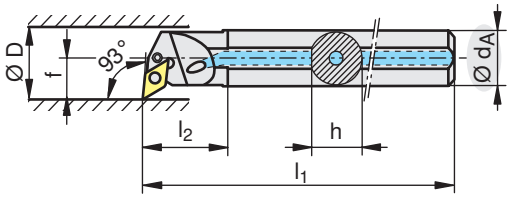
A303 A63-A66 A79

# PDUN...

MaxiLock N






Ausführung „A“ mit Kühlkanalbohrung

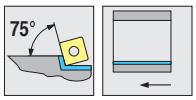
Ausführung „S“ ohne Kühlkanalbohrung

Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 20 | A20Q PDUNL 11 | L | 18,5 | 180 | | 16 | 28 | DN.. 1104.. | E01 |
| 20 | A20Q PDUNR 11 | R | 18,5 | 180 | | 16 | 28 | DN.. 1104.. | E01 |
| 25 | A25R PDUNL 11 | L | 23 | 200 | | 18,5 | 32 | DN.. 1104.. | E02 |
| 25 | A25R PDUNR 11 | R | 23 | 200 | | 18,5 | 32 | DN.. 1104.. | E02 |
| 32 | A32S PDUNL 11 | L | 30 | 250 | | 22 | 40 | DN.. 1104.. | E02 |
| 32 | A32S PDUNR 11 | R | 30 | 250 | | 22 | 40 | DN.. 1104.. | E02 |
| 32 | A32S PDUNL 15 | L | 30 | 250 | 50 | 22 | 40 | DN.. 1506.. | E03 |
| 32 | A32S PDUNR 15 | R | 30 | 250 | 50 | 22 | 40 | DN.. 1506.. | E03 |
| 40 | A40T PDUNL 15 | L | 38 | 300 | 60 | 27 | 50 | DN.. 1506.. | E03 |
| 40 | A40T PDUNR 15 | R | 38 | 300 | 60 | 27 | 50 | DN.. 1506.. | E03 |
| 50 | S50W PDUNL 15 | L | 47 | 450 | | 35 | 63 | DN.. 1506.. | E03 |
| 50 | S50W PDUNR 15 | R | 47 | 450 | | 35 | 63 | DN.. 1506.. | E03 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 293145 | | | 293144 | | 4770 | 293152 |
| E02 | 59445 | 293140 | 293147 | 293143 | 86174 | 4770 | 293151 |
| E03 | 59443 | 59570 | 59437 | 59432 | 86176 | 4771 | 140591 |

A303 A67-A69 A79





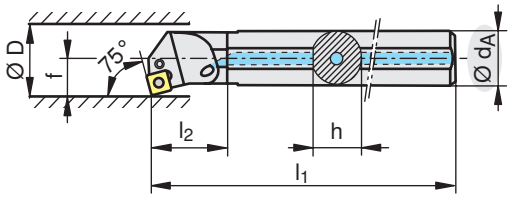
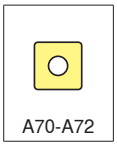



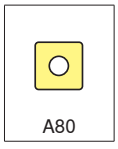

Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 25 | A25R PSKNL 12 | L | 23 | 200 | 36 | 17 | 32 | SN.. 1204.. | E01 |
| 25 | A25R PSKNR 12 | R | 23 | 200 | 36 | 17 | 32 | SN.. 1204.. | E01 |
| 32 | A32S PSKNL 12 | L | 30 | 250 | 50 | 22 | 40 | SN.. 1204.. | E01 |
| 32 | A32S PSKNR 12 | R | 30 | 250 | 50 | 22 | 40 | SN.. 1204.. | E01 |
| 40 | A40T PSKNL 12 | L | 38 | 300 | 60 | 27 | 50 | SN.. 1204.. | E02 |
| 40 | A40T PSKNR 12 | R | 38 | 300 | 60 | 27 | 50 | SN.. 1204.. | E02 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 59442 | 59547 | 59437 | 59430 | 86176 | 4771 | 140594 |
| E02 | 59446 | 59547 | 59437 | 59430 | 86176 | 4771 | 140595 |

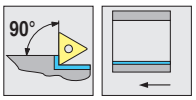

A303


A70-A72

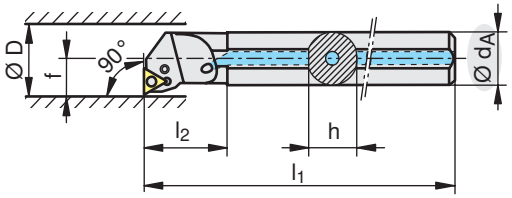

A80

# PTFN...

MaxiLock N






Ausführung „A“ mit Kühlkanalbohrung

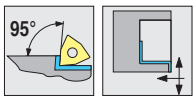
Ausführung „S“ ohne Kühlkanalbohrung

Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | A16M PTFNL 11 | L | 15 | 150 | 29 | 11 | 20 | TN.. 1103.. | E01 |
| 16 | A16M PTFNR 11 | R | 15 | 150 | 29 | 11 | 20 | TN.. 1103.. | E01 |
| 20 | A20Q PTFNL 11 | L | 18,5 | 180 | 32 | 13 | 25 | TN.. 1103.. | E01 |
| 20 | A20Q PTFNR 11 | R | 18,5 | 180 | 32 | 13 | 25 | TN.. 1103.. | E01 |
| 25 | A25R PTFNL 16 | L | 23 | 200 | 36 | 17 | 32 | TN.. 1604.. | E02 |
| 25 | A25R PTFNR 16 | R | 23 | 200 | 36 | 17 | 32 | TN.. 1604.. | E02 |
| 32 | A32S PTFNL 16 | L | 30 | 250 | 50 | 22 | 40 | TN.. 1604.. | E02 |
| 32 | A32S PTFNR 16 | R | 30 | 250 | 50 | 22 | 40 | TN.. 1604.. | E02 |
| 25 | S25T PTFNR 16 | R | 23 | 300 | 17,5 | 17 | 32 | TN.. 1604.. | E02 |
| 40 | A40T PTFNL 22 | L | 38 | 300 | 60 | 27 | 50 | TN.. 2204.. | E03 |
| 40 | A40T PTFNR 22 | R | 38 | 300 | 60 | 27 | 50 | TN.. 2204.. | E03 |
| 50 | S50W PTFNR 22 | R | 47 | 450 | 35 | 35 | 63 | TN.. 2204.. | E03 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 59444 | | | 59427 | | 4773 | 140600 |
| E02 | 59445 | 59556 | 59436 | 59429 | 86174 | 4770 | 140601 |
| E03 | 59446 | 59557 | 59437 | 59430 | 86176 | 4771 | 140602 |

A303 A73-A75 A80





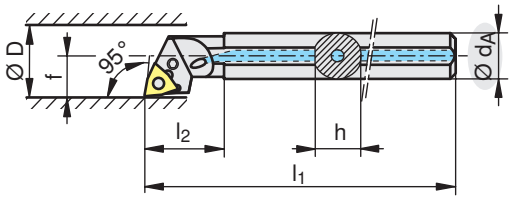




Bild zeigt Rechtsausführung

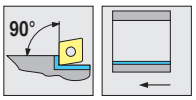
| $d_A$ [mm] | Type, Bezeichnung | L N R | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | A16M PWLNL 06 | L | 15 | 150 | | 11 | 21 | WN.. 0604.. | E01 |
| 16 | A16M PWLNR 06 | R | 15 | 150 | | 11 | 21 | WN.. 0604.. | E01 |
| 20 | A20Q PWLNL 06-1 | L | 19 | 180 | | 13 | 25 | WN.. 0604.. | E01 |
| 20 | A20Q PWLNR 06-1 | R | 19 | 180 | | 13 | 25 | WN.. 0604.. | E01 |
| 25 | A25R PWLNL 06 | L | 23 | 200 | | 17 | 32 | WN.. 0604.. | E02 |
| 25 | A25R PWLNR 06 | R | 23 | 200 | | 17 | 32 | WN.. 0604.. | E02 |
| 32 | A32S PWLNL 06 | L | 30 | 250 | | 22 | 40 | WN.. 0604.. | E02 |
| 32 | A32S PWLNR 06 | R | 30 | 250 | | 22 | 40 | WN.. 0604.. | E02 |
| 32 | A32S PWLNL 08 | L | 30 | 250 | 50 | 22 | 40 | WN.. 0804.. | E03 |
| 32 | A32S PWLNR 08 | R | 30 | 250 | 50 | 22 | 40 | WN.. 0804.. | E03 |
| 40 | A40T PWLNL 08 | L | 38 | 300 | 60 | 27 | 50 | WN.. 0804.. | E03 |
| 40 | A40T PWLNR 08 | R | 38 | 300 | 60 | 27 | 50 | WN.. 0804.. | E03 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 310913 | | | 293141 | | 4773 | 293150 |
| E02 | 59445 | 293139 | 293147 | 59429 | 86174 | 4770 | 293148 |
| E03 | 59446 | 218151 | 59437 | 59430 | 86176 | 4771 | 222127 |

A303
A77-A78

# SCFC...

MaxiLock S





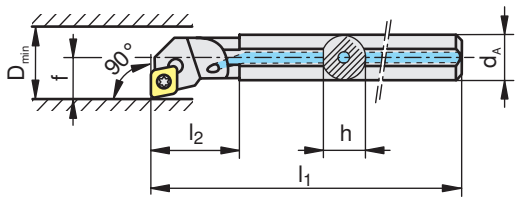
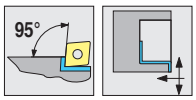




Bild zeigt Rechtsausführung

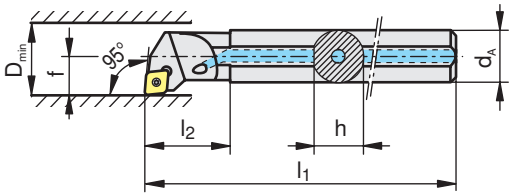
| $d_A$ [mm] | Type, Bezeichnung | L N R | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 8 | A08F SCFCR 06 | R | 7,6 | 80 | 17 | 5 | 11 | CC.. 0602.. | E01 |
| 8 | A08F SCFCL 06 | L | 7,6 | 80 | 17 | 5 | 11 | CC.. 0602.. | E01 |
| 10 | A10H SCFCR 06 | R | 9,5 | 100 | 19 | 7 | 13 | CC.. 0602.. | E01 |
| 10 | A10H SCFCL 06 | L | 9,5 | 100 | 19 | 7 | 13 | CC.. 0602.. | E01 |
| 12 | A12K SCFCR 06 | R | 11,5 | 125 | 22 | 9 | 16 | CC.. 0602.. | E01 |
| 12 | A12K SCFCL 06 | L | 11,5 | 125 | 22 | 9 | 16 | CC.. 0602.. | E01 |

| | | | |
|---|---|---|---|
| E01 | 76913 | 8095010200 | 82274 |

A303 | A82-A84 | A92






Ausführung „A“ mit Kühlkanalbohrung

Ausführung „S“ ohne Kühlkanalbohrung

Bild zeigt Rechtsausführung

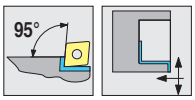
| $d_A$ [mm] | Type, Bezeichnung | LNR | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 8 | A08F SCLCR 06 | R | 7,6 | 80 | 17 | 5 | 11 | CC.. 0602.. | E01 |
| 8 | S08H SCLCR 06 | R | 7,2 | 100 | 8 | 5 | 11 | CC.. 0602.. | E01 |
| 8 | A08F SCLCL 06 | L | 7,6 | 80 | 17 | 5 | 11 | CC.. 0602.. | E01 |
| 8 | S08H SCLCL 06 | L | 7,2 | 100 | 8 | 5 | 11 | CC.. 0602.. | E01 |
| 10 | A10H SCLCR 06 | R | 9,5 | 100 | 19 | 7 | 13 | CC.. 0602.. | E01 |
| 10 | S10K SCLCR 06 | R | 9 | 125 | 10 | 7 | 13 | CC.. 0602.. | E01 |
| 10 | A10H SCLCL 06 | L | 9,5 | 100 | 19 | 7 | 13 | CC.. 0602.. | E01 |
| 10 | S10K SCLCL 06 | L | 9 | 125 | 10 | 7 | 13 | CC.. 0602.. | E01 |
| 12 | A12K SCLCR 06 | R | 11,5 | 125 | 22 | 9 | 16 | CC.. 0602.. | E01 |
| 12 | S12Q SCLCR 06 | R | 11 | 180 | 10 | 9 | 16 | CC.. 0602.. | E01 |
| 12 | A12K SCLCL 06 | L | 11,5 | 125 | 22 | 9 | 16 | CC.. 0602.. | E01 |
| 12 | S12Q SCLCL 06 | L | 11 | 180 | 10 | 9 | 16 | CC.. 0602.. | E01 |
| 16 | A16M SCLCR 09 | R | 15 | 150 | 29 | 11 | 20 | CC.. 09T3.. | E02 |
| 16 | S16R SCLCR 09 | R | 14,5 | 200 | 16 | 11 | 20 | CC.. 09T3.. | E02 |
| 16 | A16M SCLCL 09 | L | 15 | 150 | 29 | 11 | 20 | CC.. 09T3.. | E02 |
| 16 | S16R SCLCL 09 | L | 14,5 | 200 | 16 | 11 | 20 | CC.. 09T3.. | E02 |
| 20 | A20Q SCLCR 09 | R | 18,5 | 180 | 32 | 13 | 25 | CC.. 09T3.. | E03 |
| 20 | S20S SCLCR 09 | R | 18 | 250 | 16 | 13 | 25 | CC.. 09T3.. | E02 |
| 20 | A20Q SCLCL 09 | L | 18,5 | 180 | 32 | 13 | 25 | CC.. 09T3.. | E03 |
| 20 | S20S SCLCL 09 | L | 18 | 250 | 16 | 13 | 25 | CC.. 09T3.. | E02 |
| 25 | A25R SCLCR 09 | R | 23 | 200 | 36 | 17 | 32 | CC.. 09T3.. | E03 |
| 25 | S25T SCLCR 09 | R | 23 | 300 | 16 | 17 | 32 | CC.. 09T3.. | E04 |
| 25 | A25R SCLCL 09 | L | 23 | 200 | 36 | 17 | 32 | CC.. 09T3.. | E03 |
| 25 | S25T SCLCL 09 | L | 23 | 300 | 16 | 17 | 32 | CC.. 09T3.. | E04 |
| 32 | A32S SCLCR 12 | R | 30 | 250 | 50 | 22 | 40 | CC.. 1204.. | E05 |
| 32 | A32S SCLCL 12 | L | 30 | 250 | 50 | 22 | 40 | CC.. 1204.. | E05 |
| 40 | A40T SCLCR 12 | R | 38 | 300 | 60 | 27 | 50 | CC.. 1204.. | E05 |
| 40 | A40T SCLCL 12 | L | 38 | 300 | 60 | 27 | 50 | CC.. 1204.. | E05 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 76913 | | | | 8095010200 | 82274 |
| E02 | 54976 | | | | 8095010500 | 82275 |
| E03 | 165795 | | | | 8095010500 | 183936 |
| E04 | 24647 | | | | 8095010500 | 82271 |
| E05 | 54981 | 61006 | 69296 | 69293 | | 74208 |

A303 A82-A84 A92

# SCLC... mit Hartmetallschaft

MaxiLock S





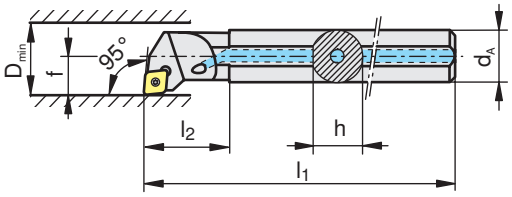
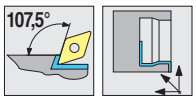




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 8 | E08H SCLCR 06 | R | 7,6 | 100 | | 6 | 11 | CC.. 0602.. | E01 |
| 8 | E08H SCLCL 06 | L | 7,6 | 100 | | 6 | 11 | CC.. 0602.. | E01 |
| 10 | E10K SCLCR 06 | R | 9 | 125 | 10 | 7 | 13 | CC.. 0602.. | E01 |
| 10 | E10K SCLCL 06 | L | 9 | 125 | 10 | 7 | 13 | CC.. 0602.. | E01 |
| 12 | E12Q SCLCR 06 | R | 11,5 | 180 | 10 | 9 | 16 | CC.. 0602.. | E01 |
| 12 | E12Q SCLCL 06 | L | 11,5 | 180 | 10 | 9 | 16 | CC.. 0602.. | E01 |
| 16 | E16R SCLCR 09 | R | 15 | 200 | 16 | 11 | 20 | CC.. 09T3.. | E02 |
| 16 | E16R SCLCL 09 | L | 15 | 200 | 16 | 11 | 20 | CC.. 09T3.. | E02 |
| 20 | E20S SCLCR 09 | R | 18,5 | 250 | 16 | 13 | 25 | CC.. 09T3.. | E03 |
| 20 | E20S SCLCL 09 | L | 18,5 | 250 | 16 | 13 | 25 | CC.. 09T3.. | E03 |
| 25 | E25T SCLCR 09 | R | 23 | 300 | 16 | 17 | 32 | CC.. 09T3.. | E04 |
| 25 | E25T SCLCL 09 | L | 23 | 300 | 16 | 17 | 32 | CC.. 09T3.. | E04 |

| | | | |
|---|---|---|---|
| E01 | 76913 | 8095010200 | 82274 |
| E02 | 54976 | 8095010500 | 82275 |
| E03 | 165795 | 8095010500 | 183936 |
| E04 | 24647 | 8095010500 | 82271 |

A303 A82-A84 A92





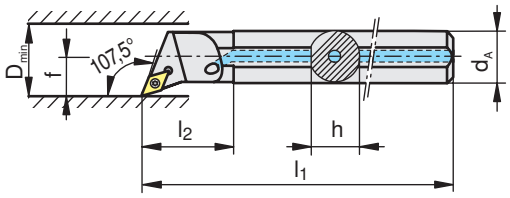




Bild zeigt Rechtsausführung

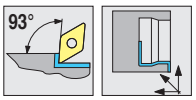
| $d_A$ [mm] | Type, Bezeichnung | LNR | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | A12K SDQCR 07 | R | 11,5 | 125 | 22 | 9 | 16 | DC.. 0702.. | E01 |
| 12 | A12K SDQCL 07 | L | 11,5 | 125 | 22 | 9 | 16 | DC.. 0702.. | E01 |
| 16 | A16M SDQCR 07 | R | 15 | 150 | 29 | 11 | 20 | DC.. 0702.. | E01 |
| 16 | A16M SDQCL 07 | L | 15 | 150 | 29 | 11 | 20 | DC.. 0702.. | E01 |
| 20 | A20Q SDQCR 07 | R | 18,5 | 180 | 32 | 13 | 25 | DC.. 0702.. | E01 |
| 20 | A20Q SDQCL 07 | L | 18,5 | 180 | 32 | 13 | 25 | DC.. 0702.. | E01 |
| 25 | A25R SDQCR 11 | R | 23 | 200 | 36 | 17 | 32 | DC.. 11T3.. | E02 |
| 25 | A25R SDQCL 11 | L | 23 | 200 | 36 | 17 | 32 | DC.. 11T3.. | E02 |
| 32 | A32S SDQCR 11 | R | 30 | 250 | 50 | 22 | 40 | DC.. 11T3.. | E03 |
| 32 | A32S SDQCL 11 | L | 30 | 250 | 50 | 22 | 40 | DC.. 11T3.. | E03 |
| 40 | A40T SDQCR 11 | R | 38 | 300 | 60 | 27 | 50 | DC.. 11T3.. | E03 |
| 40 | A40T SDQCL 11 | L | 38 | 300 | 60 | 27 | 50 | DC.. 11T3.. | E03 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24645 | | | | 8095010200 | 29280 |
| E02 | 165795 | | | | 8095010500 | 183936 |
| E03 | 24647 | 26146 | 69294 | 69293 | | 29278 |

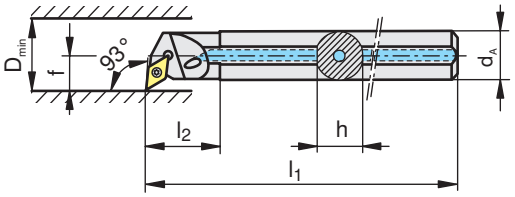
A303 A85-A86 A92

# SDUC...

MaxiLock S






Ausführung „A“ mit Kühlkanalbohrung

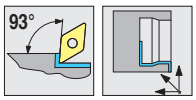
Ausführung „S“ ohne Kühlkanalbohrung

Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | A12K SDUCR 07 | R | 11,5 | 125 | 22 | 9 | 16 | DC.. 0702.. | E01 |
| 12 | S12Q SDUCR 07 | R | 11 | 180 | 12,5 | 9 | 16 | DC.. 0702.. | E01 |
| 12 | A12K SDUCL 07 | L | 11,5 | 125 | 22 | 9 | 16 | DC.. 0702.. | E01 |
| 12 | S12Q SDUCL 07 | L | 11 | 180 | 12,5 | 9 | 16 | DC.. 0702.. | E01 |
| 16 | A16M SDUCR 07 | R | 15 | 150 | 29 | 11 | 20 | DC.. 0702.. | E01 |
| 16 | S16R SDUCR 07 | R | 14,5 | 200 | 16,5 | 11 | 20 | DC.. 0702.. | E01 |
| 16 | A16M SDUCL 07 | L | 15 | 150 | 29 | 11 | 20 | DC.. 0702.. | E01 |
| 16 | S16R SDUCL 07 | L | 14,5 | 200 | 16,5 | 11 | 20 | DC.. 0702.. | E01 |
| 20 | A20Q SDUCR 07 | R | 18,5 | 180 | 32 | 13 | 25 | DC.. 0702.. | E01 |
| 20 | S20S SDUCR 07 | R | 18 | 250 | 20,5 | 13 | 25 | DC.. 0702.. | E01 |
| 20 | A20Q SDUCL 07 | L | 18,5 | 180 | 32 | 13 | 25 | DC.. 0702.. | E01 |
| 20 | A20Q SDUCR 11 | R | 18,5 | 180 | 32 | 13 | 25 | DC.. 11T3.. | E02 |
| 20 | S20S SDUCR 11 | R | 18 | 250 | 16 | 13 | 25 | DC.. 11T3.. | E03 |
| 20 | A20Q SDUCL 11 | L | 18,5 | 180 | 32 | 13 | 25 | DC.. 11T3.. | E04 |
| 25 | A25R SDUCR 11 | R | 23 | 200 | 36 | 17 | 32 | DC.. 11T3.. | E04 |
| 25 | S25T SDUCR 11 | R | 23 | 300 | 26 | 17 | 32 | DC.. 11T3.. | E05 |
| 25 | A25R SDUCL 11 | L | 23 | 200 | 36 | 17 | 32 | DC.. 11T3.. | E04 |
| 25 | S25T SDUCL 11 | L | 23 | 300 | 26 | 17 | 32 | DC.. 11T3.. | E05 |
| 32 | A32S SDUCR 11 | R | 30 | 250 | 50 | 22 | 40 | DC.. 11T3.. | E05 |
| 32 | S32U SDUCR 11 | R | 30 | 350 | 33 | 22 | 40 | DC.. 11T3.. | E05 |
| 32 | A32S SDUCL 11 | L | 30 | 250 | 50 | 22 | 40 | DC.. 11T3.. | E05 |
| 40 | A40T SDUCR 11 | R | 38 | 300 | 60 | 27 | 50 | DC.. 11T3.. | E05 |
| 40 | A40T SDUCL 11 | L | 38 | 300 | 60 | 27 | 50 | DC.. 11T3.. | E05 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24645 | | | | 8095010200 | 29280 |
| E02 | 54976 | | | | 8095010500 | 183936 |
| E03 | 54976 | | | | 8095010500 | 82275 |
| E04 | 165795 | | | | 8095010500 | 183936 |
| E05 | 24647 | 26146 | 69294 | 69293 | | 29278 |

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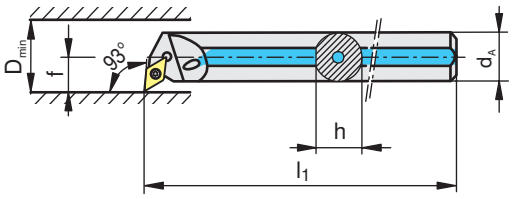




Bild zeigt Rechtsausführung

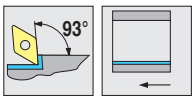
| $d_A$ [mm] | Type, Bezeichnung | L N R | h [mm] | $l_1$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 12 | E12Q SDUCR 07 | R | 11,5 | 180 | 9 | 16 | DC.. 0702.. | E01 |
| 12 | E12Q SDUCL 07 | L | 11,5 | 180 | 9 | 16 | DC.. 0702.. | E01 |
| 16 | E16R SDUCR 07 | R | 15 | 200 | 11 | 20 | DC.. 0702.. | E01 |
| 16 | E16R SDUCL 07 | L | 15 | 200 | 11 | 20 | DC.. 0702.. | E01 |
| 20 | E20S SDUCR 11 | R | 18,5 | 250 | 13 | 25 | DC.. 11T3.. | E02 |
| 20 | E20S SDUCL 11 | L | 18,5 | 250 | 13 | 25 | DC.. 11T3.. | E02 |
| 25 | E25T SDUCR 11 | R | 23 | 300 | 17 | 32 | DC.. 11T3.. | E03 |
| 25 | E25T SDUCL 11 | L | 23 | 300 | 17 | 32 | DC.. 11T3.. | E03 |

| | | | |
|---|---|---|---|
| E01 | 24645 | 8095010200 | 29280 |
| E02 | 165795 | 8095010500 | 183936 |
| E03 | 24647 | 8095010500 | 82271 |

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# SDXC...

MaxiLock S





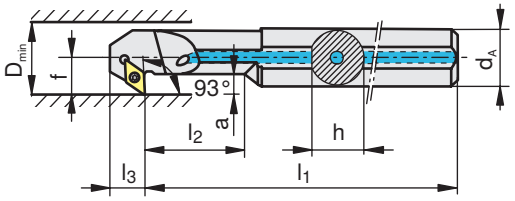
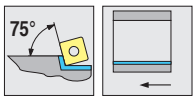




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | $d_2$ [mm] | $D_{min}$ [mm] | f [mm] | a [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | A12K SDXCR 07 | R | 125 | | 12,0 | | 16 | 9 | 4,00 | DC.. 0702.. | E01 |
| 12 | A12K SDXCL 07 | L | 125 | | 12,0 | | 16 | 9 | 4,00 | DC.. 0702.. | E01 |
| 16 | A16M SDXCR 07 | R | 150 | | 12,0 | | 20 | 11 | 4,00 | DC.. 0702.. | E01 |
| 16 | A16M SDXCL 07 | L | 150 | | 12,0 | | 20 | 11 | 4,00 | DC.. 0702.. | E01 |
| 20 | A20Q SDXCR 11 | R | 180 | | 16,5 | | 25 | 13 | 6,20 | DC.. 11T3.. | E02 |
| 20 | A20Q SDXCL 11 | L | 180 | | 16,5 | | 25 | 13 | 6,20 | DC.. 11T3.. | E02 |
| 25 | A25R SDXCR 11 | R | 200 | | 16,8 | | 32 | 17 | 9,20 | DC.. 11T3.. | E02 |
| 25 | A25R SDXCL 11 | L | 200 | | 16,8 | | 32 | 17 | 9,20 | DC.. 11T3.. | E02 |

| | | | |
|---|---|---|---|
| E01 | 24645 | 8095010200 | 29280 |
| E02 | 165795 | 8095010500 | 183936 |

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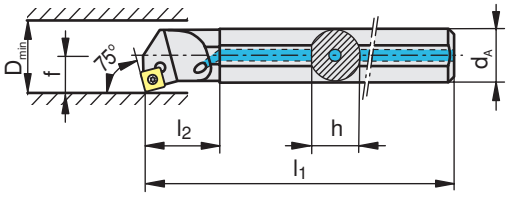




Bild zeigt Rechtsausführung

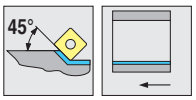
| $d_A$ [mm] | Type, Bezeichnung | L N R | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | A16M SSKCR 09 | R | 15 | 150 | 29 | 11 | 20 | SC.. 09T3.. | E01 |
| 16 | A16M SSKCL 09 | L | 15 | 150 | 29 | 11 | 20 | SC.. 09T3.. | E01 |
| 20 | A20Q SSKCR 09 | R | 18,5 | 180 | 32 | 13 | 25 | SC.. 09T3.. | E02 |
| 20 | A20Q SSKCL 09 | L | 18,5 | 180 | 32 | 13 | 25 | SC.. 09T3.. | E02 |
| 25 | A25R SSKCR 09 | R | 23 | 200 | 36 | 17 | 32 | SC.. 09T3.. | E02 |
| 25 | A25R SSKCL 09 | L | 23 | 200 | 36 | 17 | 32 | SC.. 09T3.. | E02 |

| | | | |
|---|---|---|---|
| E01 | 54976 | 8095010500 | 82275 |
| E02 | 165795 | 8095010500 | 183936 |

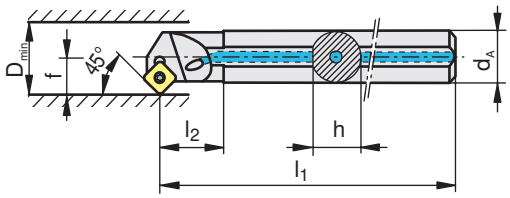
A303 A88

# SSSC...

MaxiLock S






Ausführung „A“ mit Kühlkanalbohrung

Ausführung „S“ ohne Kühlkanalbohrung

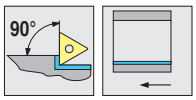
Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | A16M SSSCR 09 | R | 15 | 150 | 29 | 11 | 20 | SC.. 09T3.. | E01 |
| 16 | S16R SSSCR 09 | R | 14,5 | 200 | 8,4 | 11 | 20 | SC.. 09T3.. | E01 |
| 16 | A16M SSSCL 09 | L | 15 | 150 | 29 | 11 | 20 | SC.. 09T3.. | E01 |
| 20 | A20Q SSSCR 09 | R | 18,5 | 180 | 32 | 13 | 25 | SC.. 09T3.. | E02 |
| 20 | A20Q SSSCL 09 | L | 18,5 | 180 | 32 | 13 | 25 | SC.. 09T3.. | E02 |
| 25 | A25R SSSCR 09 | R | 23 | 200 | 36 | 17 | 32 | SC.. 09T3.. | E02 |
| 25 | A25R SSSCL 09 | L | 23 | 200 | 36 | 17 | 32 | SC.. 09T3.. | E02 |
| 32 | A32S SSSCR 12 | R | 30 | 250 | 50 | 22 | 40 | SC.. 1204.. | E03 |
| 32 | A32S SSSCL 12 | L | 30 | 250 | 50 | 22 | 40 | SC.. 1204.. | E03 |
| 40 | A40T SSSCR 12 | R | 38 | 300 | 60 | 27 | 50 | SC.. 1204.. | E03 |
| 40 | A40T SSSCL 12 | L | 38 | 300 | 60 | 27 | 50 | SC.. 1204.. | E03 |

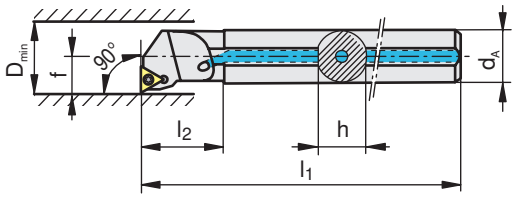
| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 54976 | | | | 8095010500 | 82275 |
| E02 | 165795 | | | | 8095010500 | 183936 |
| E03 | 54981 | 69199 | 69296 | 69293 | | 82270 |

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Ausführung „A“ mit Kühlkanalbohrung

Ausführung „S“ ohne Kühlkanalbohrung

Bild zeigt Rechtsausführung

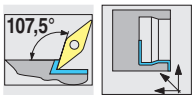
| $d_A$ [mm] | Type, Bezeichnung | LNR | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 10 | A10H STFCR 09 | R | 9,5 | 100 | 19 | 7 | 13 | TC.. 0902.. | E01 |
| 10 | A10H STFCL 09 | L | 9,5 | 100 | 19 | 7 | 13 | TC.. 0902.. | E01 |
| 12 | A12K STFCR 11 | R | 11,5 | 125 | 22 | 9 | 16 | TC.. 1102.. | E02 |
| 12 | A12K STFCL 11 | L | 11,5 | 125 | 22 | 9 | 16 | TC.. 1102.. | E02 |
| 16 | A16M STFCR 11 | R | 15 | 150 | 29 | 11 | 20 | TC.. 1102.. | E02 |
| 16 | S16R STFCR 11 | R | 14,5 | 200 | 13 | 11 | 20 | TC.. 1102.. | E02 |
| 16 | A16M STFCL 11 | L | 15 | 150 | 29 | 11 | 20 | TC.. 1102.. | E02 |
| 20 | A20Q STFCR 11 | R | 18,5 | 180 | 32 | 13 | 25 | TC.. 1102.. | E02 |
| 20 | S20S STFCR 11 | R | 18 | 250 | 13 | 13 | 25 | TC.. 1102.. | E02 |
| 20 | A20Q STFCL 11 | L | 18,5 | 180 | 32 | 13 | 25 | TC.. 1102.. | E02 |
| 25 | A25R STFCR 16 | R | 23 | 200 | 36 | 17 | 32 | TC.. 16T3.. | E03 |
| 25 | A25R STFCL 16 | L | 23 | 200 | 36 | 17 | 32 | TC.. 16T3.. | E03 |
| 32 | A32S STFCR 16 | R | 30 | 250 | 50 | 22 | 40 | TC.. 16T3.. | E03 |
| 32 | A32S STFCL 16 | L | 30 | 250 | 50 | 22 | 40 | TC.. 16T3.. | E03 |
| 40 | A40T STFCR 16 | R | 38 | 300 | 60 | 27 | 50 | TC.. 16T3.. | E03 |
| 40 | A40T STFCL 16 | L | 38 | 300 | 60 | 27 | 50 | TC.. 16T3.. | E03 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 56652 | | | | 8095010100 | 82273 |
| E02 | 24645 | | | | 8095010200 | 29280 |
| E03 | 24647 | 69209 | 69294 | 69293 | | 82758 |

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# SVQC...

MaxiLock S





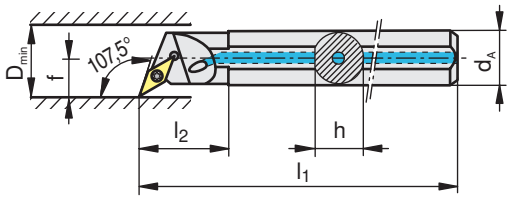
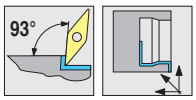




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | A16M SVQCR 11 | R | 15 | 150 | 29 | 11 | 20 | VC.. 1103.. | E01 |
| 16 | A16M SVQCL 11 | L | 15 | 150 | 29 | 11 | 20 | VC.. 1103.. | E01 |
| 20 | A20Q SVQCR 11 | R | 18,5 | 180 | 32 | 13 | 25 | VC.. 1103.. | E01 |
| 20 | A20Q SVQCL 11 | L | 18,5 | 180 | 32 | 13 | 25 | VC.. 1103.. | E01 |
| 25 | A25R SVQCR 11 | R | 23 | 200 | 36 | 17 | 32 | VC.. 1103.. | E01 |
| 25 | A25R SVQCL 11 | L | 23 | 200 | 36 | 17 | 32 | VC.. 1103.. | E01 |
| 32 | A32S SVQCR 16 | R | 30 | 250 | 50 | 22 | 40 | VC.. 1604.. | E02 |
| 32 | A32S SVQCL 16 | L | 30 | 250 | 50 | 22 | 40 | VC.. 1604.. | E02 |
| 40 | A40T SVQCR 16 | R | 38 | 300 | 60 | 27 | 50 | VC.. 1604.. | E02 |
| 40 | A40T SVQCL 16 | L | 38 | 300 | 60 | 27 | 50 | VC.. 1604.. | E02 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24645 | | | | 8095010200 | 29280 |
| E02 | 24647 | 26147 | 69294 | 69293 | | 29279 |

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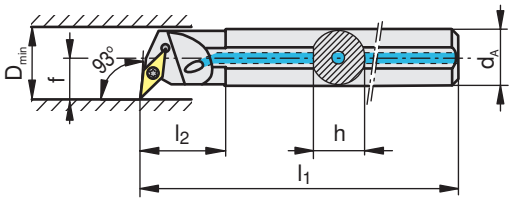
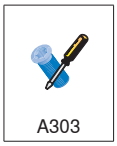



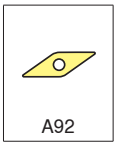

Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | A16M SVUCR 11 | R | 15 | 150 | 29 | 11 | 20 | VC.. 1103.. | E01 |
| 16 | A16M SVUCL 11 | L | 15 | 150 | 29 | 11 | 20 | VC.. 1103.. | E01 |
| 20 | A20Q SVUCR 11 | R | 18,5 | 180 | 32 | 13 | 25 | VC.. 1103.. | E01 |
| 20 | A20Q SVUCL 11 | L | 18,5 | 180 | 32 | 13 | 25 | VC.. 1103.. | E01 |
| 25 | A25R SVUCR 11 | R | 23 | 200 | 36 | 17 | 32 | VC.. 1103.. | E01 |
| 25 | A25R SVUCL 11 | L | 23 | 200 | 36 | 17 | 32 | VC.. 1103.. | E01 |
| 32 | A32S SVUCR 16 | R | 30 | 250 | 50 | 22 | 40 | VC.. 1604.. | E02 |
| 32 | A32S SVUCL 16 | L | 30 | 250 | 50 | 22 | 40 | VC.. 1604.. | E02 |
| 40 | A40T SVUCR 16 | R | 38 | 300 | 60 | 27 | 50 | VC.. 1604.. | E02 |
| 40 | A40T SVUCL 16 | L | 38 | 300 | 60 | 27 | 50 | VC.. 1604.. | E02 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24645 | | | | 8095010200 | 29280 |
| E02 | 24647 | 26147 | 69294 | 69293 | | 29279 |

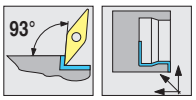

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A90-A91


A92

# SVUC... mit Hartmetallschaft

MaxiLock S





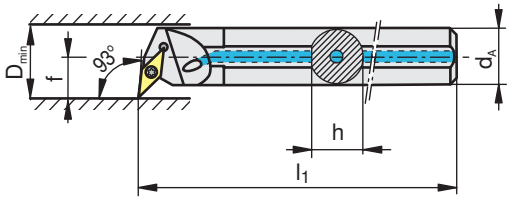
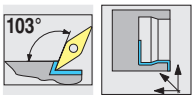




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | h [mm] | $l_1$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 16 | E16R SVUCR 11 | R | 15 | 200 | 11 | 20 | VC.. 1103.. | E01 |
| 16 | E16R SVUCL 11 | L | 15 | 200 | 11 | 20 | VC.. 1103.. | E01 |
| 20 | E20S SVUCR 11 | R | 18,5 | 250 | 13 | 25 | VC.. 1103.. | E01 |
| 20 | E20S SVUCL 11 | L | 18,5 | 250 | 13 | 25 | VC.. 1103.. | E01 |
| 25 | E25T SVUCR 11 | R | 23 | 300 | 17 | 32 | VC.. 1103.. | E01 |
| 25 | E25T SVUCL 11 | L | 23 | 300 | 17 | 32 | VC.. 1103.. | E01 |

| | | | |
|---|---|---|---|
| E01 | 24645 | 8095010200 | 29280 |

A303 | A90-A91 | A92





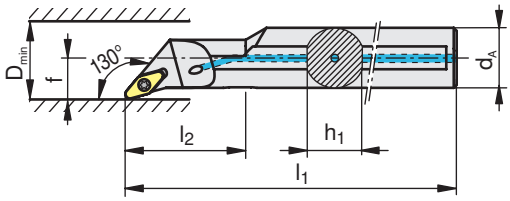




Bild zeigt Rechtsausführung

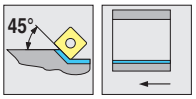
| $d_A$ [mm] | Type, Bezeichnung | L N R | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 40 | A40S SVXCR 22 | R | 37 | 250 | 80 | 27 | 45 | VC.. 2205.. | E01 |
| 40 | A40S SVXCL 22 | L | 37 | 250 | 80 | 27 | 45 | VC.. 2205.. | E01 |
| 40 | A40S SVXPR 22-16 | R | 37 | 250 | 80 | 27 | 45 | VP.. 2205.. | E01 |
| 40 | A40S SVXPL 22-16 | L | 37 | 250 | 80 | 27 | 45 | VP.. 2205.. | E01 |

| | | | |
|---|---|---|---|
| E01 | 54981 | 194263 | 8095010500 |

A303 | A90-A91 | A92

# MSSC...

MaxiLock P





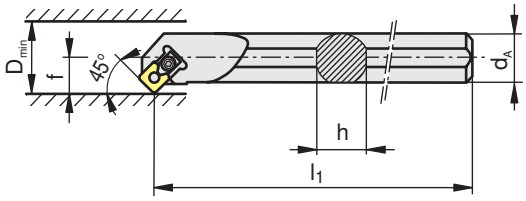
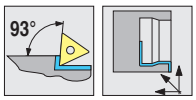




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | h [mm] | $l_1$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 32 | S32S MSSCR 12 | R | 30 | 250 | 22 | 40 | SC.. 1204.. | E01 |
| 32 | S32S MSSCL 12 | L | 30 | 250 | 22 | 40 | SC.. 1204.. | E01 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 4726 | 26139 | 5205 | 5660 | 8095010600 | 5664 |

A303 A96





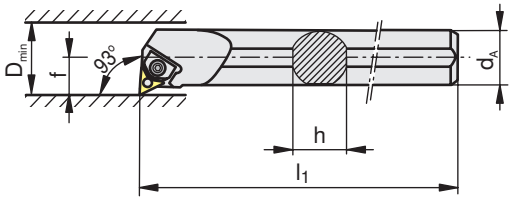




Bild zeigt Rechtsausführung

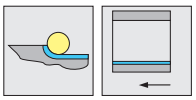
| $d_A$ [mm] | Type, Bezeichnung | L N R | h [mm] | $l_1$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 32 | S32S MTUCR 16 | R | 30 | 250 | 22 | 40 | TC.. 1604.. | E01 |
| 32 | S32S MTUCL 16 | L | 30 | 250 | 22 | 40 | TC.. 1604.. | E01 |
| 40 | S40T MTUCR 16 | R | 38 | 300 | 27 | 50 | TC.. 1604.. | E01 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 4724 | 26137 | 5204 | 5658 | 8095010600 | 5662 |

A303 A96

# CRSN...

Simplex N





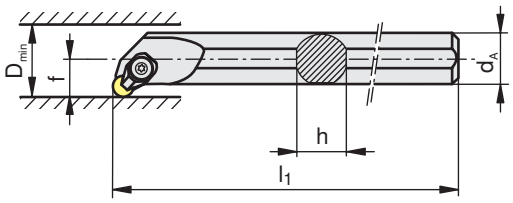
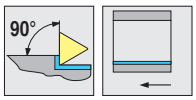



Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | h [mm] | $l_1$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 32 | S32U CRSNR 09 | R | 30 | 350 | 22 | 40 | RN.. 0903.. | E01 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 4259 | 40187 | 4211 | 4261 | 8095010600 | 40505 |

| | |
|---|---|
| A303 | A99 |





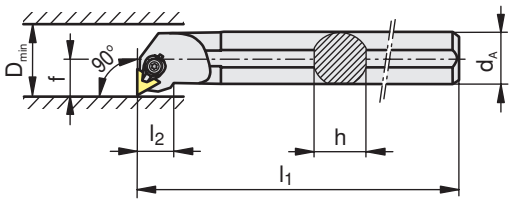
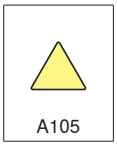




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | $D_{min}$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | S12Q CTFPR 11 | R | 11 | 180 | 15 | 9 | 16 | TP.. 1103.. | E01 |
| 12 | S12Q CTFPL 11 | L | 11 | 180 | 15 | 9 | 16 | TP.. 1103.. | E01 |
| 16 | S16R CTFPR 11 | R | 14,5 | 200 | 15 | 11 | 20 | TP.. 1103.. | E01 |
| 16 | S16R CTFPL 11 | L | 14,5 | 200 | 15 | 11 | 20 | TP.. 1103.. | E01 |
| 20 | S20S CTFPR 11 | R | 18 | 250 | 15 | 13 | 25 | TP.. 1103.. | E01 |
| 20 | S20S CTFPL 11 | L | 18 | 250 | 15 | 13 | 25 | TP.. 1103.. | E01 |
| 25 | S25T CTFPR 16 | R | 23 | 300 | 20 | 17 | 32 | TP.. 1603.. | E02 |
| 25 | S25T CTFPL 16 | L | 23 | 300 | 20 | 17 | 32 | TP.. 1603.. | E02 |
| 32 | S32U CTFPR 16 | R | 30 | 350 | 20 | 22 | 40 | TP.. 1603.. | E02 |
| 32 | S32U CTFPL 16 | L | 30 | 350 | 20 | 22 | 40 | TP.. 1603.. | E02 |

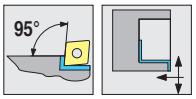
| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 4524 | | | 4523 | 8095010500 | 4527 |
| E02 | 4259 | 26126 | 4210 | 4261 | 8095010600 | 4294 |


A303


A105

# HSK-T DCLN...

MaxiLock D





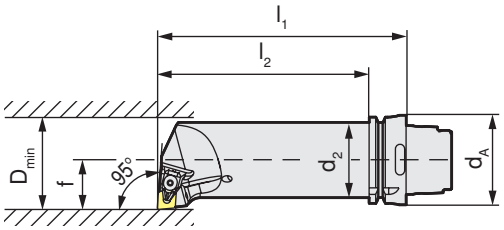
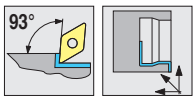




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $l_2$ [mm] | $d_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-50Q-DCLNR-12 | R | 175 | 149 | 50 | 63 | 35 | CN.. 1204.. | E01 |
| 63 | HSK-T63-50Q-DCLNL-12 | L | 175 | 149 | 50 | 63 | 35 | CN.. 1204.. | E01 |

| | | | | |
|---|---|---|---|---|
| E01 | 11224545 | 11224494 | 11211558 | 11224503 |

| | | |
|---|---|---|
| A303 | A63-A66 | A79 |





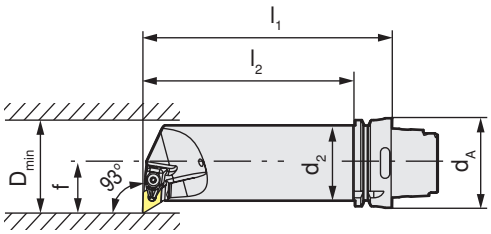




Bild zeigt Rechtsausführung

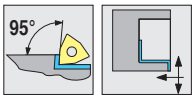
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $l_2$ [mm] | $d_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-50Q-DDUNR-15 | R | 175 | 149 | 50 | 63 | 35 | DN.. 1506.. | E01 |
| 63 | HSK-T63-50Q-DDUNL-15 | L | 175 | 149 | 50 | 63 | 35 | DN.. 1506.. | E01 |

| | | | | |
|---|---|---|---|---|
| E01 | 11224545 | 11224494 | 11211562 | 11224503 |

A303 A67-A69 A79

# HSK-T DWLN...

MaxiLock D





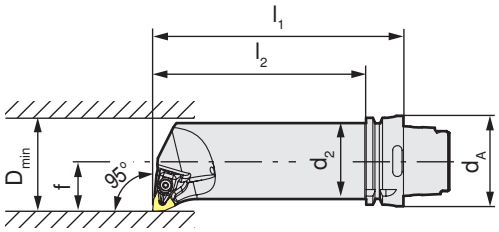
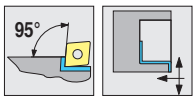




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | $l_2$ [mm] | $d_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-50Q-DWLNR-08 | R | 175 | 149 | 50 | 63 | 35 | WN.. 0804.. | E01 |
| 63 | HSK-T63-50Q-DWLNL-08 | L | 175 | 149 | 50 | 63 | 35 | WN.. 0804.. | E01 |

| | | | | |
|---|---|---|---|---|
| E01 | 11224545 | 11224494 | 11211563 | 11224503 |

A303 A77-A78





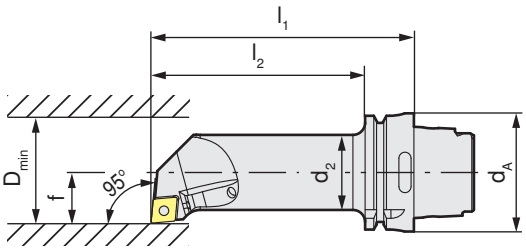




Bild zeigt Rechtsausführung

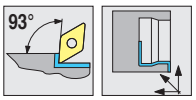
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $l_2$ [mm] | $d_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-40L-SCLCR-12 | R | 140 | 114 | 40 | 50 | 27 | CC.. 1204.. | E01 |
| 63 | HSK-T63-40L-SCLCL-12 | L | 140 | 114 | 40 | 50 | 27 | CC.. 1204.. | E01 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 54981 | 61006 | 69296 | 69293 | 74208 |

| | | |
|---|---|---|
| A303 | A82-A84 | A92 |

# HSK-T SDUC...

MaxiLock S





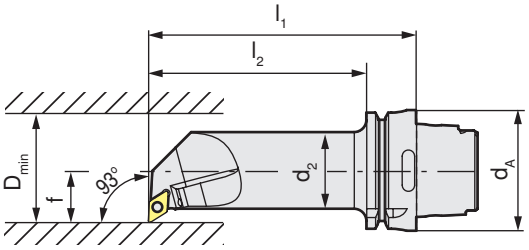
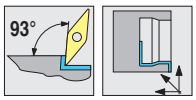




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | $l_2$ [mm] | $d_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-40L-SDUCR-11 | R | 140 | 114 | 40 | 50 | 27 | DC.. 11T3.. | E01 |
| 63 | HSK-T63-40L-SDUCL-11 | L | 140 | 114 | 40 | 50 | 27 | DC.. 11T3.. | E01 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 24647 | 26146 | 69294 | 69293 | 29278 |

A303 A85-A86 A92





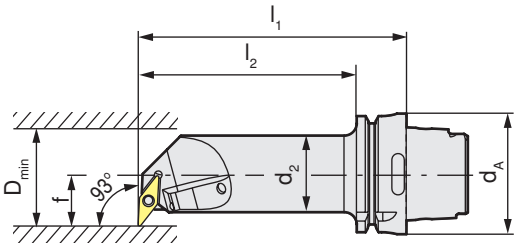




Bild zeigt Rechtsausführung

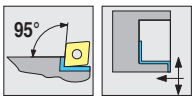
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $l_2$ [mm] | $d_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 63 | HSK-T63-40L-SVUCR-16 | R | 140 | 114 | 40 | 50 | 27 | VC.. 1604.. | E01 |
| 63 | HSK-T63-40L-SVUCL-16 | L | 140 | 114 | 40 | 50 | 27 | VC.. 1604.. | E01 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 24647 | 26147 | 69294 | 69293 | 29279 |

A303 | A90-A91 | A92

# UTS PCLN...

MaxiLock N





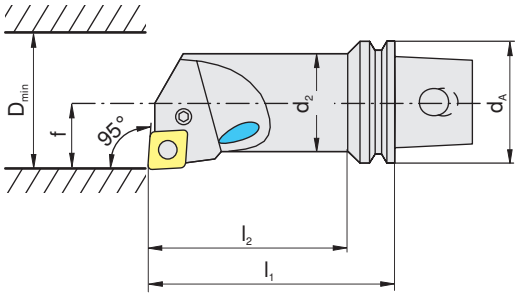
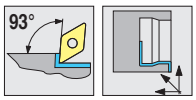




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | $l_2$ [mm] | $d_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 40 | UT40-25G-PCLNR-12 | R | 90 | 75 | 25 | 32 | 17 | CN.. 1204.. | E01 |
| 40 | UT40-25G-PCLNL-12 | L | 90 | 75 | 25 | 32 | 17 | CN.. 1204.. | E01 |
| 40 | UT40-32H-PCLNR-12 | R | 100 | 86 | 32 | 40 | 22 | CN.. 1204.. | E02 |
| 40 | UT40-32H-PCLNL-12 | L | 100 | 86 | 32 | 40 | 22 | CN.. 1204.. | E01 |
| 50 | UT50-40J-PCLNL-12 | L | 110 | 82 | 40 | 49 | 27 | CN.. 1204.. | E03 |
| 63 | UT63-40J-PCLNL-12 | L | 110 | 82 | 40 | 49 | 27 | CN.. 1204.. | E04 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| E01 | 59442 | 59568 | 59437 | 59430 | 86176 | 194263 | 4771 | 140587 |
| E02 | 59442 | 59568 | 59437 | 59430 | 86176 | 194263 | | |
| E03 | 59442 | 59568 | 59437 | 59430 | 86176 | 225429 | 4771 | 140586 |
| E04 | 59446 | 59568 | 59437 | 59430 | 86176 | 225430 | 4771 | 140587 |

A303 A63-A66 A79





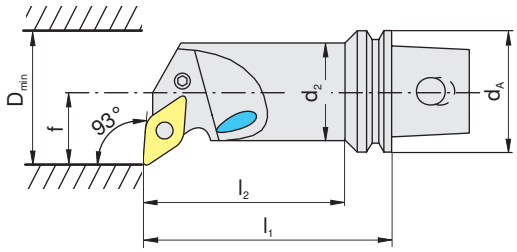




Bild zeigt Rechtsausführung

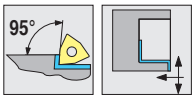
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $l_2$ [mm] | $d_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 40 | UT40-25G-PDUNR-11 | R | 90 | 75 | 25 | 32 | 18,5 | DN.. 1104.. | E01 |
| 40 | UT40-25G-PDUNL-11 | L | 90 | 75 | 25 | 32 | 18,5 | DN.. 1104.. | E01 |
| 40 | UT40-32H-PDUNL-15 | L | 100 | 86 | 32 | 40 | 22 | DN.. 1506.. | E02 |
| 50 | UT50-25G-PDUNL-11 | L | 90 | 70 | 25 | 32 | 18,5 | DN.. 1104.. | E03 |
| 50 | UT50-40J-PDUNR-15 | R | 110 | 82 | 40 | 49 | 27 | DN.. 1506.. | E04 |
| 63 | UT63-32H-PDUNR-15 | R | 100 | 66 | 32 | 40 | 22 | DN.. 1506.. | E05 |
| 63 | UT63-40J-PDUNR-15 | R | 110 | 82 | 40 | 49 | 27 | DN.. 1506.. | E05 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| E01 | 59445 | 293140 | 293147 | 293143 | 86174 | 194263 | 4770 | 293151 |
| E02 | 59443 | 59570 | 59437 | 59432 | 86176 | 194263 | 4771 | 140591 |
| E03 | 59445 | 293140 | 293147 | 293143 | 86174 | 225429 | 4770 | 293151 |
| E04 | 59443 | 59570 | 59437 | 59432 | 86176 | 225429 | 4771 | 140591 |
| E05 | 59443 | 59570 | 59437 | 59432 | 86176 | 225430 | 4771 | 140591 |


A303 A67-A69 A79

# UTS PWLN...

MaxiLock N





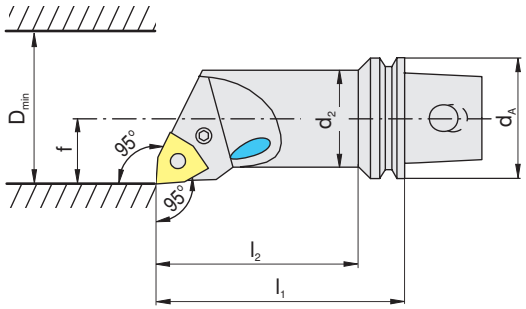



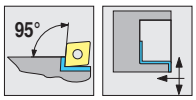

Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | $l_2$ [mm] | $d_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 40 | UT40-25G-PWLNL-06 | L | 90 | 75 | 25 | 35 | 17 | WN.. 0604.. | E01 |
| 40 | UT40-32H-PWLNR-08 | R | 100 | 86 | 32 | 49 | 22 | WN.. 0804.. | E02 |
| 40 | UT40-32H-PWLNL-08 | L | 100 | 86 | 32 | 49 | 22 | WN.. 0804.. | E02 |
| 50 | UT50-40J-PWLNL-08 | L | 110 | 82 | 40 | 49 | 27 | WN.. 0804.. | E03 |
| 63 | UT63-40J-PWLNR-08 | R | 110 | 82 | 40 | 49 | 27 | WN.. 0804.. | E04 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| E01 | 59445 | 293139 | 293147 | 59429 | 86174 | 194263 | 4770 | 293148 |
| E02 | 59446 | 218151 | 59437 | 59430 | 86176 | 194263 | 4771 | 222127 |
| E03 | 59446 | 218151 | 59437 | 59430 | 86176 | 225429 | 4771 | 222127 |
| E04 | 59446 | 218151 | 59437 | 59430 | 86176 | 225430 | 4771 | 222127 |

A303

A77-A78





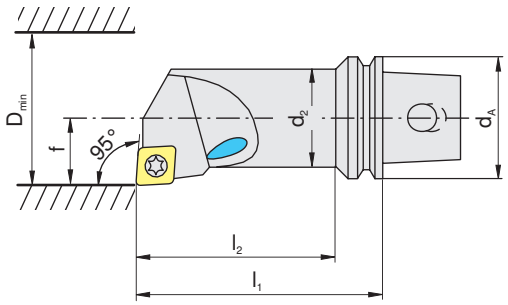




Bild zeigt Rechtsausführung

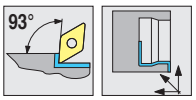
| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $l_2$ [mm] | $d_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 40 | UT40-20D-SCLCR-09 | R | 60 | 45 | 20 | 24 | 13 | CC.. 09T3.. | E01 |
| 40 | UT40-20D-SCLCL-09 | L | 60 | 45 | 20 | 24 | 13 | CC.. 09T3.. | E01 |
| 40 | UT40-25G-SCLCR-09 | R | 90 | 75 | 25 | 31 | 17 | CC.. 09T3.. | E01 |
| 40 | UT40-25G-SCLCL-09 | L | 90 | 75 | 25 | 31 | 17 | CC.. 09T3.. | E01 |
| 40 | UT40-32J-SCLCR-12 | R | 110 | 96 | 32 | 40 | 22 | CC.. 1204.. | E02 |
| 40 | UT40-32F-SCLCR-12 | R | 80 | 65 | 32 | 40 | 22 | CC.. 1204.. | E02 |
| 40 | UT40-32J-SCLCL-12 | L | 110 | 96 | 32 | 40 | 22 | CC.. 1204.. | E02 |
| 40 | UT40-32F-SCLCL-12 | L | 80 | 65 | 32 | 40 | 22 | CC.. 1204.. | E02 |
| 50 | UT50-20H-SCLCR-09 | R | 100 | 70 | 20 | 25 | 13 | CC.. 09T3.. | E03 |
| 50 | UT50-32K-SCLCR-12 | R | 125 | 96 | 32 | 40 | 22 | CC.. 1204.. | E04 |
| 50 | UT50-32K-SCLCL-12 | L | 125 | 96 | 32 | 40 | 22 | CC.. 1204.. | E04 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 165795 | | | 194263 | | 8095010500 | 183936 |
| E02 | 54981 | 61006 | 69296 | 194263 | 69293 | | 74208 |
| E03 | 165795 | | | 225429 | | 8095010500 | 183936 |
| E04 | 54981 | 61006 | 69296 | 225429 | 69293 | | 74208 |


A303 A82-A84 A92

# UTS SDUC...

MaxiLock S





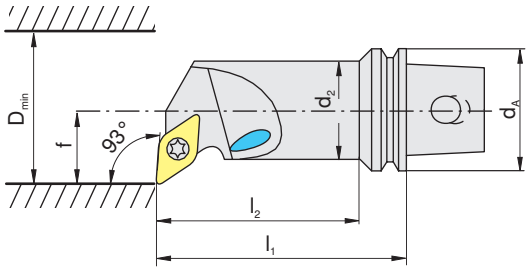
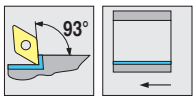




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | $l_2$ [mm] | $d_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 40 | UT40-20D-SDUCR-11 | R | 60 | 45 | 20 | 24 | 13 | DC.. 11T3.. | E01 |
| 40 | UT40-20D-SDUCL-11 | L | 60 | 45 | 20 | 24 | 13 | DC.. 11T3.. | E01 |
| 40 | UT40-25E-SDUCR-11 | R | 70 | 55 | 25 | 31 | 17 | DC.. 11T3.. | E01 |
| 40 | UT40-25E-SDUCL-11 | L | 70 | 55 | 25 | 31 | 17 | DC.. 11T3.. | E01 |
| 40 | UT40-32F-SDUCR-11 | R | 80 | 65 | 32 | 40 | 22 | DC.. 11T3.. | E02 |
| 40 | UT40-32F-SDUCL-11 | L | 80 | 65 | 32 | 40 | 22 | DC.. 11T3.. | E02 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 165795 | | | 194263 | | 8095010500 | 183936 |
| E02 | 24647 | 26146 | 69294 | 194263 | 69293 | | 29278 |

A303 A85-A86 A92





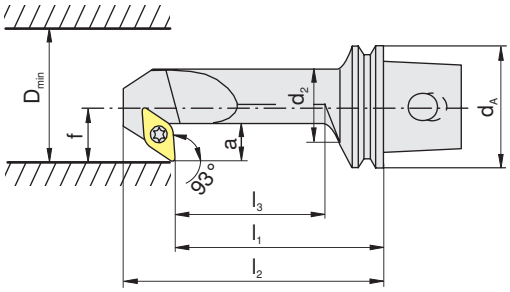




Bild zeigt Rechtsausführung

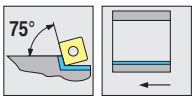
| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | $d_2$ [mm] | $D_{min}$ [mm] | f [mm] | a [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | UT40-20D-SDXCR-11 | R | 60 | 77 | 45,0 | 20 | 24 | 13 | 8,00 | DC.. 11T3.. | E01 |
| 40 | UT40-32F-SDXCR-11 | R | 80 | 97 | 65,0 | 32 | 40 | 22 | 10,00 | DC.. 11T3.. | E02 |
| 40 | UT40-20D-SDXCL-11 | L | 60 | 77 | 45,0 | 20 | 24 | 13 | 8,00 | DC.. 11T3.. | E01 |
| 40 | UT40-32F-SDXCL-11 | L | 80 | 97 | 65,0 | 32 | 40 | 22 | 10,00 | DC.. 11T3.. | E02 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 165795 | | | 194263 | | 8095010500 | 183936 |
| E02 | 24647 | 26146 | 69294 | 194263 | 69293 | | 29278 |

A303 A85-A86 A92

# UTS SSKC...

MaxiLock S





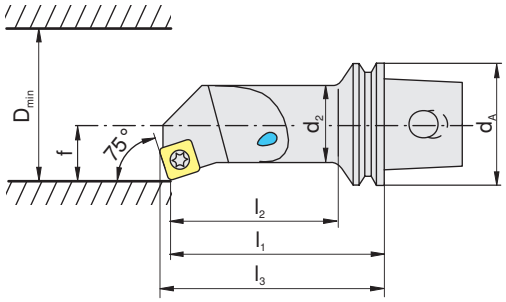
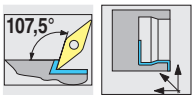




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | $D_{min}$ [mm] | $d_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 40 | UT40-20D-SSKCL-09 | L | 60 | 45 | 63,0 | 24 | 20 | 13 | SC.. 09T3.. | E01 |
| 40 | UT40-32F-SSKCL-12 | L | 80 | 65 | 84,0 | 40 | 32 | 22 | SC.. 1204.. | E02 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 165795 | | | 194263 | | 8095010500 | 183936 |
| E02 | 54981 | 69199 | 69296 | 194263 | 69293 | | 82270 |

A303 A88





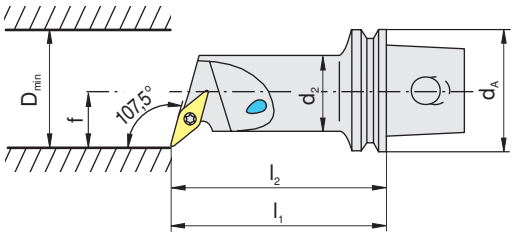
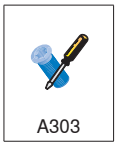



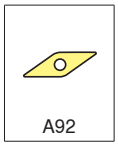

Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $l_2$ [mm] | $d_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 40 | UT40-20D-SVQCR-11 | R | 60 | 45 | 20 | 24 | 13 | VC.. 1103.. | E01 |
| 40 | UT40-20D-SVQCL-11 | L | 60 | 45 | 20 | 24 | 13 | VC.. 1103.. | E01 |
| 40 | UT40-25E-SVQCL-11 | L | 70 | 55 | 25 | 31 | 17 | VC.. 1103.. | E01 |
| 40 | UT40-32F-SVQCL-16 | L | 80 | 65 | 32 | 40 | 22 | VC.. 1604.. | E02 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 24645 | | | 194263 | | 8095010200 | 29280 |
| E02 | 24647 | 37493 / 26147 | 69294 | 194263 | 69293 | | 29279 / 83343 |

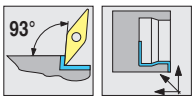

A303


A90-A91


A92

# UTS SVUC...

MaxiLock S





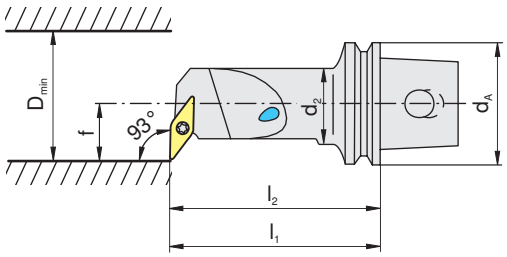




Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | LNR | $l_1$ [mm] | $l_2$ [mm] | $d_2$ [mm] | $D_{min}$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 40 | UT40-20D-SVUCR-11 | R | 60 | 45 | 20 | 24 | 13 | VC.. 1103.. | E01 |
| 40 | UT40-20D-SVUCL-11 | L | 60 | 45 | 20 | 24 | 13 | VC.. 1103.. | E01 |
| 40 | UT40-25E-SVUCR-11 | R | 70 | 55 | 25 | 31 | 17 | VC.. 1103.. | E01 |
| 40 | UT40-25E-SVUCL-11 | L | 70 | 55 | 25 | 31 | 17 | VC.. 1103.. | E01 |
| 40 | UT40-32F-SVUCR-16 | R | 80 | 65 | 32 | 40 | 22 | VC.. 1604.. | E02 |
| 40 | UT40-32F-SVUCL-16 | L | 80 | 65 | 32 | 40 | 22 | VC.. 1604.. | E02 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 24645 | | | 194263 | | 8095010200 | 29280 |
| E02 | 24647 | 37493 / 26147 | 69294 | 194263 | 69293 | | 29279 / 83343 |

A303 A90-A91 A92



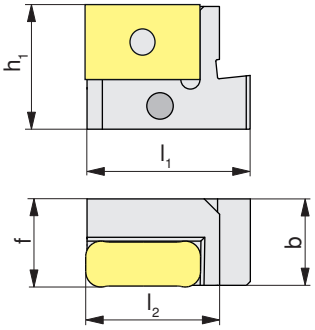
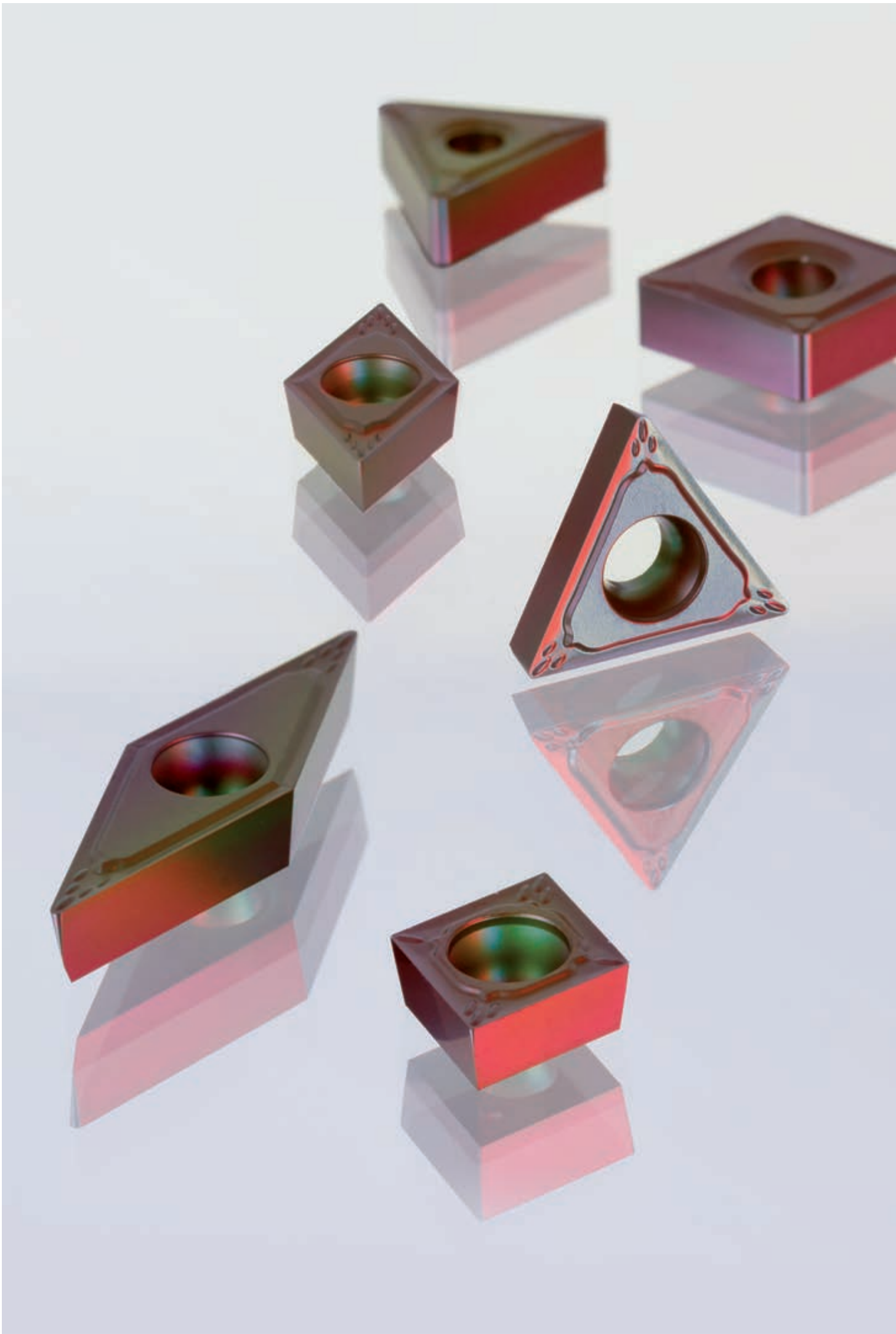


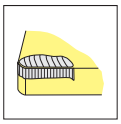
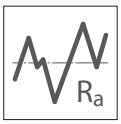
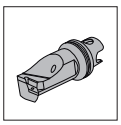
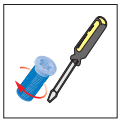

Bild zeigt Rechtsausführung (LNUX 30..)

| $h_1$ [mm] | Type, Bezeichnung | L N R | $l_1$ [mm] | $l_2$ [mm] | b [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 31 | RK 3219-C19R | R | 42,7 | 36,5 | 17,9 | 19 | CNMX 19.. | E01 |
| 31 | RK 3223-C19R | R | 42,7 | 36,5 | 21,9 | 23 | CNMX 19.. | E01 |
| 31 | RK 3219-C19L | L | 42,7 | 36,5 | 17,9 | 19 | CNMX 19.. | E01 |
| 31 | RK 3223-C19L | L | 42,7 | 36,5 | 21,9 | 23 | CNMX 19.. | E01 |
| 32 | RK 3219-19R | R | 43,0 | 35 | 18,6 | 19 | LNUX 19.. | E02 |
| 32 | RK 3223-19R | R | 42,5 | 35 | 22,5 | 23 | LNUX 19.. | E02 |
| 32 | RK 3219-19L | L | 43,0 | 35 | 18,6 | 19 | LNUX 19.. | E02 |
| 32 | RK 3223-19L | L | 42,5 | 35 | 22,5 | 23 | LNUX 19.. | E02 |
| 32 | RK 3223-30R | R | 43,0 | 35 | 22,5 | 23 | LNUX 30.. | E02 |
| 32 | RK 3223-30L | L | 43,0 | 35 | 22,5 | 23 | LNUX 30.. | E02 |
| 32 | RK 3226-21R | R | 43,0 | 35 | 24,8 | 26 | SNMG 21.. | E03 |
| 32 | RK 3226-21L | L | 43,0 | 35 | 24,8 | 26 | SNMG 21.. | E03 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 59448 | 357187 | | 59439 | 59434 | 86178 | 4209 |
| E02 | 59441 | | | | 59433 | | 4771 |
| E03 | 59448 | | 308268 | 59439 | 59434 | 86178 | 4209 |

| | | | |
|---|---|---|---|
| A303 | A81 | A81 | A81 |

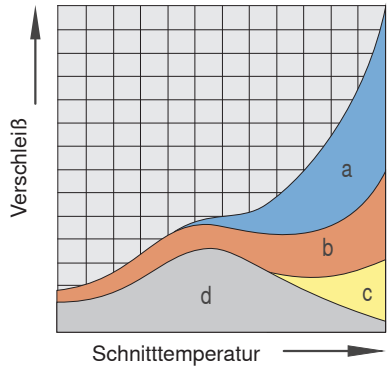


| | | |
|---|---|---|
|  | Verschleißarten / Abhilfe | A273-A276 |
|  | Oberflächen | A277-A280 |
|  | Werkzeugsysteme UTS / HSK | A281-A284 |
|  | Formelsammlung | A285 |
|  | Werkstoffinformationen | A286-A289 |
|  | ISO-ANSI Umschlüsselung | A290-A296 |
|  | Schnittdatenrichtwerte | A297 |
|  | Ersatzteile | A303 |

# Verschleißursachen

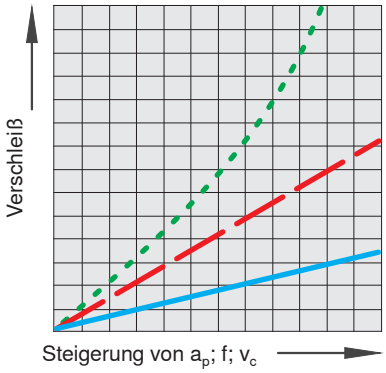
Verschleiß wird durch gleichzeitige mechanische und thermische Beanspruchung des Schneidkeils hervorgerufen. Die wichtigsten Ursachen sind

- Mechanischer Abrieb
- Abscheren von Pressschweißstellen
- Oxidationsvorgänge
- Diffusion




Mit zunehmender Schnitttemperatur überwiegen die thermisch bedingten Verschleißursachen Oxidation und Diffusion.

a = Diffusion
b = mechanischer Abrieb
c = Verzunderung/Oxidation
d = Aufbauschneidenbildung




Die Schnitttemperatur bzw. der Verschleiß hängen entscheidend von den Zerspanungsbedingungen ab.

Schnittgeschwindigkeit
Vorschub
Schnitttiefe

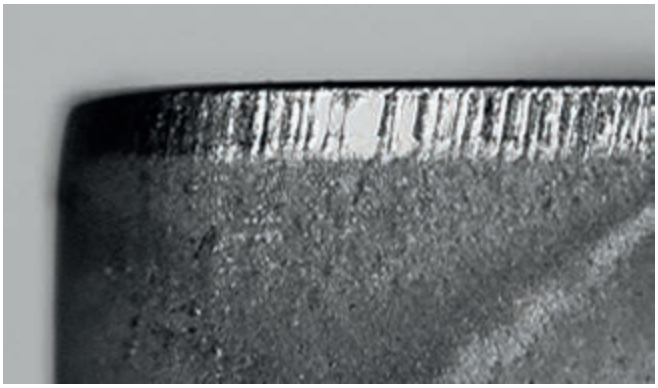


## Wirkungsweise einer Hartstoffschicht

Durch die Aufbringung von Hartstoffschichten auf Hartmetallwerkzeugen wird die Verschleißbildung reduziert.

Die Vorteile einer Hartstoffschicht sind eine Verminderung von

- Reibung
- Erwärmung
- Oxidation
- Diffusion

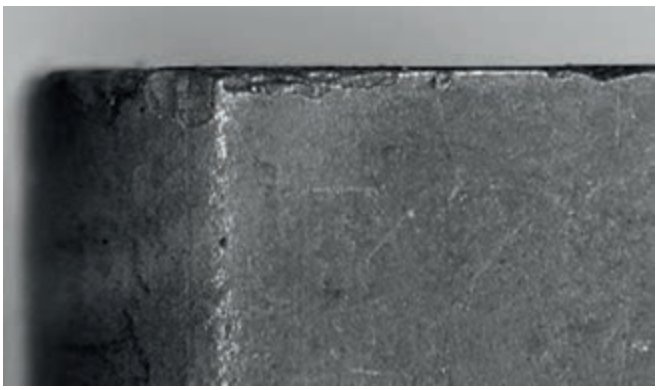


Abrieb an der Freifläche, normaler Verschleiß nach einer gewissen Eingriffszeit.

## Freiflächenverschleiß

**Ursache**
- Zu hohe Schnittgeschwindigkeit
- Hartmetallsorte mit zu geringer Verschleißfestigkeit
- Nicht angepasster Vorschub

**Abhilfe**
- Schnittgeschwindigkeit senken
- Verschleißfestere Hartmetallsorte wählen
- Vorschub in richtiges Verhältnis zu Schnittgeschwindigkeit und Schnitttiefe setzen (Vorschub erhöhen)



Durch überhöhte mechanische Beanspruchung der Schneidkante können HM-Partikel ausbrechen.

## Ausbröckelung

**Ursache**
- Zu verschleißfeste Sorte
- Vibrationen
- Zu hoher Vorschub bzw. Schnitttiefe
- Unterbrochener Schnitt
- Spanschlag

**Abhilfe**
- Zähere Sorte verwenden
- Negative Schneidengeometrie mit Spanleitstufe verwenden
- Stabilität verbessern (Werkzeug, Werkstück)



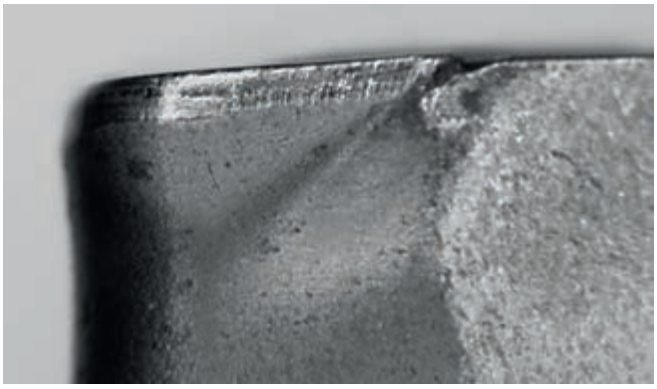
Der ablaufende heiße Span verursacht eine Auskolkung der Schneidplatte an der Spanfläche.

## Kolkverschleiß

**Ursache**
- Zu hohe Schnittgeschwindigkeit, Vorschub oder beides
- Zu geringer Spanwinkel
- Sorte mit zu geringer Verschleißfestigkeit
- Falsch zugeführte Kühlung

**Abhilfe**
- Schnittgeschwindigkeit und/oder Vorschub herabsetzen
- Kühlmittelmenge und/oder Druck erhöhen, Zuführung kontrollieren
- Kolkfestere Sorte verwenden

# Verschleißarten

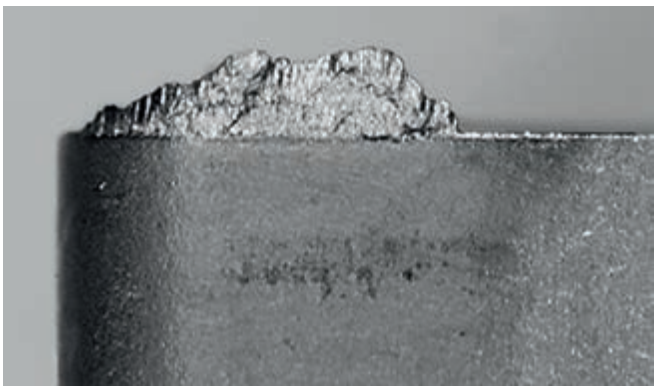


Hohe Zerspanungstemperatur bei gleichzeitiger mechanischer Beanspruchung kann zu plastischer Verformung führen.

## Plastische Verformung

**Ursache**
- Zu hohe Arbeitstemperatur, daher Erweichung des Grundmaterials
- Beschädigung der Beschichtung
- Zu enge Spanleitstufe

**Abhilfe**
- Schnittgeschwindigkeit senken
- Verschleißfestere Hartmetallsorte wählen
- Kühlung vorsehen

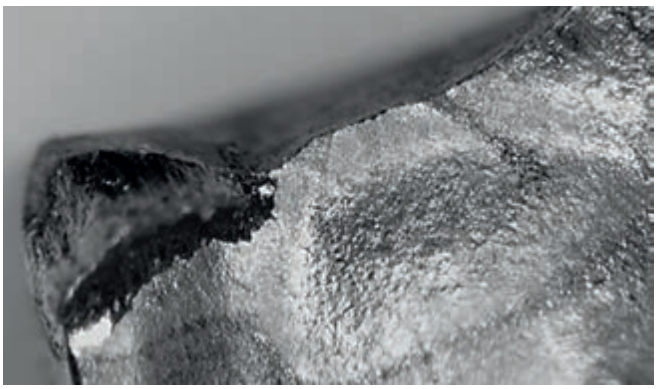


Materialaufschweißung an der Schneidkante treten auf, wenn der Span infolge zu niedriger Schnitttemperatur nicht richtig abfließt.

## Aufbauschneidenbildung

**Ursache**
- Zu geringe Schnittgeschwindigkeit
- Zu kleiner Spanwinkel
- Falscher Schneidstoff
- Fehlende Kühlung / Schmierung

**Abhilfe**
- Schnittgeschwindigkeit erhöhen
- Spanwinkel erhöhen
- TiN-Beschichtung einsetzen
- Fettere Emulsionen verwenden



Bei einer Überlastung der Schneidplatte kann es zum Plattenbruch kommen.

## Plattenbruch

**Ursache**
- Überlastung des Schneidstoffs
- Stabilitätsmängel
- Keilwinkel zu klein
- übermäßiger Kerbverschleiß

**Abhilfe**
- zäheren Schneidstoff verwenden
- Kantenschutzfase verwenden
- Schneidkantenverrundung vergrößern
- stabilere Geometrie einsetzen

| Problemstellung | | | | | | | | | | | | Abhilfe, Maßnahmen | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Verschleißtyp | | | | | | Werkstückprobleme | | | | Spanbruch | | | |
| Freiflächenverschleiß | Kolkverschleiß | Ausbröckelung | Plastische Verformung | Plattenbruch | Aufbauschneiden | Vibrationen | Butzen und Gratbildung | Bombierte Fläche | Oberflächengüte | Span zu lang (Wirrspan) | Span zu kurz (Bruchspan) | | |
| ⇩ | ⇩ | | ⇩ | | ⇧ | ⇩ | | | ⇧ | ⇩ | | Schnittgeschwindigkeit | Schnittwerte |
| ≈ | | ⇩ | ⇩ | ⇩ | | ⇧ | | ⇩ | ⇩ | ⇧ | ⇩ | Vorschub | |
| | ⇩ | ⇩ | | | | | ⇩ | ⇩ | ⇩ | | | Vorschub-Zentrumsbereich | |
| | | ⇧ | ≈ | | ⇩ | ≈ | ⇩ | ⇩ | ⇩ | ⇩ | ⇧ | Spanleitstufe (-R, -M, -F) | Wendeschneidplatten - Auswahl |
| ⇧ | | ⇧ | ⇧ | | | ⇩ | ⇩ | ⇩ | ⇧ | | | Eckenradius (größer / kleiner) | |
| ⇧ | ⇧ | ⇩ | ⇧ | ⇩ | | | | | | | | Schneidstoff (Verschleißfestigkeit / Zähigkeit) | |
| | | ≈ | | ≈ | | ≈ | | ≈ | ≈ | | | Spannung Werkzeug | Allgemeine Kriterien |
| | | ≈ | | ≈ | | ≈ | | ≈ | ≈ | | | Spannung Werkstück | |
| | | ≈ | | ≈ | | ≈ | | | ⇩ | | | Auskragung | |
| ≈ | | ≈ | | | | ≈ | ≈ | | ≈ | | | Spitzenhöhe | |
| ▢ | ≈ | | ▢ | | ▢ | | ▢ | | ▢ | ▢ | | Kühlschmierstoff | |

⇧ erhöhen, vergrößern, großer Einfluss

⇧ erhöhen, vergrößern, kleiner Einfluss

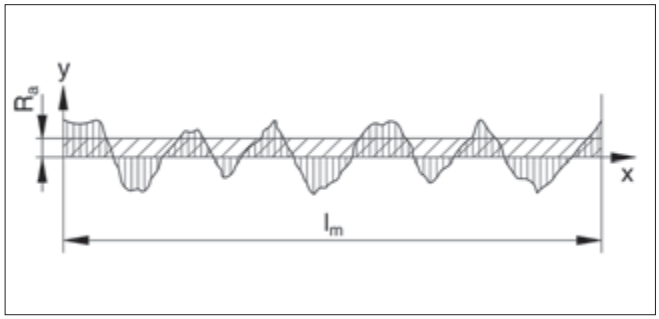
⇩ vermeiden, verkleinern, großer Einfluss

⇩ vermeiden, verkleinern, kleiner Einfluss

≈ kontrollieren, optimieren

▢ verwenden

# Oberflächengüte

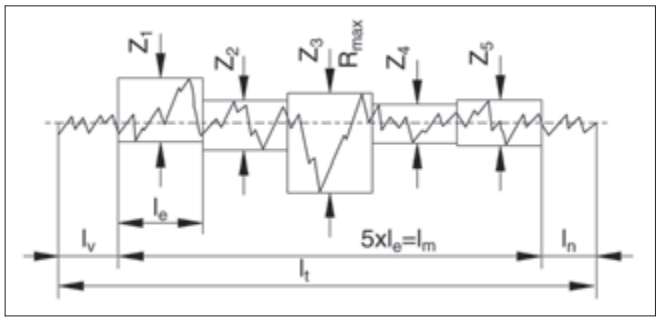



## Mittenrauwert $R_a$ DIN 4768)

ist der arithmetische Mittelwert aller Beträge des Rauheitsprofils R innerhalb der Gesamtmessstrecke $l_m$.

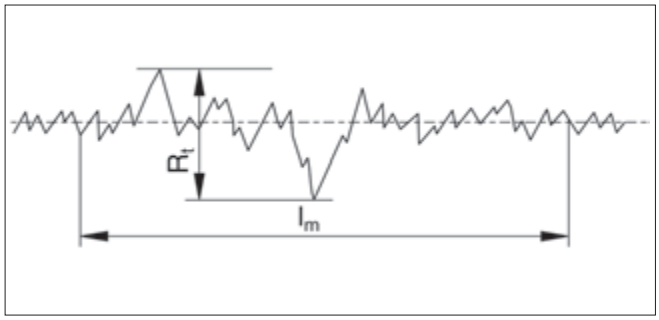
## Gemittelte Rautiefe $R_z$ (DIN 4768)

ist der Mittelwert aus den Einzelrautiefen fünf aufeinanderfolgender Einzelmessstrecken $l_e$.




## Einzelrautiefe $Z_1$ ... $Z_5$

ist der senkrechte Abstand zwischen höchstem und tiefstem Punkt des Rauheitsprofils R innerhalb einer Einzelmessstrecke $l_e$.




## Maximale Rautiefe $R_t$ (DIN 4768/1)

ist der Abstand zwischen der Linie der Erhebung und der Linie der Vertiefung innerhalb der Messstrecke (Bezugsstrecke) eines nach DIN 4768 Bl.1 gefilterten Profils.

## Oberflächengüten nach Herstellungsverfahren

| Oberflächenzeichen nach ISO 1302 | neu | 0,025 ✓ | 0,05 ✓ | 0,1 ✓ | 0,2 ✓ | 0,4 ✓ | 0,8 ✓ | 1,6 ✓ | 3,2 ✓ | 6,3 ✓ | 12,5 ✓ | 25 ✓ | 50 ✓ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oberflächenzeichen nach ISO 3141 | bisher | ▽▽▽▽ | | | | | ▽▽▽ | | ▽▽ | | ▽ | | |
| Rauheitskennzahlen | | N 1 | N 2 | N 3 | N 4 | N 5 | N 6 | N 7 | N 8 | N 9 | N 10 | N 11 | N 12 |
| Arithmetischer Mittenrauwert | $R_a$ [µm] | 0,025 | 0,05 | 0,1 | 0,2 | 0,4 | 0,8 | 1,6 | 3,2 | 6,3 | 12,5 | 25 | 50 |
| Rautiefe | $R_z$ [µm] | 0,25 | 0,63 | 1 | 1,6 | 2,5 | 4-6,3 | 10 | 16-25 | 40 | 63 | 100 | 160 |
| Längsdrehen Plandrehen | | | | | | | | | | | | | |
| Längsdrehen Plandrehen | | | | | | | | | | | | | |
| Rund-Längsschleifen<br>Rund-Planschleifen | | | | | | | | | | | | | |

≙ Rauheit (erreichbar durch besondere Methoden)

≙ Rauheit (erreichbar mit normaler Werkstattpraxis)

≙ Rauheit (erreichbar durch grobe Schruppbearbeitung)

## Rauheit und Oberfläche

Tabelle zum Vergleichen der Maßsysteme (metrisch zu inch)
von Oberflächenrauheiten

| $R_{tmax}$ [µm] | CLA/$R_a$ [µm] | CLA [µ"] | RMS [µm] | RMS [µ"] |
|---|---|---|---|---|
| 0,06 | 0,02 | 0,75 | 0,02 | 0,8 |
| 0,1 | 0,03 | 1,2 | 0,04 | 13 |
| 0,2 | 0,06 | 2,5 | 0,08 | 2,8 |
| 0,3 | 0,09 | 3,7 | 0,1 | 4,2 |
| 0,4 | 0,13 | 5 | 0,14 | 5,6 |
| 0,5 | 0,16 | 6,7 | 0,18 | 6,9 |
| 0,6 | 0,19 | 7,5 | 0,21 | 8,3 |
| 0,7 | 0,22 | 8,7 | 0,25 | 9,7 |
| 0,8 | 0,25 | 10 | 0,28 | 11,1 |
| 0,9 | 0,28 | 11,2 | 0,32 | 12,5 |
| 1 | 0,31 | 12,5 | 0,35 | 14 |
| 1,2 | 0,38 | 15,8 | 0,42 | 16,7 |
| 1,5 | 0,47 | 18,8 | 0,53 | 20,9 |
| 1,8 | 0,57 | 22,6 | 0,64 | 25,5 |
| 2 | 0,64 | 25,1 | 0,78 | 27,9 |
| 2,4 | 0,73 | 30,1 | 0,85 | 33,4 |
| 2,8 | 0,89 | 35,2 | 0,99 | 39 |
| 3 | 0,95 | 37,6 | 1,06 | 41,9 |
| 3,5 | 1,11 | 43,9 | 1,24 | 48,8 |
| 4 | 1,27 | 50,2 | 1,41 | 55,8 |
| 5 | 1,59 | 62,7 | 1,77 | 69,7 |
| 6 | 1,91 | 75,5 | 2,12 | 83,6 |
| 7 | 2,22 | 87,5 | 2,48 | 92,6 |
| 8 | 2,54 | 100 | 2,83 | 111,7 |
| 10 | 3,18 | 125,5 | 3,54 | 140 |
| 20 | 6,64 | 251,5 | 7,8 | 279 |
| 40 | 12,7 | 502 | 14,1 | 558 |
| 60 | 19,1 | 755 | 21,2 | 836 |
| 125 | 39,5 | 1560 | 43,5 | 1750 |
| 200 | 64 | 2510 | 78 | 2790 |

1 µm = 0,001 mm = 39,37 µ"

1 µ" = 0,000001" = 0,0000254 mm

### CLA (centre line average)

### RMS (root mean square)

# Oberflächengüte

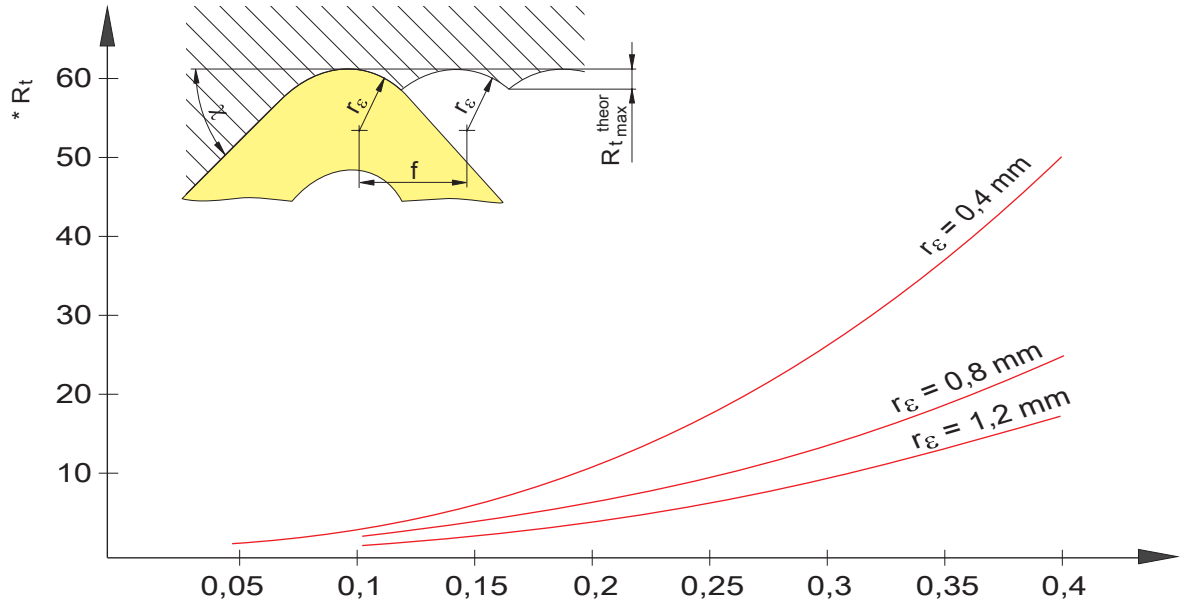
## Theoretische Oberflächengüte

Die beim Drehen theoretische, maximale Rautiefe $R_{t\,theor.}$ ergibt sich als Kombination von Vorschub und Eckenradius.

$$R_{t\,theor.} = \left( r_\varepsilon - \sqrt{r_\varepsilon^2 - \frac{f^2}{4}} \right) \cdot 1000$$

oder näherungsweise

$$R_{t\,theor.} = \frac{0.125 \cdot f^2}{r_\varepsilon}$$



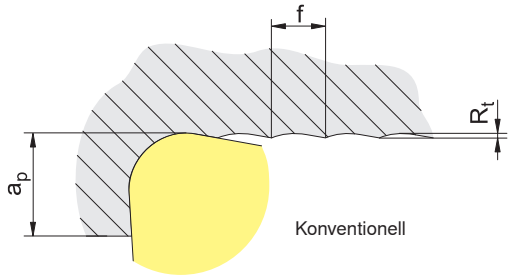

* Theoretische Rautiefe

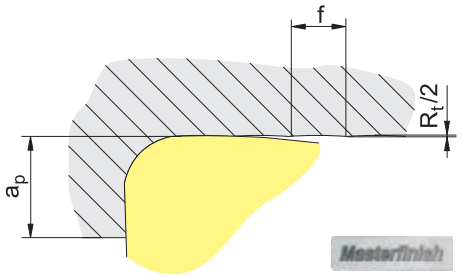
## Richtwerte Vorschub

| Rautiefen-bereich $R_z$ in µm | $R_{t\,max}$ | entspricht $R_a$-Wert | Rauheits-kennzahl | ISO 1302 | Eckenradius $r_\varepsilon$ (mm) und Vorschub f (mm/U) | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | $r_\varepsilon$ = 0,4 | $r_\varepsilon$ = .80,8 | $r_\varepsilon$ = 1,2 | $r_\varepsilon$ = 1,6 |
| 63 - 100 | $\sqrt{R_t\,100}$ | 12,5 - 25 | N 11 | 25 | – | 0,51 | 0,69 | 0,18 |
| 40 - 63 | $\sqrt{R_t\,63}$ | 6,3 - 25 | N 10 | 12,5 | 0,27 | 0,43 | 0,56 | 0,68 |
| 31,5 - 40 | $\sqrt{R_t\,40}$ | 4,9 - 6,3 | N 9 | 6,3 | 0,25 | 0,37 | 0,49 | 0,57 |
| 25 - 31,5 | $\sqrt{R_t\,31,5}$ | 4,0 - 4,9 | | | 0,22 | 0,32 | 0,41 | 0,47 |
| 16 - 25 | $\sqrt{R_t\,25}$ | 2,5 - 4,0 | N 8 | 3,2 | 0,20 | 0,28 | 0,36 | 0,39 |
| 10 - 16 | $\sqrt{R_t\,16}$ | 1,6 - 2,5 | | | 0,15 | 0,22 | 0,29 | 0,31 |
| 6,3 - 10 | $\sqrt{R_t\,10}$ | 1,0 - 1,6 | N 7 | 1,6 | 0,10 | 0,13 | 0,18 | 0,20 |

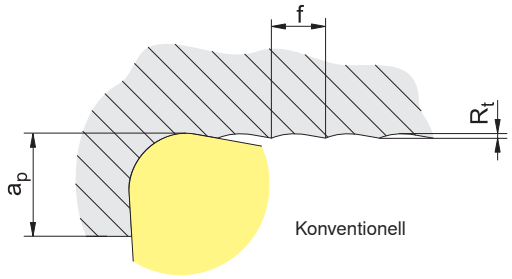
## Funktionsprinzip / Nutzen

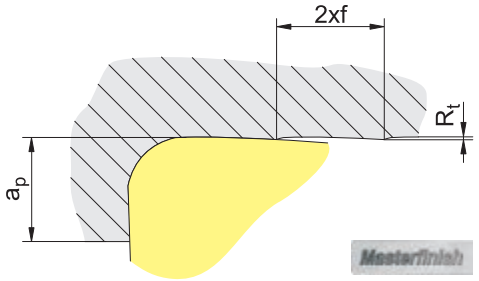
**Bessere Oberfläche**
Bei gleichem Vorschub erreicht die Wendeplatte mit Masterfinsh-Schneide einen um das Vielfache besseren $R_a$-Wert gegenüber einer herkömmlichen Wendeplatte.

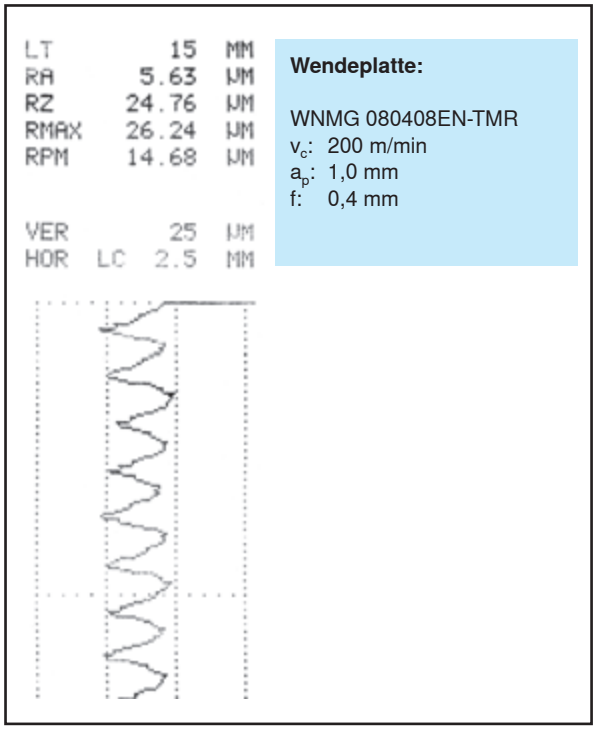



**Geringere Bearbeitungszeit**
Soll der gleiche $R_a$-Wert erreicht werden wie bei einer Standardwendeplatte, so kann mit der Wendeplatte mit Masterfinish-Schneide der doppelte Vorschub gefahren werden (= geringere Stückzeiten!)

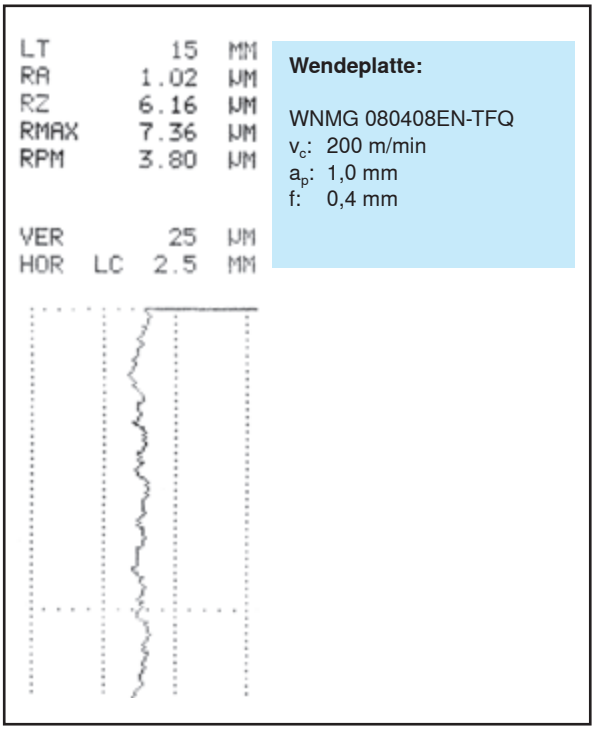



**Wendeplatte:**

WNMG 080408EN-TMR
$v_c$: 200 m/min
$a_p$: 1,0 mm
f: 0,4 mm




**Wendeplatte:**

WNMG 080408EN-TFQ
$v_c$: 200 m/min
$a_p$: 1,0 mm
f: 0,4 mm

# Das Universelle Werkzeugsystem UTS

Die Radialspannung



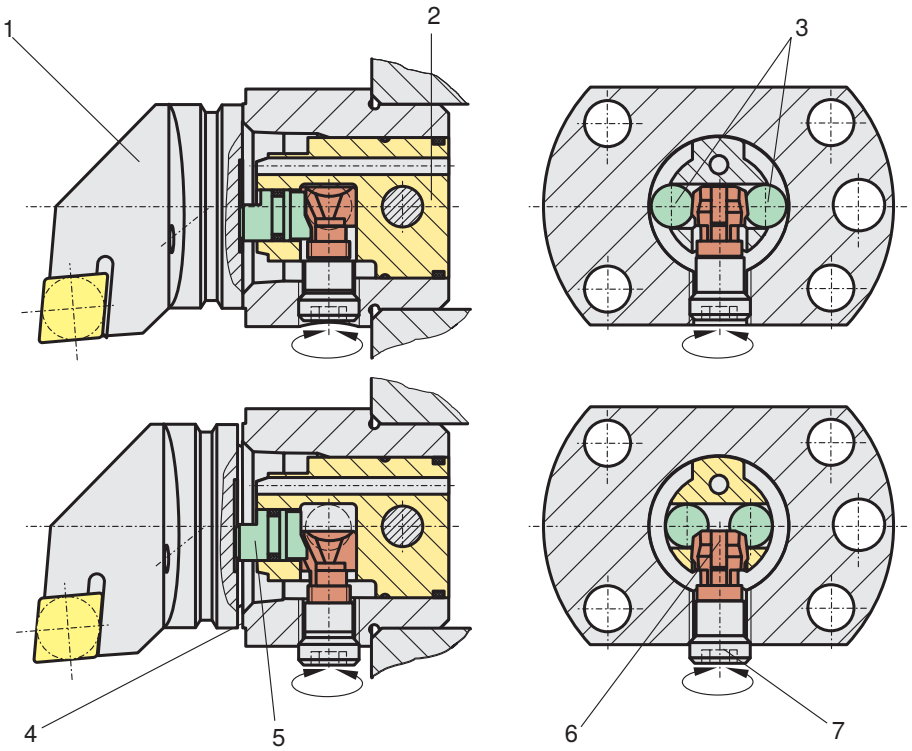
Durch das Drehen der Spannmutter (ca. 3,5 Umdrehungen) nach rechts wird die Spannstange nach hinten bewegt. Dabei werden die Spannkugeln durch die schrägen Flächen nach außen in die Bohrungen des Werkzeugkopfes geschoben und ziehen diesen bis zur Plananlage in die Aufnahme.
Die Aufnahmekegel, sowohl am Werkzeugkopf und in der Aufnahme, werden dabei elastisch verformt.

Dadurch wird eine sehr stabile und präzise Verbindung erreicht.

Bei der Radialspannung soll die Spannmutter mit definiertem Drehmoment angezogen werden:

Anzugsdrehmomente:
UT40 16 Nm
UT50 32 Nm
UT63 50 Nm

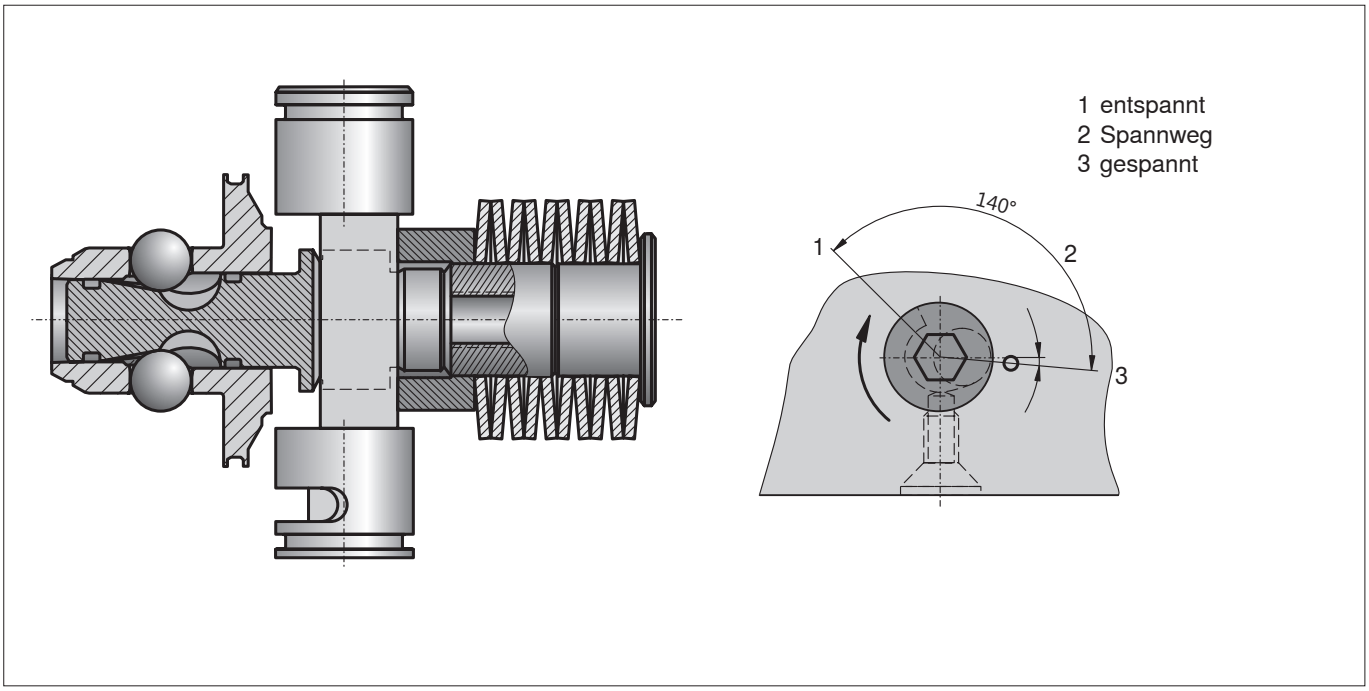
Das Lösen erfolgt durch Drehung der Spannmutter nach links. Die Spannstange bewegt sich nach hinten und die Kugeln sind frei beweglich.
Da das Kegelverhältnis mit 1:10 im Bereich der Selbsthemmung liegt wird der Werkzeugkopf während des Lösevorganges durch das Druckstück aktiv ausgestossen wird.




1 Werkzeugkopf
2 Spanneinheit
3 Kugeln
4 Plananlage
5 Druckstück
6 Spannstange
7 Spannmutter

Die Radialspannung wird vorwiegend im Bereich des modularen Aufbaues sowie auf Drehmaschinen bei längeren Werkzeugwelchsel-Intervallen eingesetzt.
Sehr vorteilhaft ist auch die extrem kurze, kompakte Bauweise.

Bei der MaxiFlex UTS Schnellspannung wird durch eine 140°-Drehung eines Exzenters die Zugstange axial bewegt. Das bewährte Grundprinzip der Kugelspannung wurde dabei beibehalten. Die definierte Spannkraft wird aber durch ein Tellerfederpaket erzeugt. Sowohl beim Spannen als auch beim Lösen eines Werkzeugkopfes wird die Drehung des Exzenters durch einen Fixanschlag begrenzt. Ein Drehmomentschlüssel ist bei der MaxiFlex UTS Schnellspannung damit nicht mehr nötig.




## Besondere Vorteile

140°-Schlüsseldrehung zum Spannen und Entspannen
- Verkürzt Werkzeugwechselzeiten erheblich
- Erleichtert Werkzeugwechsel in schwer zugänglichen Bereichen

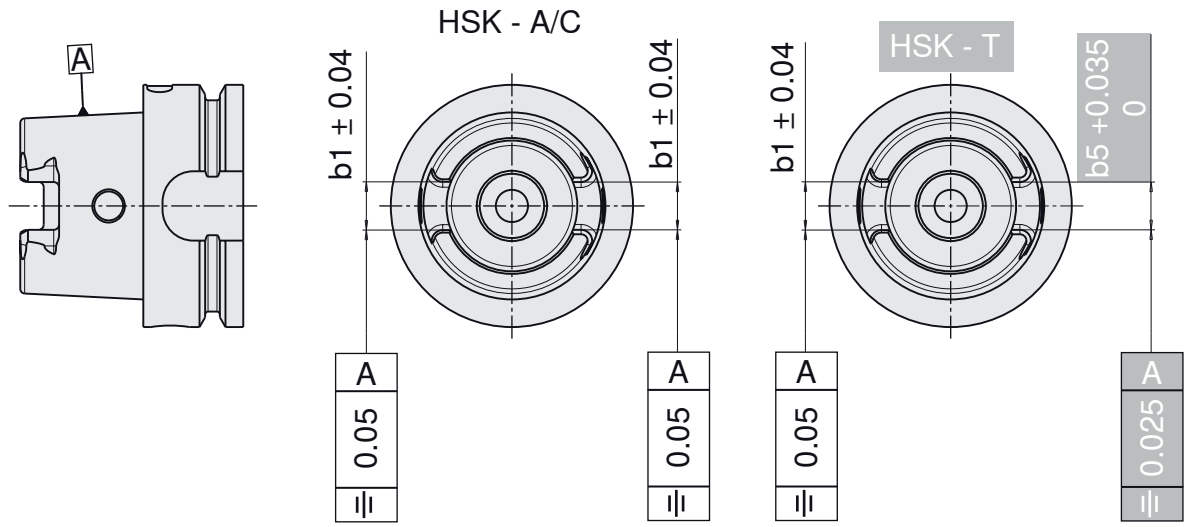
Definierte Spannkraft duch Tellerfederpaket
- KEIN Drehmomentschlüssel mehr nötig
- Konstante Spannkräfte
- Mehr Sicherheit und längere Werkzeugstandzeiten

Die Möglichkeiten der **MaxiFlex UTS Schnellspannung** können besonders **auf Drehmaschinen mit häufigem Werkzeugwechsel** genutzt werden.

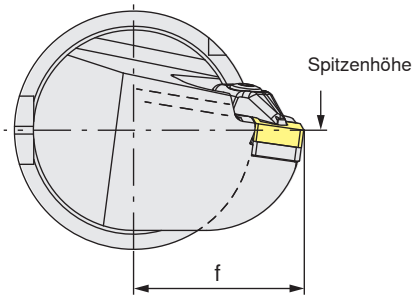
# Das Werkzeugsystem HSK-T

## Was ist HSK-T

Das „T“ steht für Turning (drehen). Der HSK-T hat die Grundform des HSK-Kegels nach Form A / C (ISO 12164-1 und -2) und unterscheidet sich von diesem im Wesentlichen durch deutlich engere Toleranzen der Mitnehmernuten (Werkzeuge) und der Mitnehmersteine (Aufnahme). Damit wird die für das Drehen wichtige radiale Positioniergenauigkeit (Spitzenhöhe) sichergestellt. Der HSK-T ist genormt nach ISO 12164-3 (Außenkegel - Werkzeug) und -4 (Innenkegel - Aufnahme).

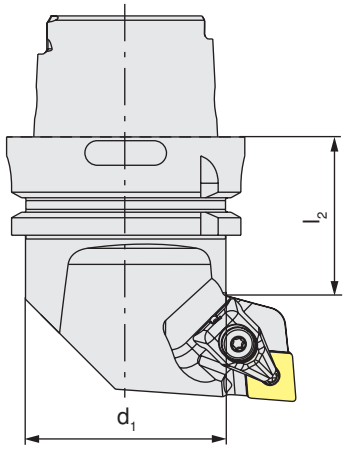



## Nutzen




### Perfekte Wechselgenauigkeit - auch bei der Spitzenhöhe

Die Positionier-Toleranz der Spitzenhöhe der Werkzeugschneide wird dami bei HSK-T63 mit Maß f = 45 mm auf ±0,13 mm bzw. bei HSK-T100 mit Maß f = 55 mm auf ±0,11 mm reduziert.




### Auf Maschinen mit HSK-T und HSK-A-Spindel einsetzbar

An allen CERATIZIT HSK-T-Werkzeuge sind die Maße d1 und l2 nach ISO 12164-1 (HSK-A) ausgeführt.
Sie können dadurch auch auf Maschinen die für HSK-A-Werkzeuge ausgelegt sind (Werkzeugwechsler) automatisch gewechselt werden.



## Optimierte Kühlmittelzuführung = effizientere Fertigungsprozesse

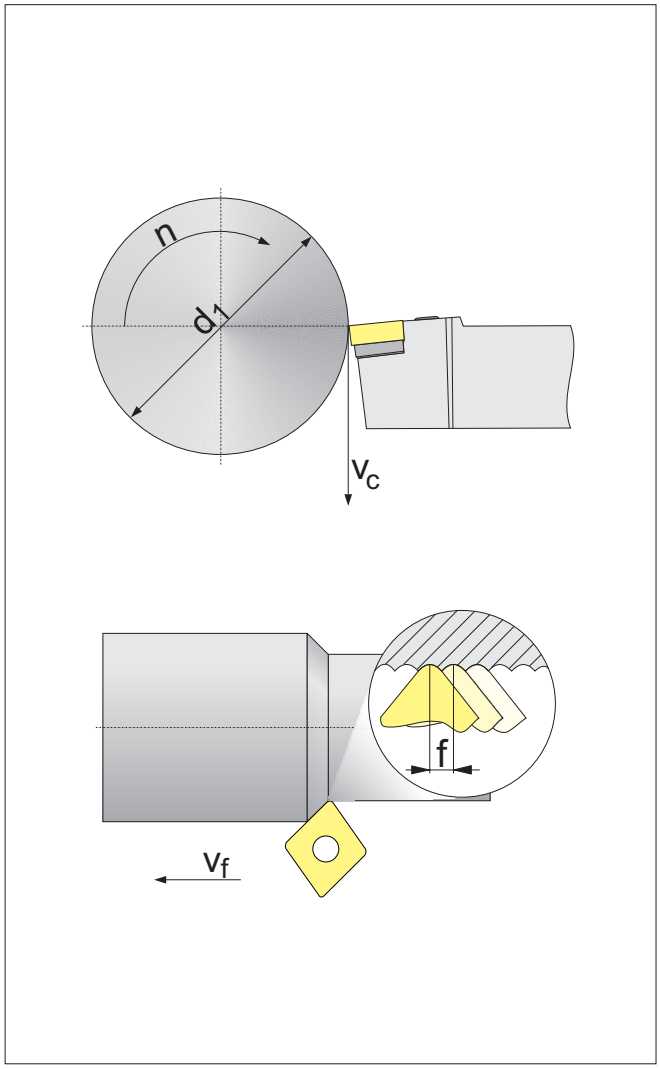
Durch die innovative Konstruktion der Kühlmittelzuführung trifft der Kühlmittelstrahl konzentriert und zielgenau auf die Werkzeugschneide. Dadurch wird ein effizienter Kühlmitteleinsatz erreicht, der zu deutlich verbesserten Werkzeugstandmengen bzw. kürzeren Prozesszeiten führt.
Auch für Minimalmengenschmierung ausgelegt.

## Komplettes Werkzeugprogramm für Komplettbearbeitungsmaschinen

Das CERATIZIT HSK-T Werkzeugprogramm ist speziell für Komplettbearbeitungsmaschinen konzipiert. Es ist derzeit in den Größen HSK-T63 und HSK-T100 ab Lager lieferbar und deckt alle Bearbeitungsverfahren optimal ab.

- Drehköpfe zum Außen- und Innendrehen
- Köpfe zum Stechdrehen
- EcoCut-Multifunktions-Werkzeuge
- Halter für Vierkant- und Rundschäfte
- Verlängerungen und Reduzierungen
- Adapter HSK-T - UT / KM
- HSK-A-Aufnahmen für rotierende Werkzeuge

# Allgemeine Formeln




## Schnittgeschwindigkeit ($v_c$)

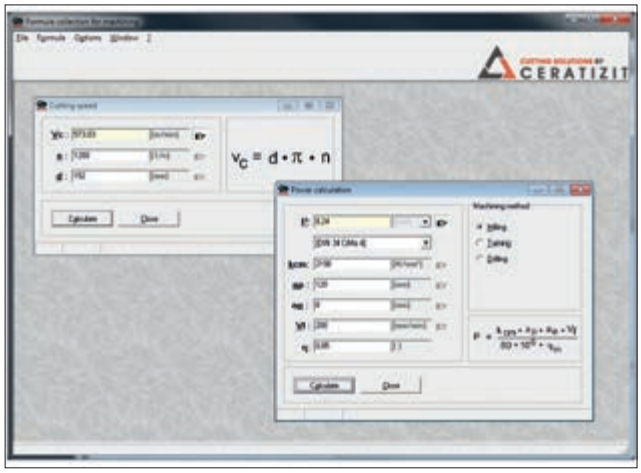
$$v_c = \frac{d_1 \cdot \pi \cdot n}{1000} \quad [m/min]$$

## Umdrehungen pro Minute (n)

$$n = \frac{v_c \cdot 1000}{d_1 \cdot \pi} \quad [U/min]$$

## Vorschubgeschwindigkeit ($v_f$)

$$v_f = f \cdot n \quad [mm/min]$$




## Die CERATIZIT Formelsammlung CT-CALC

PC-gestützte Berechnung von wichtigen Zerspanungskenngrößen
- Schnittgeschwindigkeit
- Zeitspanvolumen
- Leistungsbedarf
- mittlere Spandicke

Sprachversionen
DE, EN, FR, IT, ES, DA, SE, FI

Gratis download unter
**www.ceratizit.com**

# Härtewerte

Vergleichstabelle

| Zugfestigkeit N/mm² | Vickers HV | Brinell HB | Rockwell HRC | Shore C |
|---|---|---|---|---|
| 575 | 180 | 171 | | |
| 595 | 185 | 176 | | |
| 610 | 190 | 181 | | |
| 625 | 195 | 185 | | |
| 640 | 200 | 190 | 12 | |
| 660 | 205 | 195 | 13 | |
| 675 | 210 | 199 | 14 | |
| 690 | 215 | 204 | 15 | |
| 705 | 220 | 209 | 15 | 28 |
| 720 | 225 | 214 | 16 | |
| 740 | 230 | 219 | 17 | 29 |
| 755 | 235 | 223 | 18 | |
| 770 | 240 | 228 | 20.3 | 30 |
| 785 | 245 | 233 | 21.3 | |
| 800 | 250 | 238 | 22.2 | 31 |
| 820 | 255 | 242 | 23.1 | 32 |
| 835 | 260 | 247 | 24 | 33 |
| 850 | 265 | 252 | 24.8 | |
| 865 | 270 | 257 | 25.6 | |
| 880 | 275 | 261 | 26.4 | 34 |
| 900 | 280 | 268 | 27.1 | |
| 915 | 285 | 271 | 27.8 | 35 |
| 930 | 290 | 276 | 28.5 | |
| 950 | 295 | 280 | 29.2 | 36 |
| 965 | 300 | 285 | 29.8 | 37 |
| 995 | 310 | 295 | 31 | 38 |
| 1030 | 320 | 304 | 32.2 | 39 |
| 1060 | 330 | 314 | 33.3 | 40 |
| 1095 | 340 | 323 | 34.3 | 41 |
| 1125 | 350 | 333 | 35.5 | 42 |
| 1155 | 360 | 342 | 36.6 | 43 |
| 1190 | 370 | 352 | 37.7 | 44 |
| 1220 | 380 | 361 | 38.8 | 45 |
| 1255 | 390 | 371 | 39.8 | 46 |
| 1290 | 400 | 380 | 40.8 | 47 |
| 1320 | 410 | 390 | 41.8 | 48 |
| 1350 | 420 | 399 | 42.7 | |
| 1385 | 430 | 409 | 43.6 | 49 |
| 1420 | 440 | 418 | 44.5 | |
| 1455 | 450 | 428 | 45.3 | 51 |
| 1485 | 460 | 437 | 46.1 | 52 |
| 1520 | 470 | 447 | 46.9 | 53 |
| 1555 | 480 | 465 | 47.7 | 54 |
| 1595 | 490 | 466 | 48.4 | |
| 1630 | 500 | 475 | 49.1 | 57 |
| 1665 | 510 | 485 | 49.8 | 58 |
| 1700 | 520 | 494 | 50.5 | 59 |
| 1740 | 530 | 504 | 51.1 | 60 |
| 1775 | 540 | 513 | 51.7 | 61 |
| 1810 | 550 | 523 | 52.3 | 62 |

| Zugfestigkeit N/mm² | Vickers HV | Brinell HB | Rockwell HRC | Shore C |
|---|---|---|---|---|
| 1845 | 560 | 532 | 53 | 63 |
| 1880 | 570 | 542 | 53.6 | 64 |
| 1920 | 580 | 551 | 54.1 | 65 |
| 1955 | 590 | 561 | 54.7 | 66 |
| 1995 | 600 | 570 | 55.2 | 67 |
| 2030 | 610 | 580 | 55.7 | 68 |
| 2070 | 620 | 589 | 56.3 | 69 |
| 2105 | 630 | 599 | 56.8 | 70 |
| 2145 | 640 | 608 | 57.3 | 71 |
| 2180 | 650 | 618 | 57.8 | 72 |
| 2210 | 660 | 628 | 58.3 | 73 |
| 2240 | 665 | 633 | 58.8 | 74 |
| 2280 | 670 | 638 | 59.3 | |
| 2310 | 675 | 643 | 59.8 | 75 |
| 2350 | 680 | 648 | 60.3 | 76 |
| 2380 | 685 | 653 | 61.1 | 77 |
| 2410 | 690 | 658 | 61.3 | 78 |
| 2450 | 695 | 663 | 61.7 | 79 |
| 2480 | 710 | 668 | 62.2 | 80 |
| 2520 | 720 | 678 | 62.6 | 81 |
| 2550 | 730 | 683 | 63.1 | 82 |
| 2590 | 740 | 693 | 63.5 | |
| 2630 | 750 | 703 | 63.9 | 83 |
| 2660 | 760 | 708 | 64.3 | 84 |
| 2700 | 770 | 718 | 64.7 | 85 |
| 2730 | 780 | 723 | 65.1 | |
| 2770 | 790 | 733 | 65.5 | 86 |
| 2800 | 800 | 738 | 65.9 | |
| 2840 | 810 | 748 | 66.3 | 87 |
| 2870 | 820 | 753 | 66.7 | 88 |
| 2910 | 830 | 763 | 67 | |
| 2940 | 840 | 768 | 67.4 | 89 |
| 2980 | 850 | | 67.7 | |
| 3010 | 860 | | 68.1 | 90 |
| 3050 | 870 | | 68.4 | |
| 3080 | 880 | | 68.7 | 91 |
| 3120 | 890 | | 69 | |
| 3150 | 900 | | 69.3 | 92 |
| 3190 | 910 | | 69.6 | |
| 3220 | 920 | | 69.9 | |
| 3260 | 930 | | 70.1 | |

Umrechnungswerte sind angenähert nach DIN EN ISO18265 (02-2004)

# Werkstoffvergleichstabelle



| DIN | Wks Nr. | BS | AFNOR | SS | AISI | Japan JIS | Kc1.1 N/mm² | mc | VDI 3323 Gruppe |
|---|---|---|---|---|---|---|---|---|---|
| 10 SPb 20 | 1.0722 | | 10 PbF 2 | | 11 L 08 | | 1350 | 0,20 | **1** |
| 100 Cr 6 | 1.2067 | BL 3 | Y 100 C 6 | | L 3 | SUJ2 | 1775 | 0,24 | **6/9** |
| 105 WCr 6 | 1.2419 | | 105 WC 13 | | | SKS31 | 1775 | 0,24 | **6/9** |
| 12 CrMo 9 10 | 1.7380 | 1501-622 Gr. 31; 45 | 10 CD 9.10 | 2218 | A 182-F22 | SPVA,SCMV4 | 1675 | 0,24 | **6/7** |
| 12 Ni 19 | 1.5680 | | Z 18 N 5 | | 2515 | | 2450 | 0,23 | **10/11** |
| 13 CrMo 4 4 | 1.7335 | 1501-620 Gr. 27 | 15 CD 3.5 | 2216 | A 182-F11; F12 | SPVAF12 | 1675 | 0,24 | **6/7** |
| 14 MoV 6 3 | 1.7715 | 1503-660-440 | | | | | 1675 | 0,24 | **6/7** |
| 14 Ni 6 | 1.5622 | | 16 N 6 | | A 350-LF 5 | | 1675 | 0,24 | **6/7** |
| 14 NiCr 10 | 1.5732 | | 14 NC 11 | | 3415 | SNC415(H) | 1675 | 0,24 | **6/7** |
| 14 NiCr 14 | 1.5752 | 655 M 13 | 12 NC 15 | | 3310; 9314 | SNC815(H) | 1675 | 0,24 | **6/7** |
| 14 NiCrMo 13 4 | 1.6657 | | | | | | 1675 | 0,24 | **6/7** |
| 15 Cr 3 | 1.7015 | 523 M 15 | 12 C 3 | | 5015 | | 1675 | 0,24 | **6/7** |
| 15 CrMo 5 | 1.7262 | | 12 CD 4 | | | SCM415(H) | 1675 | 0,24 | **6/7** |
| 15 Mo 3 | 1.5415 | 1501-240 | 15 D 3 | 2912 | A 204 Gr. A | | 1675 | 0,24 | **6/7** |
| 16 MnCr 5 | 1.7131 | 527 M 17 | 16 MC 5 | 2511 | 5115 | SCR415 | 1675 | 0,24 | **6/7** |
| 16 Mo 5 | 1.5423 | 1503-245-420 | | | 4520 | SB450M | 1675 | 0,24 | **6/7** |
| 17 CrNiMo 6 | 1.6587 | 820 A 16 | 18 NCD 6 | | | | 1675 | 0,24 | **6/7** |
| 21 NiCrMo 2 | 1.6523 | 805 M 20 | 20 NCD 2 | 2506 | 8620 | SNCM220(H) | 1725 | 0,24 | **6/8** |
| 25 CrMo 4 | 1.7218 | 1717 CDS 110 | 25 CD 4 S | 2225 | 4130 | SM420;SCM430 | 1725 | 0,24 | **6/8** |
| 28 Mn 6 | 1.1170 | 150 M 28 | 20 M 5 | | 1330 | | 1500 | 0,22 | **2** |
| 32 CrMo 12 | 1.7361 | 722 M 24 | 30 CD 12 | 2240 | | | 1775 | 0,24 | **6/9** |
| 34 Cr 4 | 1.7033 | 530 A 32 | 32 C 4 | | 5132 | SCR430(H) | 1725 | 0,24 | **6/8** |
| 34 CrMo 4 | 1.7220 | 708 A 37 | 35 CD 4 | 2234 | 4135; 4137 | SCM432;SCCRM3 | 1775 | 0,24 | **6/9** |
| 34 CrNiMo 6 | 1.6582 | 817 M 40 | 35 NCD 6 | 2541 | 4340 | SNCM447 | 1775 | 0,24 | **6/9** |
| 35 S 20 | 1.0726 | 212 M 36 | 35 MF 4 | 1957 | 1140 | | 1525 | 0,22 | **2/3** |
| 36 CrNiMo 4 | 1.6511 | 816 M 40 | 40 NCD 3 | | 9840 | SNCM447 | 1775 | 0,24 | **6/9** |
| 36 Mn 5 | 1.1167 | | | | | | 1525 | 0,22 | **2/3** |
| 36 NiCr 6 | 1.5710 | 640 A 35 | 35 NC 6 | | 3135 | SNC236 | 1800 | 0,24 | **3/9** |
| 38 MnSi 4 | 1.5120 | | | | | | 1800 | 0,24 | **3/9** |
| 39 CrMoV 13 9 | 1.8523 | 897 M 39 | | | | | 1775 | 0,24 | **6/9** |
| 40 Mn 4 | 1.1157 | 150 M 36 | 35 M 5 | | 1039 | | 1525 | 0,22 | **2/3** |
| 40 NiCrMo 2 2 | 1.6546 | 311-Type 7 | 40 NCD 2 | | 8740 | SNCM240 | 1775 | 0,24 | **6/9** |
| 41 Cr 4 | 1.7035 | 530 M 40 | 42 C 4 | | 5140 | SCR440(H) | 1775 | 0,24 | **6/9** |
| 41 CrAlMo 7 | 1.8509 | 905 M 39 | 40 CAD 6.12 | 2940 | A 355 Cl. A | SACM645 | 1775 | 0,24 | **6/9** |
| 41 CrMo 4 | 1.7223 | 708 M 40 | 42 CD 4 TS | 2244 | 4142; 4140 | SCM440 | 1775 | 0,24 | **6/9** |
| 42 Cr 4 | 1.7045 | 530 A 40 | 42 C 4 TS | 2245 | 5140 | SCr440 | 1775 | 0,24 | **6/9** |
| 42 CrMo 4 | 1.7225 | 708 M 40 | 42 CD 4 | 2244 | 4142; 4140 | SCM440(H) | 1775 | 0,24 | **6/9** |
| 45 WCrV 7 | 1.2542 | BS 1 | | 2710 | S 1 | | 1775 | 0,24 | **6/9** |
| 50 CrV 4 | 1.8159 | 735 A 50 | 50 CV 4 | 2230 | 6150 | SUP10 | 1775 | 0,24 | **6/9** |
| 55 Cr 3 | 1.7176 | 527 A 60 | 55 C 3 | 2253 | 5155 | SUP9(A) | 1775 | 0,24 | **6/9** |
| 55 NiCrMoV 6 | 1.2713 | | 55 NCDV 7 | | L 6 | SKH1;SKT4 | 1775 | 0,24 | **6/9** |
| 55 Si 7 | 1.0904 | 250 A 53 | 55 S 7 | 2085; 2090 | 9255 | | 1775 | 0,24 | **6/9** |
| 58 CrV 4 | 1.8161 | | | | | | 1775 | 0,24 | **6/9** |
| 60 SiCr 7 | 1.0961 | | 60 SC 7 | | 9262 | | 1775 | 0,24 | **6/9** |
| 9 SMn 28 | 1.0715 | 230 M 07 | S 250 | 1912 | 1213 | SUM22 | 1350 | 0,21 | **1** |
| 9 SMn 36 | 1.0736 | 240 M 07 | S 300 | | 1215 | | 1350 | 0,21 | **1** |
| 9 SMnPb 28 | 1.0718 | | S 250 Pb | 1914 | 12 L 13 | SUM22L | 1350 | 0,21 | **1** |
| 9 SMnPb 36 | 1.0737 | | S 300 Pb | 1926 | 12 L 14 | | 1350 | 0,21 | **1** |
| Al99 | 3.0205 | | | | | | 700 | 0,25 | **21** |
| AlCuMg1 | 3.1325 | | | | | | 700 | 0,25 | **22** |
| AlMg1 | 3.3315 | | | | | | 700 | 0,25 | **21** |

| DIN | Wks Nr. | BS | AFNOR | SS | AISI | Japan JIS | Kc1.1 N/mm² | mc | VDI 3323 Gruppe |
|---|---|---|---|---|---|---|---|---|---|
| AlMgSi1 | 3.2315 | | | | | | 700 | 0,25 | **22** |
| C 105 W1 | 1.1545 | | Y1 105 | 1880 | W 110 | SK3 | 1675 | 0,24 | **3** |
| C 125 W | 1.1663 | | Y2 120 | | W 112 | | 1675 | 0,24 | **3** |
| C 15 | 1.0401 | 080 M 15 | AF3 7 C 12; XC 18 | 1350 | 1015 | S15C | 1350 | 0,21 | **1** |
| C 22 | 1.0402 | 050 A 20 | AF 42 C 20 | 1450 | 1020 | S20C, S22C | 1350 | 0,21 | **1** |
| C 35 | 1.0501 | 060 A 35 | AF 55 C 35 | 1550 | 1035 | S35C | 1525 | 0,22 | **2/3** |
| C 45 | 1.0503 | 080 M 46 | AF 65 C 45 | 1650 | 1045 | S45C | 1525 | 0,22 | **2/3** |
| C 55 | 1.0535 | 070 M 55 | | 1655 | 1055 | S55C | 1675 | 0,24 | **3** |
| C 60 | 1.0601 | 080 A 62 | CC 55 | | 1060 | S60C | 1675 | 0,24 | **3** |
| Cf 35 | 1.1183 | | | | | S35C | 1525 | 0,22 | **2/3** |
| Cf 53 | 1.1213 | | | | | S50C | 1525 | 0,22 | **2/3** |
| Ck 101 | 1.1274 | 060 A 96 | | 1870 | 1095 | | 1675 | 0,24 | **3** |
| Ck 15 | 1.1141 | 080 M 15 | XC 15; XC 18 | 1370 | 1015 | S15C | 1350 | 0,21 | **1** |
| Ck 55 | 1.1203 | 070 M 55 | XC 55 | | 1055 | S55C | 1675 | 0,24 | **3** |
| Ck 60 | 1.1221 | 080 A 62 | XC 60 | 1665; 1678 | 1060 | S58C | 1675 | 0,24 | **3** |
| CoCr20W15Ni | 2.4764 | | | | | | 3300 | 0,24 | **35** |
| CuZn15 | 2.0240 | | | | | | 700 | 0,27 | **27** |
| CuZn36Pb3 | 2.0375 | | | | | | 700 | 0,27 | **26** |
| E-Cu57 | 2.0060 | | | | | | 700 | 0,27 | **28** |
| G-AlSi10Mg | 3.2381 | | | | | | 700 | 0,25 | **24** |
| G-AlSi12 | 3.2581 | | | | | | 700 | 0,25 | **23** |
| G-AlSi9Cu3 | 3.2163 | | | | | | 700 | 0,25 | **23** |
| G-CuSn5ZnPb | 2.1096 | | | | | | 700 | 0,27 | **26** |
| G-CuZn40Fe | 2.0590 | | | | | | 700 | 0,27 | **28** |
| G-X 120 Mn 12 | 1.3401 | Z 120 M 12 | Z 120 M 12 | | A 128 (A) | | 3300 | 0,24 | **35** |
| G-X 20 Cr 14 | 1.4027 | 420 C 29 | Z 20 C 13 M | | | SCS2 | 1875 | 0,21 | **12/13** |
| G-X 40 NiCrSi 38 18 | 1.4865 | 330 C 40 | | | | | 2600 | 0,24 | **31** |
| G-X 45 CrSi 9 3 | 1.4718 | 401 S 45 | Z 45 CS 9 | | HNV 3 | | 2450 | .23 | **10/11** |
| G-X 5 CrNi 13 4 | 1.4313 | 425 C 11 | Z 5 CN 13.4 | 2385 | CA 6-NM | | 1875 | 0,21 | **12/13** |
| G-X 5 CrNiMoNb 18 10 | 1.4581 | 318 C 17 | Z 4 CNDNb 18.12 M | | | | 2150 | .0,2 | **14** |
| G-X 6 CrNi 18 9 | 1.4308 | 304 C 15 | Z 6 CN 18.10 M | 2333 | CF-8 | | 2150 | .0,2 | **14** |
| G-X 6 CrNiMo 18 10 | 1.4408 | | | | | | 2150 | .0,2 | **14** |
| G-X 7 Cr 13 | 1.4001 | | | | | | 1875 | 0,21 | **12/13** |
| GG-10 | .6010 | | Ft 10 D | 01 10-00 | A48-20 B | FC100 | 1150 | .0,2 | **15** |
| GG-15 | .6015 | Grade 150 | Ft 15 D | 01 15-00 | A48-25 B | FC150 | 1150 | .0,2 | **15** |
| GG-20 | .6020 | Grade 220 | Ft 20 D | 01 20-00 | A48-30 B | FC200 | 1150 | .0,2 | **15** |
| GG-25 | .6025 | Grade 260 | Ft 25 D | 01 25-00 | A48-40 B | FC250 | 1250 | 0,24 | **15/16** |
| GG-30 | .6030 | Grade 300 | Ft 30 D | 01 30-00 | A48-45 B | FC300 | 1350 | 0,28 | **16** |
| GG-35 | .6035 | Grade 350 | Ft 35 D | 01 35-00 | A48-50 B | FC350 | 1350 | 0,28 | **16** |
| GG-40 | .6040 | Grade 400 | Ft 40 D | 01 40-00 | A48-60 B | FC400 | 1350 | 0,28 | **16** |
| GGG-35.3 | .7033 | | | | | FCD350 | 1225 | 0,25 | **17** |
| GGG-40 | .7040 | SNG 420/12 | FGS 400-12 | 0717-02 | 60-40-18 | FCD400 | 1225 | 0,25 | **17** |
| GGG-40.3 | .7043 | SNG 370/17 | FGS 370-17 | 0717-15 | | FCD400 | 1225 | 0,25 | **17** |
| GGG-50 | .7050 | SNG 500/7 | FGS 500-7 | 0727-02 | 65-45-12 | FCD500 | 1350 | 0,28 | **18** |
| GGG-60 | .7060 | SNG 600/3 | FGS 600-3 | 0732-03 | 80-55-06 | FCD600 | 1350 | 0,28 | **18** |
| GGG-70 | .7070 | SNG 700/2 | FGS 700-2 | 0737-01 | 100-70-03 | FCD700 | 1350 | 0,28 | **18** |
| GGG-NiCr 20 2 | .7660 | S-NiCr 20 2 | S-NC 20 2 | | A 439 Type D-2 | | 1350 | 0,28 | **18** |
| GGG-NiMn 13 7 | .7652 | S-NiMn 13 7 | S-NM 13 7 | | | | 1350 | 0,28 | **18** |
| GS-Ck 45 | 1.1191 | 080 M 46 | XC 42 | 1672 | 1045 | S45C | 1525 | 0,22 | **2/3** |
| GTS-35-10 | .8135 | B 340/12 | MN 35-10 | | | | 1225 | 0,25 | **19** |
| GTS-45-06 | .8145 | P 440/7 | | | | | 1420 | 0,3 | **20** |

# Werkstoffvergleichstabelle



| DIN | Wks Nr. | BS | AFNOR | SS | AISI | Japan JIS | Kc1.1 N/mm² | mc | VDI 3323 Gruppe |
|---|---|---|---|---|---|---|---|---|---|
| GTS-55-04 | .8155 | P 510/4 | MP 50-5 | | | | 1420 | 0,3 | **20** |
| GTS-65-02 | .8165 | P 570/3 | MP 60-3 | | | | 1420 | 0,3 | **20** |
| GTS-70-02 | .8170 | P 690/2 | IP 70-2 | | | | 1420 | 0,3 | **20** |
| NiCr20TiAl | 2.4631 | HR 401; 601 | Nimonic 80 A | | | | 3300 | 0,24 | **33** |
| NiCr22Mo9Nb | 2.4856 | | Inconel 625 | | | | 3300 | 0,24 | **33** |
| NiCu30Al | 2.4375 | | Monel K 500 | | | | 3300 | 0,24 | **34** |
| NiFe25Cr20NbTi | 2.4955 | | | | | | 3300 | 0,24 | **34** |
| S 18-0-1 | 1.3355 | BT 1 | Z 80 WCV 18-04-01 | | T 1 | | 2450 | 0,23 | **10/11** |
| S 18-1-2-5 | 1.3255 | BT 4 | Z 80 WKCV 18-05-04-0 | | T 4 | | 2450 | 0,23 | **10/11** |
| S 2-9-2 | 1.3348 | | Z 100 DCWV 09-04-02- | 2782 | M 7 | | 2450 | 0,23 | **10/11** |
| S 6-5-2 | 1.3343 | BM 2 | Z 85 WDCV 06-05-04-0 | 2722 | M 2 | SKH9; SKH51 | 2450 | 0,23 | **10/11** |
| S 6-5-2-5 | 1.3243 | | Z 85 WDKCV 06-05-05- | 2723 | | SKH55 | 2450 | 0,23 | **10/11** |
| TiAl6V4 | 3.7165 | TA 10 bis TA 13 | T-A 6 V | | | | 2110 | 0,22 | **37** |
| X 10 Cr 13 | 1.4006 | 410 S 21 | Z 12 C 13 | 2302 | 410; CA-15 | SUS410 | 1875 | 0,21 | **12/13** |
| X 10 CrNiMoNb 18 12 | 1.4583 | | | | 318 | | 2150 | 0,2 | **14** |
| X 10 CrNiS 18 9 | 1.4305 | 303 S 21 | Z 10 CNF 18.09 | 2346 | 303 | | 2150 | 0,2 | **14** |
| X 100 CrMoV 5 1 | 1.2363 | BA 2 | Z 100 CDV 5 | 2260 | A 2 | | 2450 | 0,23 | **10/11** |
| X 12 CrMoS 17 | 1.4104 | | Z 10 CF 17 | 2383 | 430 F | SUS430F | 1875 | 0,21 | **12/13** |
| X 12 CrNi 17 7 | 1.4310 | 301 S 21 | Z 12 CN 17.07 | | 301 | | 2150 | 0,2 | **14** |
| X 12 CrNi 22 12 | 1.4829 | | | | | SUS301 | 1350 | 0,28 | **16** |
| X 12 CrNi 25 21 | 1.4845 | 310 S24 | Z 12 CN 25.20 | 2361 | 310 S | SUH310; SUS310S | 2150 | 0,2 | **14** |
| X 12 CrNiTi 18 9 | 1.4878 | 321 S 20 | Z 6 CNT 18.12 (B) | 2337 | 321 | | 2150 | 0,2 | **14** |
| X 12 NiCrSi 36 16 | 1.4864 | NA 17 | Z 12 NCS 37.18 | | 330 | SUH330 | 2600 | 0,24 | **31** |
| X 15 CrNiSi 20 12 | 1.4828 | 309 S 24 | Z 15 CNS 20.12 | | 309 | SUH309 | 1350 | 0,28 | **16** |
| X 165 CrMoV 12 | 1.2601 | | | 2310 | | | 2450 | 0,23 | **10/11** |
| X 2 CrNiMo 18 13 | 1.4440 | | | | | | 2150 | 0,2 | **14** |
| X 2 CrNiMoN 17 13 3 | 1.4429 | 316 S 62 | Z 2 CND 17.13 Az | 2375 | 316 LN | SUS316LN | 2150 | 0,2 | **14** |
| X 2 CrNiN 18 10 | 1.4311 | 304 S 62 | Z 2 CN 18 .10 | 2371 | 304 LN | SUS304LN | 2150 | 0,2 | **14** |
| X 20 CrNi 17 2 | 1.4057 | 431 S 29 | Z 15 CN 16.02 | 2321 | 431 | SUS431 | 1875 | 0,21 | **12/13** |
| X 210 Cr 12 | 1.2080 | BD 3 | Z 200 C 12 | | D 3 | | 2450 | 0,23 | **10/11** |
| X 210 CrW 12 | 1.2436 | | | 2312 | | | 2450 | 0,23 | **10/11** |
| X 30 WCrV 9 3 | 1.2581 | BH 21 | Z 30 WCV 9 | | H 21 | SKD5 | 2450 | 0,23 | **10/11** |
| X 40 CrMoV 5 1 | 1.2344 | BH 13 | Z 40 CDV 5 | 2242 | H 13 | SKD61 | 2450 | 0,23 | **10/11** |
| X 46 Cr 13 | 1.4034 | 420 S 45 | Z 40 C 14 | | | | 1875 | 0,21 | **12/13** |
| X 5 CrNi 18 9 | 1.4301 | 304 S 15 | Z 6 CN 18.09 | 2332; 2333 | 304; 304 H | SUS304 | 2150 | 0,2 | **14** |
| X 5 CrNiMo 17 13 3 | 1.4436 | 316 S 16 | Z 6 CND 17.12 | 2343 | 316 | SUS316 | 2150 | 0,2 | **14** |
| X 5 CrNiMo 18 10 | 1.4401 | 316 S 16 | Z 6 CND 17.11 | 2347 | 316 | SUS316 | 2150 | 0,2 | **14** |
| X 53 CrMnNiN 21 9 | 1.4871 | 349 S 54 | Z 52 CMN 21.09 | | EV 8 | | 1875 | 0,21 | **12/13** |
| X 6 Cr 13 | 1.4000 | 403 S 17 | Z 6 C 13 | 2301 | 403 | SUS403 | 1875 | 0,21 | **12/13** |
| X 6 Cr 17 | 1.4016 | 430 S 15 | Z 8 C 17 | 2320 | 430 | SUS430 | 1875 | 0,21 | **12/13** |
| X 6 CrMo 17 | 1.4113 | 434 S 17 | Z 8 CD 17.01 | 2325 | 434 | SUS434 | 1875 | 0,21 | **12/13** |
| X 6 CrNiMoTi 17 12 2 | 1.4571 | 320 S 31 | Z 6 CNT 17.12 | 2350 | 316 Ti | | 2150 | 0,2 | **14** |
| X 6 CrNiNb 18 10 | 1.4550 | 347 S 17 | Z 6 CNNb 18.10 | 2338 | 347 | | 2150 | 0,2 | **14** |
| X 6 CrNiTi 18 10 | 1.4541 | 321 S 12 | Z 6 CNT 18.10 | 2337 | 321 | | 2150 | 0,2 | **14** |
| X2 CrNi 18-8 | 1.4317 | | | | | | 2150 | 0,2 | **14** |

| | ISO | ANSI |
|---|---|---|
| CCGT | CCGT 060200FN-F23 | CCGT 21.5X0FN-F23 |
| | CCGT 060201FN | CCGT 21.50FN |
| | CCGT 060201FN-F23 | CCGT 21.50FN-F23 |
| | CCGT 060202EN-SF | CCGT 21.5.5EN-SF |
| | CCGT 060202EN-SM | CCGT 21.5.5EN-SM |
| | CCGT 060202FN | CCGT 21.5.5FN |
| | CCGT 060202FN-23P | CCGT 21.5.5FN-23P |
| | CCGT 060202FN-25P | CCGT 21.5.5FN-25P |
| | CCGT 060202FN-27 | CCGT 21.5.5FN-27 |
| | CCGT 060204EN-SF | CCGT 21.51EN-SF |
| | CCGT 060204FN | CCGT 21.51FN |
| | CCGT 060204FN-23P | CCGT 21.51FN-23P |
| | CCGT 060204FN-25P | CCGT 21.51FN-25P |
| | CCGT 060204FN-25Q | CCGT 21.51FN-25Q |
| | CCGT 060204FN-27 | CCGT 21.51FN-27 |
| | CCGT 09T300FN-F23 | CCGT 32.5X0FN-F23 |
| | CCGT 09T301FN | CCGT 32.50FN |
| | CCGT 09T301FN-F23 | CCGT 32.50FN-F23 |
| | CCGT 09T302EN-SF | CCGT 32.5.5EN-SF |
| | CCGT 09T302FN | CCGT 32.5.5FN |
| | CCGT 09T302FN-25P | CCGT 32.50.5FN-25P |
| | CCGT 09T302FN-27 | CCGT 32.5.5FN-27 |
| | CCGT 09T304EN-SF | CCGT 32.51EN-SF |
| | CCGT 09T304FN | CCGT 32.51FN |
| | CCGT 09T304FN-23P | CCGT 32.51FN-23P |
| | CCGT 09T304FN-25P | CCGT 32.51FN-25P |
| | CCGT 09T304FN-25Q | CCGT 32.51FN-25Q |
| | CCGT 09T304FN-27 | CCGT 32.51FN-27 |
| | CCGT 09T308EN-SF | CCGT 32.52EN-SF |
| | CCGT 09T308FN | CCGT 32.52FN |
| | CCGT 09T308FN-23P | CCGT 32.52FN-23P |
| | CCGT 09T308FN-25P | CCGT 32.52FN-25P |
| | CCGT 09T308FN-25Q | CCGT 32.52FN-25Q |
| | CCGT 09T308FN-27 | CCGT 32.52FN-27 |
| | CCGT 120402FN-25P | CCGT 43.5FN-25P |
| | CCGT 120402FN-27 | CCGT 43.5FN-27 |
| | CCGT 120404EN-SF | CCGT 431EN-SF |
| | CCGT 120404FN | CCGT 431FN |
| | CCGT 120404FN-25P | CCGT 431FN-25P |
| | CCGT 120404FN-25Q | CCGT 431FN-25Q |
| | CCGT 120404FN-27 | CCGT 431FN-27 |
| | CCGT 120408FN | CCGT 432FN |
| | CCGT 120408FN-25P | CCGT 432FN-25P |
| | CCGT 120408FN-25Q | CCGT 432FN-25Q |
| | CCGT 120408FN-27 | CCGT 432FN-27 |
| CCGW | CCGW 060202FN | CCGW 21.5.5FN |
| | CCGW 060204FN | CCGW 21.51FN |
| | CCGW 09T301FN | CCGW 32.50FN |
| | CCGW 09T302FN | CCGW 32.5.5FN |
| | CCGW 09T304FN | CCGW 32.51FN |
| | CCGW 09T308FN | CCGW 32.52FN |
| CCMT | CCMT 060204EN-29 | CCMT 21.51EN-29 |
| | CCMT 060204EN-SF | CCMT 21.51EN-SF |

| | ISO | ANSI |
|---|---|---|
| | CCMT 060204EN-SM | CCMT 21.51EN-SM |
| | CCMT 060204EN-SMF | CCMT 21.51EN-SMF |
| | CCMT 060208EN-SM | CCMT 21.52EN-SM |
| | CCMT 060208EN-SMF | CCMT 21.52EN-SMF |
| | CCMT 09T304EN-29 | CCMT 32.51EN-29 |
| | CCMT 09T304EN-F43 | CCMT 32.51EN-F43 |
| | CCMT 09T304EN-SF | CCMT 32.51EN-SF |
| | CCMT 09T304EN-SM | CCMT 32.51EN-SM |
| | CCMT 09T304EN-SMF | CCMT 32.51EN-SMF |
| | CCMT 09T304EN-SMQ | CCMT 32.51EN-SMQ |
| | CCMT 09T308EN-29 | CCMT 32.52EN-29 |
| | CCMT 09T308EN-F43 | CCMT 32.52EN-F43 |
| | CCMT 09T308EN-SF | CCMT 32.52EN-SF |
| | CCMT 09T308EN-SM | CCMT 32.52EN-SM |
| | CCMT 09T308EN-SMF | CCMT 32.52EN-SMF |
| | CCMT 09T308EN-SMQ | CCMT 32.52EN-SMQ |
| | CCMT 120404EN-SF | CCMT 431EN-SF |
| | CCMT 120404EN-SM | CCMT 431EN-SM |
| | CCMT 120404EN-SMF | CCMT 431EN-SMF |
| | CCMT 120404EN-SMQ | CCMT 431EN-SMQ |
| | CCMT 120408EN-SF | CCMT 432EN-SF |
| | CCMT 120408EN-SM | CCMT 432EN-SM |
| | CCMT 120408EN-SMF | CCMT 432EN-SMF |
| | CCMT 120408EN-SMQ | CCMT 432EN-SMQ |
| | CCMT 120412EN-SM | CCMT 433EN-SM |
| CCMX | CCMX 09T304SN | CCMX 32.51SN |
| | CCMX 09T308SN | CCMX 32.52SN |
| | CCMX 120408EN | CCMX 432EN |
| CNGA | CNGA 120408SN-025C | CNGA 432SN-025C |
| | CNGA 120408TN-020D | CNGA 432TN-020D |
| | CNGA 120412SN-020D | CNGA 433SN-020D |
| | CNGA 120412SN-025C | CNGA 433SN-025C |
| | CNGA 160608SN-028C | CNGA 542SN-028C |
| | CNGA 160616SN-028C | CNGA 544SN-028C |
| | CNGA 160616TN-020D | CNGA 544TN-020D |
| CNGG | CNGG 120404EN-CF | CNGG 431EN-CF |
| CNGM | CNGM 190612FN-27 | CNGM 643FN-27 |
| CNGN | CNGN 120404TN-020D | CNGN 431TN-020D |
| | CNGN 120408TN-020D | CNGN 432TN-020D |
| | CNGN 120416SN-020D | CNGN 434SN-020D |
| | CNGN 120712PN-100CF | CNGN 453PN-100CF |
| | CNGN 120712SN-025C | CNGN 453SN-025C |
| | CNGN 120716PN-100CF | CNGN 454PN-100CF |
| | CNGN 120716PN-150CF | CNGN 454PN-150CF |
| | CNGN 120716SN-025C | CNGN 454SN-025C |
| | CNGN 160716SN-025C | CNGN 554SN-025C |
| | CNGN 160716SN-200C | CNGN 554SN-200C |
| CNGP | CNGP 120402FN-F32 | CNGP 43.5FN-F32 |
| | CNGP 120408FN-F32 | CNGP 432FN-F32 |
| CNMA | CNMA 120404EN | CNMA 431EN |
| | CNMA 120408EN | CNMA 432EN |
| | CNMA 120412EN | CNMA 433EN |
| | CNMA 120412FN | CNMA 433FN |

# Bezeichnung

ISO - ANSI



| | ISO | ANSI |
|---|---|---|
| | CNMA 120412TN-020D | CNMA 433TN-020D |
| | CNMA 120416EN | CNMA 434EN |
| | CNMA 120416FN | CNMA 434FN |
| | CNMA 120416TN-020D | CNMA 434TN-020D |
| | CNMA 160608EN | CNMA 542EN |
| | CNMA 160612EN | CNMA 543EN |
| | CNMA 160616EN | CNMA 544EN |
| | CNMA 190612EN | CNMA 643EN |
| | CNMA 190616EN | CNMA 644EN |
| CNMG | CNMG 090304EN-TF | CNMG 321EN-TF |
| | CNMG 090308EN-TM | CNMG 322EN-TM |
| | CNMG 120404EN-42 | CNMG 431EN-42 |
| | CNMG 120404EN-CF | CNMG 431EN-CF |
| | CNMG 120404EN-M42 | CNMG 431EN-M42 |
| | CNMG 120404EN-M52 | CNMG 431EN-M52 |
| | CNMG 120404EN-TF | CNMG 431EN-TF |
| | CNMG 120404EN-TFQ | CNMG 431EN-TFQ |
| | CNMG 120404EN-TMF | CNMG 431EN-TMF |
| | CNMG 120408EN-42 | CNMG 432EN-42 |
| | CNMG 120408EN-CF | CNMG 432EN-CF |
| | CNMG 120408EN-M42 | CNMG 432EN-M42 |
| | CNMG 120408EN-M52 | CNMG 432EN-M52 |
| | CNMG 120408EN-TF | CNMG 432EN-TF |
| | CNMG 120408EN-TFQ | CNMG 432EN-TFQ |
| | CNMG 120408EN-TM | CNMG 432EN-TM |
| | CNMG 120408EN-TMF | CNMG 432EN-TMF |
| | CNMG 120408EN-TMM | CNMG 432EN-TMM |
| | CNMG 120408EN-TMQ | CNMG 432EN-TMQ |
| | CNMG 120408EN-TMR | CNMG 432EN-TMR |
| | CNMG 120412EN-CF | CNMG 433EN-CF |
| | CNMG 120412EN-M42 | CNMG 433EN-M42 |
| | CNMG 120412EN-M52 | CNMG 433EN-M52 |
| | CNMG 120412EN-TF | CNMG 433EN-TF |
| | CNMG 120412EN-TFQ | CNMG 433EN-TFQ |
| | CNMG 120412EN-TM | CNMG 433EN-TM |
| | CNMG 120412EN-TMF | CNMG 433EN-TMF |
| | CNMG 120412EN-TMM | CNMG 433EN-TMM |
| | CNMG 120412EN-TMQ | CNMG 433EN-TMQ |
| | CNMG 120412EN-TRM | CNMG 433EN-TRM |
| | CNMG 120416EN-TM | CNMG 434EN-TM |
| | CNMG 120416EN-TRM | CNMG 434EN-TRM |
| | CNMG 160608EN-TM | CNMG 542EN-TM |
| | CNMG 160612EN-TM | CNMG 543EN-TM |
| | CNMG 160612EN-TMR | CNMG 543EN-TMR |
| | CNMG 160616EN-TRM | CNMG 544EN-TRM |
| | CNMG 190612EN-TM | CNMG 643EN-TM |
| | CNMG 190612EN-TMR | CNMG 643EN-TMR |
| | CNMG 190616EN-TMR | CNMG 644EN-TMR |
| CNMM | CNMM 120408EN-TR | CNMM 432EN-TR |
| | CNMM 120408SN-TRR | CNMM 432SN-TRR |
| | CNMM 120412EN-TR | CNMM 433EN-TR |
| | CNMM 120412SN-TRR | CNMM 433SN-TRR |
| | CNMM 160612EN-TR | CNMM 543EN-TR |

| | ISO | ANSI |
|---|---|---|
| | CNMM 160612SN-TRR | CNMM 543SN-TRR |
| | CNMM 160616EN-TR | CNMM 544EN-TR |
| | CNMM 160616SN-TRR | CNMM 544SN-TRR |
| | CNMM 190612EN-TR | CNMM 643EN-TR |
| | CNMM 190612SN-TRR | CNMM 643SN-TRR |
| | CNMM 190616EN-TR | CNMM 644EN-TR |
| | CNMM 190616SN-R80 | CNMM 644SN-R80 |
| | CNMM 190616SN-TRR | CNMM 644SN-TRR |
| | CNMM 190624SN-R80 | CNMM 646SN-R80 |
| CNMN | CNMN 090308FN | CNMN 322FN |
| | CNMN 090308TN-020D | CNMN 322TN-020D |
| | CNMN 090312TN-020D | CNMN 323TN-020D |
| | CNMN 090316TN-020D | CNMN 324TN-020D |
| | CNMN 120412FN | CNMN 433FN |
| | CNMN 120412TN-020D | CNMN 433TN-020D |
| | CNMN 120416FN | CNMN 434FN |
| | CNMN 120416TN-020D | CNMN 434TN-020D |
| CNMX | CNMX 120404SN | CNMX 431SN |
| | CNMX 120408EN | CNMX 432EN |
| | CNMX 120408SN | CNMX 432SN |
| | CNMX 120412SN | CNMX 433SN |
| | CNMX 120712SN-020D | CNMX 453SN-020D |
| | CNMX 120716SN-020D | CNMX 454SN-020D |
| | CNMX 190740SN | CNMX 65XSN-020D |
| DCGT | DCGT 070200FN-F23 | DCGT 21.5X0FN-F23 |
| | DCGT 070201EN-SF | DCGT 21.50EN-SF |
| | DCGT 070201FN | DCGT 21.50FN |
| | DCGT 070201FN-F23 | DCGT 21.50FN-F23 |
| | DCGT 070202EN-SF | DCGT 21.5.5EN-SF |
| | DCGT 070202EN-SM | DCGT 21.5.5EN-SM |
| | DCGT 070202FN | DCGT 21.5.5FN |
| | DCGT 070202FN-25P | DCGT 21.5.5FN-25P |
| | DCGT 070202FN-27 | DCGT 21.5.5FN-27 |
| | DCGT 070204EN-SF | DCGT 21.51EN-SF |
| | DCGT 070204FN | DCGT 21.51FN |
| | DCGT 070204FN-23P | DCGT 21.51FN-23P |
| | DCGT 070204FN-25P | DCGT 21.51FN-25P |
| | DCGT 070204FN-27 | DCGT 21.51FN-27 |
| | DCGT 11T300FN-F23 | DCGT 32.5X0FN-F23 |
| | DCGT 11T302EN-SF | DCGT 32.5.5EN-SF |
| | DCGT 11T302FN | DCGT 32.5.5FN |
| | DCGT 11T302FN-25P | DCGT 32.5.5FN-25P |
| | DCGT 11T302FN-27 | DCGT 32.5.5FN-27 |
| | DCGT 11T304EN-SF | DCGT 32.51EN-SF |
| | DCGT 11T304FL-25Q | DCGT 32.51FL-25Q |
| | DCGT 11T304FN | DCGT 32.51FN |
| | DNMG 150608EN-TMF | DNMG 442EN-TMF |
| | DNMG 150608EN-TMR | DNMG 442EN-TMR |
| | DNMG 150612EN-CF | DNMG 443EN-CF |
| | DNMG 150612EN-TF | DNMG 443EN-TF |
| | DNMG 150612EN-TFQ | DNMG 443EN-TFQ |
| | DNMG 150612EN-TM | DNMG 443EN-TM |
| | DNMG 150612EN-TM | DNMG 443EN-TM |

| | ISO | ANSI |
|---|---|---|
| | DNMG 150612EN-TMM | DNMG 443EN-TMM |
| | DNMG 150612EN-TMQ | DNMG 443EN-TMQ |
| | DNMG 150612EN-TMR | DNMG 443EN-TMR |
| | DNMG 150616EN-TM | DNMG 444EN-TM |
| | DNMG 150616EN-TMM | DNMG 444EN-TMM |
| | DNMG 150616EN-TMR | DNMG 444EN-TMR |
| | DNMG 150616EN-TRM | DNMG 444EN-TRM |
| DNMM | DNMM 150608EN-TR | DNMM 442EN-TR |
| | DNMM 150612EN-TR | DNMM 443EN-TR |
| DNMX | DNMX 150608SN | DNMX 442SN |
| | DNMX 150708SN-020D | DNMX 452SN-020D |
| | DNMX 150712SN-020D | DNMX 453SN-020D |
| | DNMX 150716SN-020D | DNMX 454SN-020D |
| ENGN | ENGN 130704TN-020D | ENGN 451TN-020D |
| | ENGN 130708TN-020D | ENGN 452TN-020D |
| | ENGN 130712SN-025E | ENGN 453TN-025D |
| | ENGN 130712TN-020D | ENGN 453TN-020D |
| | ENGN 130716SN-025E | ENGN 454TN-025E |
| | ENGN 130716SN-200C | ENGN 454TN-200C |
| | ENGN 130732TN-020D | ENGN 458TN-020D |
| KNUX | KNUX 160405EL-11 | |
| | KNUX 160405EL-12 | |
| | KNUX 160405ER-11 | |
| | KNUX 160405ER-12 | |
| | KNUX 160410EL-11 | |
| | KNUX 160410EL-12 | |
| | KNUX 160410ER-11 | |
| | KNUX 160410ER-12 | |
| LNMN | LNMN 6688PN-150CE | |
| RCGT | RCGT 0602MOEN-SM | |
| | RCGT 0602MOFN-27 | |
| | RCGT 0803MOEN-SM | |
| | RCGT 0803MOFN-25P | |
| | RCGT 0803MOFN-27 | |
| | RCGT 1003MOFN-27 | |
| RCGX | RCGX 070400SN-050C | RCGX 2.53SN-050C |
| | RCGX 090700PN-075CF | RCGX 35PN-075CF |
| | RCGX 090700PN-100CF | RCGX 35PN-100CF |
| | RCGX 090700SN-200C | RCGX 35SN-200C |
| | RCGX 090700TN-020D | RCGX 35TN-020D |
| | RCGX 120700PN-100CF | RCGX 45PN-100CF |
| | RCGX 120700PN-150CF | RCGX 45PN-150CF |
| | RCGX 120700SN-200C | RCGX 45SN-200C |
| | RCGX 120700TN-020D | RCGX 45TN-020D |
| | RCGX 151000PN-100CF | RCGX 5(6.3)PN-100CF |
| | RCGX 151000PN-150CF | RCGX 5(6.3)PN-150CF |
| | RCGX 151000SN-200C | RCGX 5(6.3)SN-200C |
| | RCGX 191000PN-100CF | RCGX 6(6.3)PN-100CF |
| | RCGX 191000PN-200CF | RCGX 6(6.3)PN-200CF |
| | RCGX 191000SN-200C | RCGX 6(6.3)SN-200C |
| | RCGX 251200PN-100CF | RCGX 88PN-100CF |
| | RCGX 251200PN-200CF | RCGX 88PN-200CF |
| | RCGX 251200SN-200C | RCGX 88SN-200C |

| | ISO | ANSI |
|---|---|---|
| RCMT | RCMT 0803MOEN-25 | |
| | RCMT 1003MOSN-SM | |
| | RCMT 1204MOSN-SM | |
| | RCMT 1606MOSN-SM | |
| | RCMT 2006MOSN-SM | |
| | RCMT 2507MOSN-SM | |
| | RCMT 3209MOSN-SM | |
| RNGN | RNGN 060400TN-020D | RNGN 23TN-020D |
| | RNGN 120400PN-150CF | RNGN 43PN-150CF |
| | RNGN 120700PN-150CF | RNGN 45PN-150CF |
| | RNGN 120700SN-020D | RNGN 45SN-020D |
| | RNGN 120700SN-200C | RNGN 45SN-200C |
| | RNGN 120700TN-020D | RNGN 45TN-020D |
| | RNGN 150700PN-150CE | RNGN 55PN-150CE |
| | RNGN 150700SN-200C | RNGN 55SN-200C |
| | RNGN 190700PN-100CF | RNGN 65PN-100CF |
| | RNGN 190700PN-150CE | RNGN 65PN-150CE |
| | RNGN 190700SN-200C | RNGN 65SN-200C |
| | RNGN 190700TN-020D | RNGN 65TN-020D |
| | RNGN 250700PN-100CF | RNGN 85PN-100CF |
| | RNGN 250700PN-200CE | RNGN 85PN-200CE |
| | RNGN 250700TN-020D | RNGN 85TN-020D |
| | RNGN 310900PN-100CF | RNGN 106PN-100CF |
| | RNGN 310900PN-215CF | RNGN 106PN-215CF |
| RNMN | RNMN 090300FN | RNMN 32FN |
| | RNMN 090300TN-020D | RNMN 32TN-020D |
| | RNMN 120300TN-020D | RNMN 42TN-020D |
| | RNMN 120400FN | RNMN 43FN |
| | RNMN 120400TN-020D | RNMN 43TN-020D |
| | RNMN 250400TN-050D | RNMN 83TN-050D |
| | RNMN 250600TN-050D | RNMN 84TN-050D |
| SCGT | SCGT 09T304EN-SF | SCGT 32.51EN-SF |
| | SCGT 09T308FN-27P | SCGT 32.52FN-27P |
| | SCGT 120408FN-25P | SCGT 432FN-25P |
| | SCGT 120408FN-27 | SCGT 432FN-27 |
| SCMT | SCMT 09T304EN-SF | SCMT 32.51EN-SF |
| | SCMT 09T304EN-SM | SCMT 32.51EN-SM |
| | SCMT 09T304EN-SMF | SCMT 32.51EN-SMF |
| | SCMT 09T308EN-SF | SCMT 32.52EN-SF |
| | SCMT 09T308EN-SM | SCMT 32.52EN-SM |
| | SCMT 09T308EN-SMF | SCMT 32.52EN-SMF |
| | SCMT 120408EN-SF | SCMT 432EN-SF |
| | SCMT 120408EN-SM | SCMT 432EN-SM |
| | SCMT 120408EN-SMF | SCMT 432EN-SMF |
| | SCMT 120412EN-SM | SCMT 433EN-SM |
| SCMX | SCMX 120408EN | SCMX 432EN |
| | SCMX 120412EN | SCMX 433EN |
| | SCMX 190612EN | SCMX 643EN |
| | SCMX 190616EN | SCMX 644EN |
| SNGA | SNGA 120408SN-025C | SNGA 432SN-025C |
| | SNGA 120412SN-025C | SNGA 433SN-025C |
| SNGN | SNGN 090308SN-025C | SNGN 322SN-025C |
| | SNGN 120408SN-015D | SNGN 432SN-015D |

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| | ISO | ANSI |
|---|---|---|
| | SNGN 120408TN-020D | SNGN 432TN-020D |
| | SNGN 120412PN-150CF | SNGN 433PN-150CF |
| | SNGN 120412SN-015D | SNGN 433SN-015D |
| | SNGN 120412TN-020D | SNGN 433TN-020D |
| | SNGN 120716PN-100CF | SNGN 454PN-100CF |
| | SNGN 120716PN-150CF | SNGN 454PN-150CF |
| | SNGN 120716SN-025C | SNGN 454SN-025C |
| | SNGN 120716SN-200C | SNGN 454SN-200C |
| | SNGN 120720PN-100CF | SNGN 455PN-100CF |
| | SNGN 120720PN-150CF | SNGN 455PN-150CF |
| | SNGN 120720SN-200C | SNGN 455SN-200C |
| | SNGN 120730PN-028C | SNGN 457.5PN-028C |
| | SNGN 150712TN-020D | SNGN 553TN-020D |
| | SNGN 150716PN-150CF | SNGN 554PN-150CF |
| | SNGN 150720SN-200C | SNGN 555SN-200C |
| | SNGN 190716PN-150CF | SNGN 654PN-150CF |
| | SNGN 190716SN-025E | SNGN 654SN-025E |
| | SNGN 190716TN-020D | SNGN 654TN-020D |
| | SNGN 190720PN-100CF | SNGN 655PN-100CF |
| | SNGN 190720SN-200C | SNGN 655SN-200C |
| | SNGN 190720TN-020D | SNGN 655TN-020D |
| | SNGN 250724PN-100CF | SNGN 856PN-100CF |
| | SNGN 250724PN-150CE | SNGN 856PN-150CE |
| | SNGN 250724SN-050C | SNGN 856SN-050C |
| | SNGN 250724SN-200C | SNGN 856SN-200C |
| | SNGN 250924PN-100CF | SNGN 866PN-100CF |
| | SNGN 250924PN-150CE | SNGN 866PN-150CE |
| | SNGN 250924SN-030E | SNGN 866SN-030E |
| | SNGN 250924SN-200C | SNGN 866SN-200C |
| | SNGN 250924TN-020D | SNGN 866TN-020D |
| SNMA | SNMA 120408EN | SNMA 432EN |
| | SNMA 120412TN-020D | SNMA 433TN-020D |
| | SNMA 120416EN | SNMA 434EN |
| | SNMA 150616EN | SNMA 544EN |
| | SNMA 190616EN | SNMA 644EN |
| SNMG | SNMG 090308EN | SNMG 322EN |
| | SNMG 120404EN-TF | SNMG 431EN-TF |
| | SNMG 120408EN-M42 | SNMG 432EN-M42 |
| | SNMG 120408EN-M52 | SNMG 432EN-M52 |
| | SNMG 120408EN-TM | SNMG 432EN-TM |
| | SNMG 120408EN-TMF | SNMG 432EN-TMF |
| | SNMG 120412EN-M42 | SNMG 433EN-M42 |
| | SNMG 120412EN-TM | SNMG 433EN-TM |
| | SNMG 120412EN-TMF | SNMG 433EN-TMF |
| | SNMG 120412EN-TMR | SNMG 433EN-TMR |
| | SNMG 120412EN-TRM | SNMG 433EN-TRM |
| | SNMG 120416EN-TM | SNMG 434EN-TM |
| | SNMG 120416EN-TMR | SNMG 434EN-TMR |
| | SNMG 150612EN-TMR | SNMG 543EN-TMR |
| | SNMG 150616EN-TMR | SNMG 544EN-TMR |
| | SNMG 190612EN-TMR | SNMG 643EN-TMR |
| | SNMG 190616EN-TMR | SNMG 644EN-TMR |
| SNMM | SNMM 120408EN-TR | SNMM 432EN-TR |

| | ISO | ANSI |
|---|---|---|
| | SNMM 120408EN-TUB | SNMM 432EN-TUB |
| | SNMM 120412EN-TR | SNMM 433EN-TR |
| | SNMM 150612EN-TR | SNMM 543EN-TR |
| | SNMM 190612EN-TUB | SNMM 643EN-TUB |
| | SNMM 190616EN-TR | SNMM 644EN-TR |
| | SNMM 190616SN-TRR | SNMM 644SN-TRR |
| | SNMM 250724EN-TR | SNMM 856EN-TR |
| | SNMM 250724SN-TRR | SNMM 856SN-TRR |
| SNMN | SNMN 090308FN | SNMN 322FN |
| | SNMN 090308TN-020D | SNMN 322TN-020D |
| | SNMN 090312FN | SNMN 323FN |
| | SNMN 090312TN-020D | SNMN 323TN-020D |
| | SNMN 090316FN | SNMN 324FN |
| | SNMN 090316TN-020D | SNMN 324TN-020D |
| | SNMN 120312FN | SNMN 423FN |
| | SNMN 120312TN-020D | SNMN 423TN-020D |
| | SNMN 120316FN | SNMN 424FN |
| | SNMN 120316TN-020D | SNMN 424TN-020D |
| | SNMN 120412FN | SNMN 433FN |
| | SNMN 120412TN-020D | SNMN 433TN-020D |
| | SNMN 120416FN | SNMN 434FN |
| | SNMN 120416TN-020D | SNMN 434TN-020D |
| SNMX | SNMX 120712SN-020D | SNMX 453SN-020D |
| | SNMX 120716SN-020D | SNMX 454SN-020D |
| SNUN | SNUN 120412EN | SNUN 433EN |
| | SNUN 120416EN | SNUN 434EN |
| SPMR | SPMR 090304EN | SPMR 321EN |
| | SPMR 090308EN-57 | SPMR 322EN-57 |
| | SPMR 120304EN | SPMR 421EN |
| | SPMR 120308EN | SPMR 422EN |
| | SPMR 120308ER | SPMR 422ER |
| SPUN | SPUN 120308EN | SPUN 422EN |
| | SPUN 120312EN | SPUN 423EN |
| TCGT | TCGT 090202FN | TCGT 1.81.5.5FN |
| | TCGT 090204FN | TCGT 1.81.51FN |
| | TCGT 110202EN-SF | TCGT 21.5.5EN-SF |
| | TCGT 110202EN-SM | TCGT 21.5.5EN-SM |
| | TCGT 110202FN-27 | TCGT 21.5.5FN-27 |
| | TCGT 110204EN-SF | TCGT 21.51EN-SF |
| | TCGT 110204FN | TCGT 21.51FN |
| | TCGT 110204FN-27 | TCGT 21.51FN-27 |
| | TCGT 110208EN-SF | TCGT 21.52EN-SF |
| | TCGT 110208FN | TCGT 21.52FN |
| | TCGT 16T302FN-27 | TCGT 32.5.5FN-27 |
| | TCGT 16T304EN-SF | TCGT 32.51EN-SF |
| | TCGT 16T304FN | TCGT 32.51FN |
| | TCGT 16T304FN-27 | TCGT 32.51FN-27 |
| | TCGT 16T308EN-SF | TCGT 32.52EN-SF |
| | TCGT 16T308FN | TCGT 32.52FN |
| | TCGT 16T308FN-27 | TCGT 32.52FN-27 |
| TCMT | TCMT 090204EN-SM | TCMT 1.81.51EN-SM |
| | TCMT 110204EN-F43 | TCMT 21.51EN-F43 |
| | TCMT 110204EN-SF | TCMT 21.51EN-SF |

| | ISO | ANSI |
|---|---|---|
| | TCMT 110204EN-SM | TCMT 21.51EN-SM |
| | TCMT 110204EN-SMF | TCMT 21.51EN-SMF |
| | TCMT 110208EN-SF | TCMT 21.52EN-SF |
| | TCMT 110208EN-SM | TCMT 21.52EN-SM |
| | TCMT 110208EN-SMF | TCMT 21.52EN-SMF |
| | TCMT 16T304EN-F43 | TCMT 32.51EN-F43 |
| | TCMT 16T304EN-SF | TCMT 32.51EN-SF |
| | TCMT 16T304EN-SM | TCMT 32.51EN-SM |
| | TCMT 16T304EN-SMF | TCMT 32.51EN-SMF |
| | TCMT 16T308EN-F43 | TCMT 32.52EN-F43 |
| | TCMT 16T308EN-SF | TCMT 32.52EN-SF |
| | TCMT 16T308EN-SM | TCMT 32.52EN-SM |
| | TCMT 16T308EN-SMF | TCMT 32.52EN-SMF |
| | TCMT 220408EN-SM | TCMT 432EN-SM |
| TCMW | TCMW 16T304FN | TCMW 32.51FN |
| TCMX | TCMX 160404EN | TCMX 331EN |
| | TCMX 160408EN | TCMX 332EN |
| | TCMX 160412EN | TCMX 333EN |
| | TCMX 220404EN | TCMX 431EN |
| | TCMX 220408EN | TCMX 432EN |
| | TCMX 220412EN | TCMX 433EN |
| TNGA | TNGA 160408TN-020D | TNGA 332TN-020D |
| TNGN | TNGN 110308TN-020D | TNGN 222TN-020D |
| | TNGN 160408TN-020D | TNGN 332TN-020D |
| | TNGN 220408TN-020D | TNGN 432TN-020D |
| TNMA | TNMA 160408EN | TNMA 332EN |
| | TNMA 160412EN | TNMA 333EN |
| | TNMA 220408EN | TNMA 432EN |
| | TNMA 220412EN | TNMA 433EN |
| | TNMA 220416EN | TNMA 434EN |
| TNMG | TNMG 110302EN | TNMG 22.5EN |
| | TNMG 110304EN-TF | TNMG 221EN-TF |
| | TNMG 160404EN-CF | TNMG 331EN-CF |
| | TNMG 160404EN-M42 | TNMG 331EN-M42 |
| | TNMG 160404EN-M52 | TNMG 331EN-M52 |
| | TNMG 160404EN-TF | TNMG 331EN-TF |
| | TNMG 160404EN-TMF | TNMG 331EN-TMF |
| | TNMG 160404ER | TNMG 331ER |
| | TNMG 160408EL | TNMG 332EL |
| | TNMG 160408EN-CF | TNMG 332EN-CF |
| | TNMG 160408EN-M42 | TNMG 332EN-M42 |
| | TNMG 160408EN-M52 | TNMG 332EN-M52 |
| | TNMG 160408EN-TF | TNMG 332EN-TF |
| | TNMG 160408EN-TM | TNMG 332EN-TM |
| | TNMG 160408EN-TMF | TNMG 332EN-TMF |
| | TNMG 160408EN-TMR | TNMG 332EN-TMR |
| | TNMG 160408ER | TNMG 332ER |
| | TNMG 160412EN-CF | TNMG 333EN-CF |
| | TNMG 160412EN-TF | TNMG 333EN-TF |
| | TNMG 160412EN-TM | TNMG 333EN-TM |
| | TNMG 160412EN-TMF | TNMG 333EN-TMF |
| | TNMG 160412EN-TMR | TNMG 333EN-TMR |
| | TNMG 160412EN-TRM | TNMG 333EN-TRM |

| | ISO | ANSI |
|---|---|---|
| | TNMG 220408EN-TM | TNMG 432EN-TM |
| | TNMG 220408EN-TMR | TNMG 432EN-TMR |
| | TNMG 220408EN-TRM | TNMG 432EN-TRM |
| | TNMG 220412EN-TM | TNMG 433EN-TM |
| | TNMG 220412EN-TMR | TNMG 433EN-TMR |
| | TNMG 220412EN-TRM | TNMG 433EN-TRM |
| | TNMG 220416EN-TM | TNMG 434EN-TM |
| | TNMG 220416EN-TMR | TNMG 434EN-TMR |
| | TNMG 220416EN-TRM | TNMG 434EN-TRM |
| TNMM | TNMM 160408EN-TR | TNMM 332EN-TR |
| | TNMM 160408SN-TRR | TNMM 332SN-TRR |
| | TNMM 160412EN-TR | TNMM 333EN-TR |
| | TNMM 220408EN-TR | TNMM 432EN-TR |
| | TNMM 220412EN-TR | TNMM 433EN-TR |
| | TNMM 220412SN-TRR | TNMM 433SN-TRR |
| | TNMM 220416EN-TR | TNMM 434EN-TR |
| | TNMM 270612EN-TUB | TNMM 543EN-TUB |
| | TNMM 270616EN-TR | TNMM 544EN-TR |
| TNMN | TNMN 110304FN | TNMN 221FN |
| | TNMN 110304TN-020D | TNMN 221TN-020D |
| | TNMN 110308FN | TNMN 222FN |
| | TNMN 110308TN-020D | TNMN 222TN-020D |
| | TNMN 110312TN-020D | TNMN 223TN-020D |
| TNMX | TNMX 160408SN | TNMX 332SN |
| TNUN | TNUN 160308EN | TNUN 322EN |
| | TNUN 160412EN | TNUN 333EN |
| | TNUN 160416EN | TNUN 334EN |
| TPGN | TPGN 160304TN-020D | TPGN 321TN-020D |
| TPMR | TPMR 110304EL | TPMR 221EL |
| | TPMR 110304EN | TPMR 221EN |
| | TPMR 110304ER | TPMR 221ER |
| | TPMR 110308EN | TPMR 222EN |
| | TPMR 160304EL | TPMR 321EL |
| | TPMR 160304EN | TPMR 321EN |
| | TPMR 160304ER | TPMR 321ER |
| | TPMR 160308EL | TPMR 322EL |
| | TPMR 160308EN | TPMR 322EN |
| | TPMR 160308EN-57 | TPMR 322EN-57 |
| | TPMR 160308ER | TPMR 322ER |
| TPUN | TPUN 110304EN | TPUN 221EN |
| | TPUN 110308EN | TPUN 222EN |
| | TPUN 160304EN | TPUN 321EN |
| | TPUN 160304FN | TPUN 321FN |
| | TPUN 160308EN | TPUN 322EN |
| | TPUN 160308FN | TPUN 322FN |
| | TPUN 160312EN | TPUN 323EN |
| | TPUN 220408EN | TPUN 432EN |
| | TPUN 220412EN | TPUN 433EN |
| VCGT | VCGT 110300FN-F23 | VCGT 22X0FN-F23 |
| | VCGT 110301EN-SF | VCGT 220EN-SF |
| | VCGT 110301FN-F23 | VCGT 220FN-F23 |
| | VCGT 110302EN-SF | VCGT 220.5EN-SF |
| | VCGT 110302EN-SMF | VCGT 22.5EN-SMF |

# Bezeichnung

ISO - ANSI



| | ISO | ANSI |
|---|---|---|
| | VCGT 110302FN-25P | VCGT 220.5FN-25P |
| | VCGT 110302FN-27 | VCGT 22.5FN-27 |
| | VCGT 110304EN-SF | VCGT 221EN-SF |
| | VCGT 110304FL-25Q | VCGT 221FL-25Q |
| | VCGT 110304FN-25P | VCGT 221FN-25P |
| | VCGT 110304FN-27 | VCGT 221FN-27 |
| | VCGT 110304FR-25Q | VCGT 221FR-25Q |
| | VCGT 110308EN-SF | VCGT 222EN-SF |
| | VCGT 110308FN-27 | VCGT 222FN-27 |
| | VCGT 160400FN-F23 | VCGT 33X0FN-F23 |
| | VCGT 160401FN-F23 | VCGT 330FN-F23 |
| | VCGT 160404EN-SF | VCGT 331EN-SF |
| | VCGT 160404FN-25P | VCGT 331FN-25P |
| | VCGT 160404FN-27 | VCGT 331FN-27 |
| | VCGT 160408EN-SF | VCGT 332EN-SF |
| | VCGT 160408FN-25P | VCGT 332FN-25P |
| | VCGT 160408FN-27 | VCGT 332FN-27 |
| | VCGT 160412FN-25P | VCGT 333FN-25P |
| | VCGT 160412FN-27 | VCGT 333FN-27 |
| | VCGT 220530FN-25P | VCGT 43.57.5FN-25P |
| | VCGT 220530FN-27 | VCGT 43.57.5FN-27 |
| VCMT | VCMT 110304EN-SMF | VCMT 221EN-SMF |
| | VCMT 160404EN-29 | VCMT 331EN-29 |
| | VCMT 160404EN-SF | VCMT 331EN-SF |
| | VCMT 160404EN-SM | VCMT 331EN-SM |
| | VCMT 160404EN-SMF | VCMT 331EN-SMF |
| | VCMT 160406EN-SM | |
| | VCMT 160408EN-29 | VCMT 332EN-29 |
| | VCMT 160408EN-SF | VCMT 332EN-SF |
| | VCMT 160408EN-SM | VCMT 332EN-SM |
| | VCMT 160408EN-SMF | VCMT 332EN-SMF |
| | VCMT 160412EN-25 | VCMT 333EN-25 |
| | VCMT 160412EN-29 | VCMT 333EN-29 |
| | VCMT 160412EN-SM | VCMT 333EN-SM |
| | VCMT 220530EN-25 | VCMT 447EN-25 |
| VCMW | VCMW 160404FN | VCMW 331FN |
| VCUW | VCUW 160404FL | VCUW 331FL |
| | VCUW 160404FN | VCUW 331FN |
| | VCUW 160404FR | VCUW 331FR |
| | VCUW 160408FL | VCUW 332FL |
| | VCUW 160408FN | VCUW 332FN |
| | VCUW 160408FN-F3 | VCUW 332FN-F3 |
| | VCUW 160408FN-M4 | VCUW 332FN-M4 |
| | VCUW 160408FR | VCUW 332FR |
| | VCUW 160412FN | VCUW 333FN |
| | VCUW 160412FN-F3 | VCUW 333FN-F3 |
| | VCUW 160412FN-M4 | VCUW 333FN-M4 |
| | VCUW 160412TN-M4 | VCUW 333TN-M4 |
| | VCUW 160416FN | VCUW 334FN |
| | VCUW 220530FN | VCUW 43.57.5FN |
| | VCUW 220530FN-M4 | VCUW 43.57.5FN-M4 |
| VNGA | VNGA 160408TN-020D | VNGA 332TN-020D |
| | VNGA 160412TN-020D | VNGA 333TN-020D |

| | ISO | ANSI |
|---|---|---|
| VNGP | VNGP 160402FN-F32 | VNGP 33.5FN-F32 |
| | VNGP 160404FN-F32 | VNGP 331FN-F32 |
| VNMG | VNMG 160404EN-F40 | VNMG 331EN-F40 |
| | VNMG 160404EN-M40 | VNMG 331EN-M40 |
| | VNMG 160408EN-F40 | VNMG 332EN-F40 |
| | VNMG 160408EN-M40 | VNMG 332EN-M40 |
| VPGT | VPGT 220516FN-25P | VPGT 444FN-25P |
| | VPGT 220516FN-27 | VPGT 43.54FN-27 |
| VPMT | VPMT 220516EN-25 | VPMT 43.54EN-25 |
| VPUW | VPUW 220516FN-F3 | VPUW 43.54FN-F3 |
| | VPUW 220516FN-M4 | VPUW 43.54FN-M4 |
| | VPUW 220612FN-F3 | VPUW443FN-F3 |
| WNMG | WNMG 060404EN-CF | WNMG 231EN-CF |
| | WNMG 060404EN-M42 | WNMG 231EN-M42 |
| | WNMG 060404EN-M52 | WNMG 231EN-M52 |
| | WNMG 060404EN-TF | WNMG 231EN-TF |
| | WNMG 060404EN-TFQ | WNMG 331EN-TFQ |
| | WNMG 060404EN-TMF | WNMG 231EN-TMF |
| | WNMG 060408EN-CF | WNMG 232EN-CF |
| | WNMG 060408EN-M42 | WNMG 232EN-M42 |
| | WNMG 060408EN-M52 | WNMG 232EN-M52 |
| | WNMG 060408EN-TFQ | WNMG 332EN-TFQ |
| | WNMG 060408EN-TM | WNMG 232EN-TM |
| | WNMG 060408EN-TMF | WNMG 232EN-TMF |
| | WNMG 060408EN-TMM | WNMG 232EN-TMM |
| | WNMG 060408EN-TRM | WNMG 232EN-TRM |
| | WNMG 060412EN-TMF | WNMG 233EN-TMF |
| | WNMG 060412EN-TRM | WNMG 233EN-TRM |
| | WNMG 080404EN-M42 | WNMG 431EN-M42 |
| | WNMG 080404EN-M52 | WNMG 431EN-M52 |
| | WNMG 080404EN-TF | WNMG 431EN-TF |
| | WNMG 080404EN-TFQ | WNMG 431EN-TFQ |
| | WNMG 080404EN-TMF | WNMG 431EN-TMF |
| | WNMG 080408EN-CF | WNMG 432EN-CF |
| | WNMG 080408EN-M42 | WNMG 432EN-M42 |
| | WNMG 080408EN-M52 | WNMG 432EN-M52 |
| | WNMG 080408EN-TF | WNMG 432EN-TF |
| | WNMG 080408EN-TFQ | WNMG 432EN-TFQ |
| | WNMG 080408EN-TM | WNMG 432EN-TM |
| | WNMG 080408EN-TMF | WNMG 432EN-TMF |
| | WNMG 080408EN-TMM | WNMG 432EN-TMM |
| | WNMG 080408EN-TMQ | WNMG 432EN-TMQ |
| | WNMG 080408EN-TMR | WNMG 432EN-TMR |
| | WNMG 080408EN-TMR | WNMG 432EN-TMR |
| | WNMG 080412EN-CF | WNMG 433EN-CF |
| | WNMG 080412EN-M42 | WNMG 433EN-M42 |
| | WNMG 080412EN-TFQ | WNMG 433EN-TFQ |
| | WNMG 080412EN-TM | WNMG 433EN-TM |
| | WNMG 080412EN-TMF | WNMG 433EN-TMF |
| | WNMG 080412EN-TMM | WNMG 433EN-TMM |
| | WNMG 080412EN-TMQ | WNMG 433EN-TMQ |
| | WNMG 080412EN-TMR | WNMG 433EN-TMR |
| | WNMG 080412EN-TRM | WNMG 433EN-TRM |

| | ISO | ANSI |
|---|---|---|
| | WNMG 080416EN-TMR | WNMG 434EN-TMR |
| | WNMG 080416EN-TRM | WNMG 434EN-TRM |
| XCET | XCET 040102FL-27P | |
| | XCET 040102FL-27Q | |
| | XCET 040102FR-27P | |
| | XCET 040102FR-27Q | |
| | XCET 040104FL-27P | |
| | XCET 040104FL-27Q | |
| | XCET 040104FR-27P | |
| | XCET 040104FR-27Q | |
| | XCET 050202FN-27P | |
| | XCET 050202FN-27Q | |
| | XCET 050204FN-27P | |
| | XCET 050204FN-27Q | |
| | XCET 060202FN-27P | |
| | XCET 060202FN-27Q | |
| | XCET 060204FN-27P | |
| | XCET 060204FN-27Q | |
| | XCET 070304FN-27P | |
| | XCET 070304FN-27Q | |
| | XCET 080304FN-27P | |
| | XCET 080304FN-27Q | |
| | XCET 09T304FN-27P | |
| | XCET 09T304FN-27Q | |
| | XCET 10T304FN-27P | |
| | XCET 10T304FN-27Q | |
| | XCET 10T308FN-27P | |
| | XCET 10T308FN-27Q | |
| | XCET 130404FN-27P | |
| | XCET 130404FN-27Q | |
| | XCET 130408FN-27P | |
| | XCET 130408FN-27Q | |
| | XCET 170508FN-27P | |
| | XCET 170508FN-27Q | |
| XCGT | XCGT 400632FN-25 | |

| ISO | ANSI |
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# Schnittdatenrichtwerte



| | Werkstück-werkstoff | Behandlungsart / Legierung | | VDI 3323 Gruppe | Härte HB |
|---|---|---|---|---|---|
| P | unlegierter Stahl | geglüht | ≤ 0,15 % C | 1 | 125 |
| | | geglüht | 0,15 % - 0,45 % C | 2 | 150 - 250 |
| | | vergütet | ≥ 0,45 % C | 3 | 300 |
| | niedriglegierter Stahl | geglüht | | 6 | 180 |
| | | vergütet | | 7 / 8 | 250 - 300 |
| | | vergütet | | 9 | 350 |
| | hochlegierter Stahl | geglüht | | 10 | 200 |
| | | vergütet | | 11 | 350 |
| | rostfreier Stahl | geglüht | ferritisch / martensitisch | 12 | 200 |
| | | vergütet | martensitisch | 13 | 325 |
| | | wärmebehandelt | ferritisch / martensitisch | 13 | 200 |
| M | rostfreier Stahl | abgeschreckt | austenitisch | 14 | 180 |
| | | abgeschreckt | ferritisch / austenitisch (Duplex) | 14 | 230 - 260 |
| | | ausgehärtet | austenitisch ausscheidungsgehärtet (PH) | 14 | 330 |
| K | Grauguss | | perlitisch / ferritisch | 15 | 180 |
| | | | perlitisch / martensitisch | 16 | 260 |
| | Grauguss mit Kugelgraphit | | ferritisch | 17 | 160 |
| | | | perlitisch | 18 | 250 |
| | Temperguss | | ferritisch | 19 | 130 |
| | | | perlitisch | 20 | 230 |
| N | Aluminium Knetlegierung | nicht aushärtbar | | 21 | 60 |
| | | aushärtbar | | 22 | 100 |
| | Aluminium Gusslegierung | nicht aushärtbar | < 12 % Si | 23 | 75 |
| | | aushärtbar | < 12 % Si | 24 | 90 |
| | | nicht aushärtbar | > 12 % Si | 25 | 130 |
| | Kupfer und Kupferlegierungen (Bronze, Messing) | | Automatenlegierung (1% Pb) | 26 | (110) |
| | | | Messing, Rotguss | 27 | 90 |
| | | | Bronze | 28 | 100 |
| | | | bleifreies Kupfer und Elektrolytkupfer | 28 | 100 |
| | nichtmetallische Werkstoffe | | Duroplast | 29 | – |
| | | | faserverstärkter Kunststoff | 29 | – |
| | | | Hartgummi | 30 | – |
| S | warmfeste Legierungen | geglüht | Fe-Basis | 31 | 200 |
| | | ausgehärtet | Fe-Basis | 32 | 280 |
| | | geglüht | Ni- oder Co-Basis | 33 | 250 |
| | | ausgehärtet | Ni- oder Co-Basis 30 - 58 HRC | 34 | (350) |
| | | gegossen | Ni- oder Co-Basis 1500 - 2200 N/mm² | 35 | (320) |
| | Titanlegierungen | | Reintitan | 36 | $R_m$ 440* |
| | | | Alpha- + Beta-Legierung | 37 | $R_m$ 1050* |
| H | gehärteter Stahl | gehärtet u. angelassen | | 38 | 55 HRC |
| | | gehärtet u. angelassen | | 39 | 60 HRC |
| | Hartguss | gegossen | | 40 | 400 |
| | gehärtetes Gusseisen | gehärtet u. angelassen | | 41 | 55 HRC |

* $R_m$ = maximale Festigkeit, gemessen in MPa

| TCM407 $v_c$ [m/min] | CTEP110 $v_c$ [m/min] | TCM10 $v_c$ [m/min] | CTCP115 $v_c$ [m/min] | CTCP125 $v_c$ [m/min] | CTCP135 $v_c$ [m/min] | CTPM125 $v_c$ [m/min] | CTC2135 $v_c$ [m/min] | CTI3105 $v_c$ [m/min] |
|---|---|---|---|---|---|---|---|---|
| 340 - 430 | 400 - 520 | 280 - 350 | 250 - 500 | 190 - 290 | 160 - 210 | 120 - 280 | 180 - 230 | |
| 290 - 340 | 350 - 450 | 230 - 270 | 220 - 400 | 170 - 240 | 150 - 170 | 130 - 250 | 170 - 190 | |
| 240 - 290 | 300 - 350 | 190 - 240 | 180 - 300 | 130 - 200 | 110 - 130 | 100 - 180 | 130 - 150 | |
| 320 - 360 | 400 - 440 | 260 - 300 | 250 - 400 | 170 - 250 | 150 - 170 | 130 - 200 | 170 - 190 | |
| 230 - 280 | 300 - 360 | 180 - 230 | 200 - 320 | 100 - 190 | 80 - 130 | 60 - 180 | 90 - 150 | |
| 200 - 250 | 250 - 300 | 140 - 220 | 150 - 280 | 80 - 170 | 60 - 110 | 50 - 150 | 70 - 130 | |
| 250 - 310 | 310 - 380 | 160 - 200 | 180 - 320 | 130 - 210 | 100 - 180 | 80 - 200 | 120 - 200 | |
| 230 - 330 | 280 - 400 | 160 - 200 | 120 - 280 | 80 - 160 | 40 - 80 | 40 - 140 | 50 - 100 | |
| 280 - 340 | 350 - 400 | 230 - 270 | 200 - 320 | 130 - 220 | 120 - 160 | 100 - 200 | 140 - 180 | |
| 210 - 250 | 260 - 310 | 170 - 250 | 150 - 280 | 110 - 190 | 90 - 140 | 80 - 150 | 110 - 160 | |
| 200 - 260 | 250 - 320 | 170 - 240 | 220 - 300 | 140 - 210 | 120 - 180 | 120 - 250 | 140 - 200 | |
| 250 - 280 | 300 - 350 | 200 - 240 | | 100 - 210 | 90 - 170 | 100 - 220 | 110 - 190 | |
| | | | | | 70 - 130 | 60 - 160 | 80 - 150 | |
| 160 - 200 | 210 - 250 | 130 - 160 | | 70 - 100 | 40 - 60 | 40 - 100 | 55 - 75 | |
| | 340 - 480 | | 140 - 370 | 130 - 210 | | | | 600 - 1200 |
| | 260 - 360 | | 140 - 330 | 120 - 200 | | | | 600 - 1200 |
| 280 - 430 | 360 - 520 | 220 - 300 | 190 - 430 | 120 - 240 | | | | 300 - 700 |
| 250 - 380 | 300 - 400 | 180 - 250 | 140 - 270 | 120 - 200 | | | | |
| 250 - 400 | 330 - 500 | 250 - 350 | 180 - 520 | 150 - 250 | | | | |
| 180 - 320 | 180 - 320 | 160 - 250 | 150 - 330 | 120 - 200 | | | | |
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| | | | | | | | 80 - 130 | |
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Die Schnittdaten sind unverbindliche Angaben für den Anwender. Eine Anpassung an die aktuellen Gegebenheiten ist zu empfehlen!

# Schnittdatenrichtwerte



| | Werkstück-werkstoff | Behandlungsart / Legierung | | VDI 3323 Gruppe | Härte HB |
|---|---|---|---|---|---|
| P | unlegierter Stahl | geglüht | ≤ 0,15 % C | 1 | 125 |
| | | geglüht | 0,15 % - 0,45 % C | 2 | 150 - 250 |
| | | vergütet | ≥ 0,45 % C | 3 | 300 |
| | niedriglegierter Stahl | geglüht | | 6 | 180 |
| | | vergütet | | 7 / 8 | 250 - 300 |
| | | vergütet | | 9 | 350 |
| | hochlegierter Stahl | geglüht | | 10 | 200 |
| | | vergütet | | 11 | 350 |
| | rostfreier Stahl | geglüht | ferritisch / martensitisch | 12 | 200 |
| | | vergütet | martensitisch | 13 | 325 |
| | | wärmebehandelt | ferritisch / martensitisch | 13 | 200 |
| M | rostfreier Stahl | abgeschreckt | austenitisch | 14 | 180 |
| | | abgeschreckt | ferritisch / austenitisch (Duplex) | 14 | 230 - 260 |
| | | ausgehärtet | austenitisch ausscheidungsgehärtet (PH) | 14 | 330 |
| K | Grauguss | | perlitisch / ferritisch | 15 | 180 |
| | | | perlitisch / martensitisch | 16 | 260 |
| | Grauguss mit Kugelgraphit | | ferritisch | 17 | 160 |
| | | | perlitisch | 18 | 250 |
| | Temperguss | | ferritisch | 19 | 130 |
| | | | perlitisch | 20 | 230 |
| N | Aluminium Knetlegierung | nicht aushärtbar | | 21 | 60 |
| | | aushärtbar | | 22 | 100 |
| | Aluminium Gusslegierung | nicht aushärtbar | < 12 % Si | 23 | 75 |
| | | aushärtbar | < 12 % Si | 24 | 90 |
| | | nicht aushärtbar | > 12 % Si | 25 | 130 |
| | Kupfer und Kupferlegierungen (Bronze, Messing) | | Automatenlegierung (1% Pb) | 26 | (110) |
| | | | Messing, Rotguss | 27 | 90 |
| | | | Bronze | 28 | 100 |
| | | | bleifreies Kupfer und Elektrolytkupfer | 28 | 100 |
| | nichtmetallische Werkstoffe | | Duroplast | 29 | – |
| | | | faserverstärkter Kunststoff | 29 | – |
| | | | Hartgummi | 30 | – |
| S | warmfeste Legierungen | geglüht | Fe-Basis | 31 | 200 |
| | | ausgehärtet | Fe-Basis | 32 | 280 |
| | | geglüht | Ni- oder Co-Basis | 33 | 250 |
| | | ausgehärtet | Ni- oder Co-Basis 30 - 58 HRC | 34 | (350) |
| | | gegossen | Ni- oder Co-Basis 1500 - 2200 N/mm² | 35 | (320) |
| | Titanlegierungen | | Reintitan | 36 | $R_m$ 440* |
| | | | Alpha- + Beta-Legierung | 37 | $R_m$ 1050* |
| H | gehärteter Stahl | gehärtet u. angelassen | | 38 | 55 HRC |
| | | gehärtet u. angelassen | | 39 | 60 HRC |
| | Hartguss | gegossen | | 40 | 400 |
| | gehärtetes Gusseisen | gehärtet u. angelassen | | 41 | 55 HRC |

* $R_m$ = maximale Festigkeit, gemessen in MPa

| CTN3105 $v_c$ [m/min] | CTS3105 $v_c$ [m/min] | CTBK102 $v_c$ [m/min] | CTBK104 $v_c$ [m/min] | CTM3110 $v_c$ [m/min] | CTN3110 $v_c$ [m/min] | CTC3110 $v_c$ [m/min] | CTCK120 $v_c$ [m/min] | CTD4110 $v_c$ [m/min] |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | 230 - 450 | |
| | | | | | | | 200 - 340 | |
| | | | | | | | 160 - 270 | |
| | | | | | | | 200 - 360 | |
| | | | | | | | 150 - 290 | |
| | | | | | | | 130 - 260 | |
| | | | | | | | 150 - 290 | |
| | | | | | | | 100 - 260 | |
| | | | | | | | 160 - 290 | |
| | | | | | | | 130 - 250 | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 300 - 1500 | ***400 -1200 | | 500 - 2000 | 500 - 1100 | 500 - 1100 | 250 - 450 | 150 - 400 | |
| 200 - 800 | ***150 - 500 | | | 300 - 800 | 300 - 800 | 220 - 350 | 180 - 350 | |
| 200 - 700 | ***250 - 600 | | | 200 - 600 | 200 - 600 | 220 - 380 | 200 - 450 | |
| 200 - 700 | | **200 - 700 | | 250 - 450 | 250 - 450 | 200 - 350 | 160 - 300 | |
| 300 - 1000 | | | | 300 - 800 | 300 - 800 | 200 - 400 | 200 - 550 | |
| 250 - 700 | | | | 250 - 600 | 250 - 600 | 180 - 320 | 160 - 350 | |
| | | | | | | | | 300 - 4000 |
| | | | | | | | | 300 - 1500 |
| | | | | | | | | 300 - 4000 |
| | | | | | | | | 300 - 2000 |
| | | | | | | | | 200 - 700 |
| | | | | | | | | |
| | | | | | | | | 100 - 700 |
| | | | | | | | | 100 - 1500 |
| | | | | | | | | 300 - 3000 |
| | | | | | | | | 80 - 300 |
| | | | | | | | | 80 - 300 |
| | | | | | | | | 50 - 200 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | 100 - 250 | | | | | | |
| | | 100 - 250 | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | 40 - 200 | 100 - 200 | | | | | | |
| | 30 - 180 | 100 - 200 | | | | | | |
| | 70 - 200 | | 30 - 120 | | | | | |
| | 60 - 70 | | 30 - 120 | | | | | |

Die Schnittdaten sind unverbindliche Angaben für den Anwender. Eine Anpassung an die aktuellen Gegebenheiten ist zu empfehlen!
** ab GGG60 / *** nur für Schlichten

# Schnittdatenrichtwerte



| | Werkstück-werkstoff | Behandlungsart / Legierung | | VDI 3323 Gruppe | Härte HB |
|---|---|---|---|---|---|
| P | unlegierter Stahl | geglüht | ≤ 0,15 % C | 1 | 125 |
| | | geglüht | 0,15 % - 0,45 % C | 2 | 150 - 250 |
| | | vergütet | ≥ 0,45 % C | 3 | 300 |
| | niedriglegierter Stahl | geglüht | | 6 | 180 |
| | | vergütet | | 7 / 8 | 250 - 300 |
| | | vergütet | | 9 | 350 |
| | hochlegierter Stahl | geglüht | | 10 | 200 |
| | | vergütet | | 11 | 350 |
| | rostfreier Stahl | geglüht | ferritisch / martensitisch | 12 | 200 |
| | | vergütet | martensitisch | 13 | 325 |
| | | wärmebehandelt | ferritisch / martensitisch | 13 | 200 |
| M | rostfreier Stahl | abgeschreckt | austenitisch | 14 | 180 |
| | | abgeschreckt | ferritisch / austenitisch (Duplex) | 14 | 230 - 260 |
| | | ausgehärtet | austenitisch ausscheidungsgehärtet (PH) | 14 | 330 |
| K | Grauguss | | perlitisch / ferritisch | 15 | 180 |
| | | | perlitisch / martensitisch | 16 | 260 |
| | Grauguss mit Kugelgraphit | | ferritisch | 17 | 160 |
| | | | perlitisch | 18 | 250 |
| | Temperguss | | ferritisch | 19 | 130 |
| | | | perlitisch | 20 | 230 |
| N | Aluminium Knetlegierung | nicht aushärtbar | | 21 | 60 |
| | | aushärtbar | | 22 | 100 |
| | Aluminium Gusslegierung | nicht aushärtbar | < 12 % Si | 23 | 75 |
| | | aushärtbar | < 12 % Si | 24 | 90 |
| | | nicht aushärtbar | > 12 % Si | 25 | 130 |
| | Kupfer und Kupferlegierungen (Bronze, Messing) | | Automatenlegierung (1% Pb) | 26 | (110) |
| | | | Messing, Rotguss | 27 | 90 |
| | | | Bronze | 28 | 100 |
| | | | bleifreies Kupfer und Elektrolytkupfer | 28 | 100 |
| | nichtmetallische Werkstoffe | | Duroplast | 29 | – |
| | | | faserverstärkter Kunststoff | 29 | – |
| | | | Hartgummi | 30 | – |
| S | warmfeste Legierungen | geglüht | Fe-Basis | 31 | 200 |
| | | ausgehärtet | Fe-Basis | 32 | 280 |
| | | geglüht | Ni- oder Co-Basis | 33 | 250 |
| | | ausgehärtet | Ni- oder Co-Basis 30 - 58 HRC | 34 | (350) |
| | | gegossen | Ni- oder Co-Basis 1500 - 2200 N/mm² | 35 | (320) |
| | Titanlegierungen | | Reintitan | 36 | $R_m$ 440* |
| | | | Alpha- + Beta-Legierung | 37 | $R_m$ 1050* |
| H | gehärteter Stahl | gehärtet u. angelassen | | 38 | 55 HRC |
| | | gehärtet u. angelassen | | 39 | 60 HRC |
| | Hartguss | gegossen | | 40 | 400 |
| | gehärtetes Gusseisen | gehärtet u. angelassen | | 41 | 55 HRC |

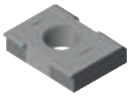
* $R_m$ = maximale Festigkeit, gemessen in MPa

| H210T $v_c$ [m/min] | AMZ $v_c$ [m/min] | H10T $v_c$ [m/min] | H216T $v_c$ [m/min] | CTP5110 $v_c$ [m/min] | CTP5115 $v_c$ [m/min] | CTL6115 $v_c$ [m/min] |
|---|---|---|---|---|---|---|
| | 110 - 160 | | | | | |
| | 90 - 140 | | | | | |
| | 80 - 120 | | | | | |
| | 90 - 130 | | | | | |
| | 80 - 120 | | | | | |
| | 70 - 90 | | | | | |
| | 90 - 110 | | | | | |
| | 70 - 90 | | | | | |
| | 160 - 220 | | | | | |
| | 70 - 110 | | | | | |
| | - | | | 150 - 230 | 130 - 220 | |
| | 90 - 140 | | | 140 - 190 | 120 - 180 | |
| | | | | 60 - 100 | 50 - 90 | |
| | | | | | | |
| 140 - 200 | 180 - 220 | 120 - 160 | 120 - 160 | | | |
| 100 - 160 | 140 - 180 | 90 - 140 | 90 - 140 | | | |
| 160 - 200 | 160 - 220 | 130 - 170 | 130 - 170 | | | |
| 110 - 150 | 120 - 180 | 90 - 130 | 90 - 130 | | | **200 - 700 |
| 160 - 220 | 180 - 240 | 140 - 200 | 140 - 200 | | | |
| 140 - 180 | 160 - 200 | 120 - 160 | 120 - 160 | | | |
| 300 - 3000 | 300 - 3200 | 300 - 2500 | 300 - 2500 | | | |
| 200 - 2500 | 200 - 2800 | 200 - 2000 | 200 - 2000 | | | |
| 400 - 2000 | 400 - 2000 | 400 - 1500 | 400 - 1500 | | | |
| 400 - 1800 | 400 - 2000 | 400 - 1500 | 400 - 1500 | | | |
| 200 - 1000 | 200 - 1200 | 200 - 800 | 200 - 800 | | | |
| 250 - 800 | 250 - 1000 | 250 - 600 | 250 - 600 | | | |
| 200 - 800 | 200 - 1000 | 200 - 600 | 200 - 600 | | | |
| 150 - 600 | 150 - 800 | 150 - 400 | 150 - 400 | | | |
| 150 - 400 | 150 - 500 | 150 - 300 | 150 - 300 | | | |
| 100 - 220 | 80 - 200 | 80 - 180 | 80 - 180 | | | |
| 80 - 200 | 80 - 220 | 60 - 150 | 60 - 150 | | | |
| 100 - 300 | 100 - 320 | 100 - 250 | 100 - 250 | | | |
| 35 - 50 | 30 - 50 | | | 80 - 120 | 80 - 120 | |
| 25 - 40 | 20 - 40 | | | 60 - 100 | 60 - 100 | |
| 25 - 40 | 20 - 40 | | | 35 - 90 | 35 - 90 | |
| 20 - 30 | 18 - 30 | | | 30 - 50 | 30 - 50 | 100 - 250 |
| 15 - 25 | 15 - 25 | | | 30 - 45 | 30 - 45 | 100 - 250 |
| 80 - 140 | 80 - 140 | | | 70 - 120 | 70 - 120 | |
| 40 - 100 | 40 - 100 | | | 40 - 70 | 40 - 70 | |
| | | | | | | 100 - 200 |
| | | | | | | 100 - 200 |
| | | | | | | |
| | | | | | | |

Die Schnittdaten sind unverbindliche Angaben für den Anwender. Eine Anpassung an die aktuellen Gegebenheiten ist zu empfehlen!
** ab GGG60

# Ersatzteile



| | Material | Type, Bezeichnung |
|---|---|---|
|  | 154568 | H 000341/H |
| | 154570 | H 000342/H |
| | 154571 | H 000343/H |
| | 154572 | H 000344/H |
| | 293141 | 7853608/H |
| | 293143 | 7853610/H |
| | 293144 | 7853611/H |
| | 59426 | H 000840/H |
| | 59427 | H 011446/H |
| | 59429 | H 018440/H |
| | 59430 | H 023441/H |
| | 59432 | H 024447/H |
| | 59433 | H 028443/H |
| | 59434 | H 033442/H |
| | 59435 | H 038444/H |
|  | 4724 | 7880101/K |
| | 4725 | 7880102/K |
| | 4726 | 7880103/K |
|  | 11224545 | SET-02-D |
| | 11227306 | SET-01-D |
| | 11227322 | SET-03-D |
| | 11227325 | SET-04-D |
| | 11227328 | SET-05-D |
| | 11258694 | SET-01L-D |
|  | 149395 | 70.5-824/SP |
| | 149396 | 70.5-825/SP |
| | 4261 | 7485865/SP |
| | 4265 | 7485869/SP |
| | 4523 | 7830001/SP |
| | 4738 | 7880601/KE |
| | 4739 | 7880602/KE |
| | 4740 | 7880603/KE |
| | 5658 | 7880606/KE |
| | 5660 | 7880608/KE |
|  | 69294 | 7883102/B M 3,5 |
| | 69296 | 7883101/B M 4,5 |
|  | 4210 | 7480901/KN 3x10 |
| | 4211 | 7480902/KN 2,6x10 |
|  | 4734 | 7880401/PS |
| | 4735 | 7880402/PS |
| | 5204 | 7880408/PS |
| | 5205 | 7880407/PS |
|  | 154577 | R 000467/R |
| | 293147 | 7853806/R |
| | 59436 | R 018463/R |
| | 59437 | R 023461/R |
| | 59438 | R 025464/R |
| | 59439 | R 033462/R |
| | 59440 | R 038465/R |
|  | 149400 | 70.5-841/F+S |
| | 4213 | 7480910/FS |
|  | 149399 | 70.5-848/F |
|  | 11232874 | HY-M5 |

| | Material | Type, Bezeichnung |
|---|---|---|
|  | 86174 | M 018470/MO |
| | 86176 | M 018471/MO |
| | 86177 | M 022473/MO |
| | 86178 | M 022472/MO |
| | 86182 | M 028474/MO |
|  | 194263 | 7896900/O-RING 40 |
| | 225429 | 7896940/O-RING 50 |
| | 225430 | 7896941/O-RING 63 |

| | Material | Type, Bezeichnung |
|---|---|---|
|  | 118849 | 7883911/SORT |
| | 11963665 | 7485927/SORT |
| | 140586 | 7853400/SORT |
| | 140587 | 7853401/SORT |
| | 140589 | 7853402/SORT |
| | 140590 | 7853403/SORT |
| | 140591 | 7853404/SORT |
| | 140594 | 7853407/SORT |
| | 140595 | 7853408/SORT |
| | 140596 | 7853409/SORT |
| | 140597 | 7853410/SORT |
| | 140599 | 7853411/SORT |
| | 140600 | 7853412/SORT |
| | 140601 | 7853413/SORT |
| | 140602 | 7853414/SORT |
| | 146868 | 7817913/SORT |
| | 154578 | 7853416/SORT |
| | 154579 | 7853417/SORT |
| | 154580 | 7853418/SORT |
| | 154581 | 7853419/SORT |
| | 154584 | 7853421/SORT |
| | 183936 | 7883914/SORT |
| | 222127 | 7853422/SORT |
| | 260199 | 7883912/SORT |
| | 29278 | 7815900/SORT |
| | 29279 | 7815901/SORT |
| | 29280 | 7815902/SORT |
| | 293148 | 7853423/SORT |
| | 293150 | 7853425/SORT |
| | 293151 | 7853426/SORT |
| | 293152 | 7853427/SORT |
| | 36305 | 7817902/SORT |
| | 40505 | 7817911/SORT |
| | 40506 | 7817912/SORT |
| | 41917 | 7485926/SORT |
| | 4283 | 7485901/SORT |
| | 4287 | 7485906/SORT |
| | 4288 | 7485907/SORT |
| | 4292 | 7485911/SORT |
| | 4294 | 7485915/SORT |
| | 4527 | 7830005/SORT |
| | 4743 | 7880901/SORT |
| | 4744 | 7880902/SORT |
| | 4745 | 7880903/SORT |
| | 4746 | 7880904/SORT |
| | 5662 | 7880912/SORT |
| | 5664 | 7880914/SORT |
| | 71533 | 7830509/SORT |
| | 74208 | 7883901/SORT |
| | 82270 | 7883902/SORT |
| | 82271 | 7883906/SORT |
| | 82272 | 7883907/SORT |
| | 82273 | 7883908/SORT |
| | 82274 | 7883909/SORT |
| | 82275 | 7883910/SORT |
| | 82756 | 7883903/SORT |
| | 82757 | 7883904/SORT |
| | 82758 | 7883905/SORT |
| | 83343 | 7815903/SORT |

| | Material | Type, Bezeichnung |
|---|---|---|
|  | 154575 | S 000433/S |
| | 154576 | S 000432/S |
| | 293145 | 7853711/S |
| | 310913 | 7853712/S |
| | 59441 | S 000425/S ISK 3MM |
| | 59442 | S 000458/S ISK 3MM |
| | 59443 | S 000831/S ISK 3MM |
| | 59444 | S 011429/S ISK 2MM |
| | 59445 | S 018420/S ISK 2,5MM |
| | 59446 | S 023421/S ISK 3MM |
| | 59448 | S 033422/S ISK 4MM |
| | 59449 | S 038427/S ISK 5MM |
|  | 11211558 | U-CN12T3-D |
| | 11227315 | U-CN1604-D |
| | 11227316 | U-CN1905-D |
| | 11294214 | U-CN2507 |
| | 11577861 | U-CN0903-D |
| | 11579427 | U-CN2506-D |
| | 26132 | 7880004/HM-U |
| | 357187 | 10006885/HM-U CNMX1907 |
| | 54742 | 7830501/HM-U |
| | 59451 | U 000152/HM-U |
| | 59568 | U 112150/HM-U |
| | 59569 | U 123151/HM-U |
| | 61006 | 7883002/HM-U |
| | 69216 | 7883001/HM-U |
|  | 11211562 | U-DN15T3-D |
| | 11227308 | U-DN1103-D |
| | 26146 | 7815000/HM-U |
| | 293140 | 7853521/HM-U |
| | 59570 | U 153150/HM-U |
|  | 106009 | U 000051L/HM-U |
| | 106014 | U 000051R/HM-U |
| | | |
| | | |
|  | 146066 | 7817010/HM-U RC 1203 |
| | 154563 | U 000351/U |
| | 154564 | U 000352/U |
| | 154565 | U 000353/U |
| | 154566 | U000354/U |
| | 24838 | 7817002/HM-U |
| | 40187 | 7817008/HM-U RN 0903 |
| | 40192 | 7817009/HM-U |
|  | 11211561 | U-SN12T3-D |
| | 11227317 | U-SN1905-D |
| | 11227319 | U-SN2506-D |
| | 11247269 | U-SN1504-D |
| | 26111 | 7880003/HM-U |
| | 26122 | 7480312/HM-U SN 1203 |
| | 26139 | 7880010/HM-U |
| | 308268 | 3673051/HM-U SN 2110 |
| | 4299 | 7485940/HM-U |
| | 59547 | U 000456/HM-U |
| | 59549 | U 000457/HM-U |
| | 59562 | U 053450/HM-U |
| | 59564 | U 063451/HM-U |
| | 59566 | U 083452/HM-U |
| | 59567 | U 092453/HM-U |
| | 69199 | 7883004/HM-U |
| | 69214 | 7883003/HM-U |

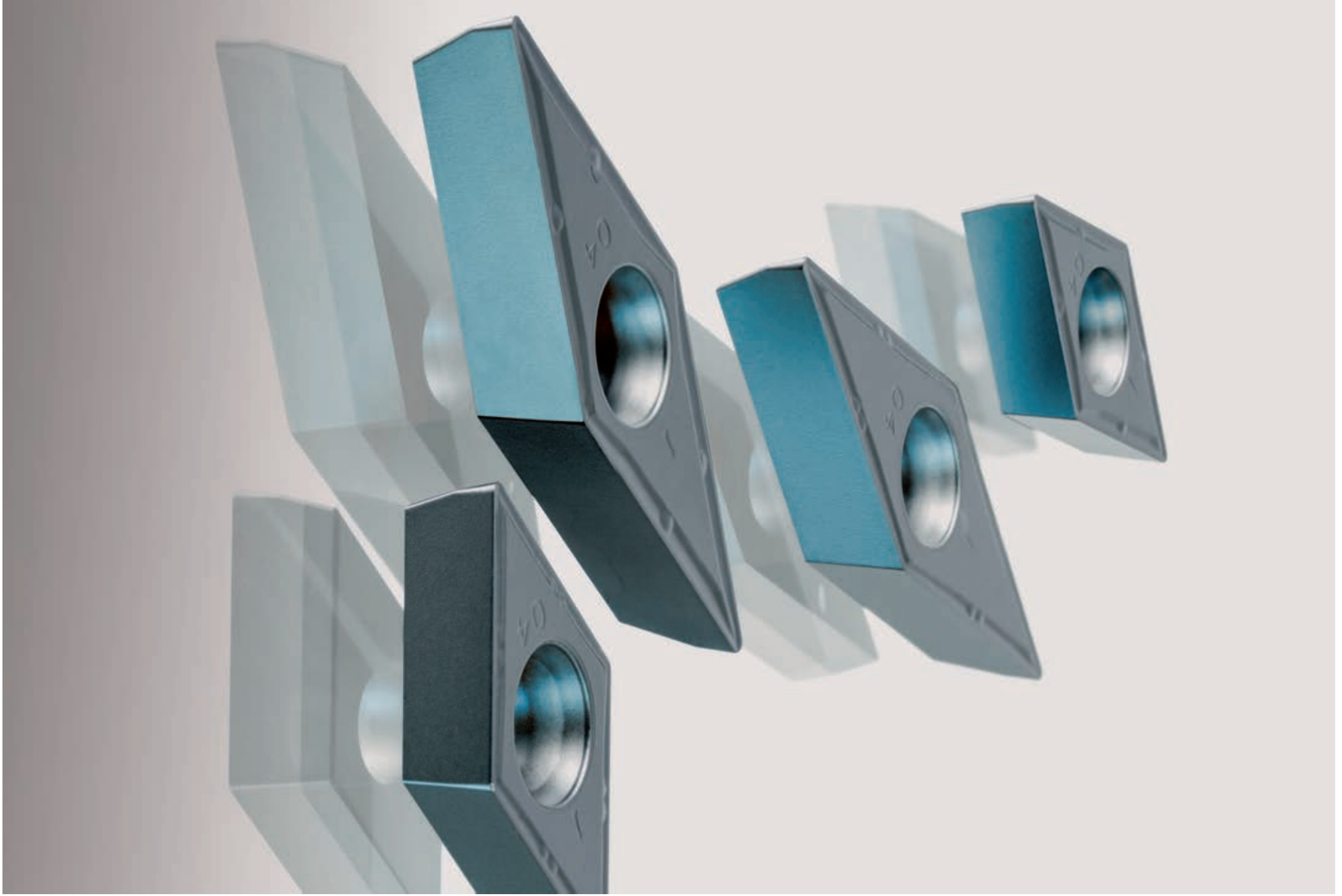
# Ersatzteile

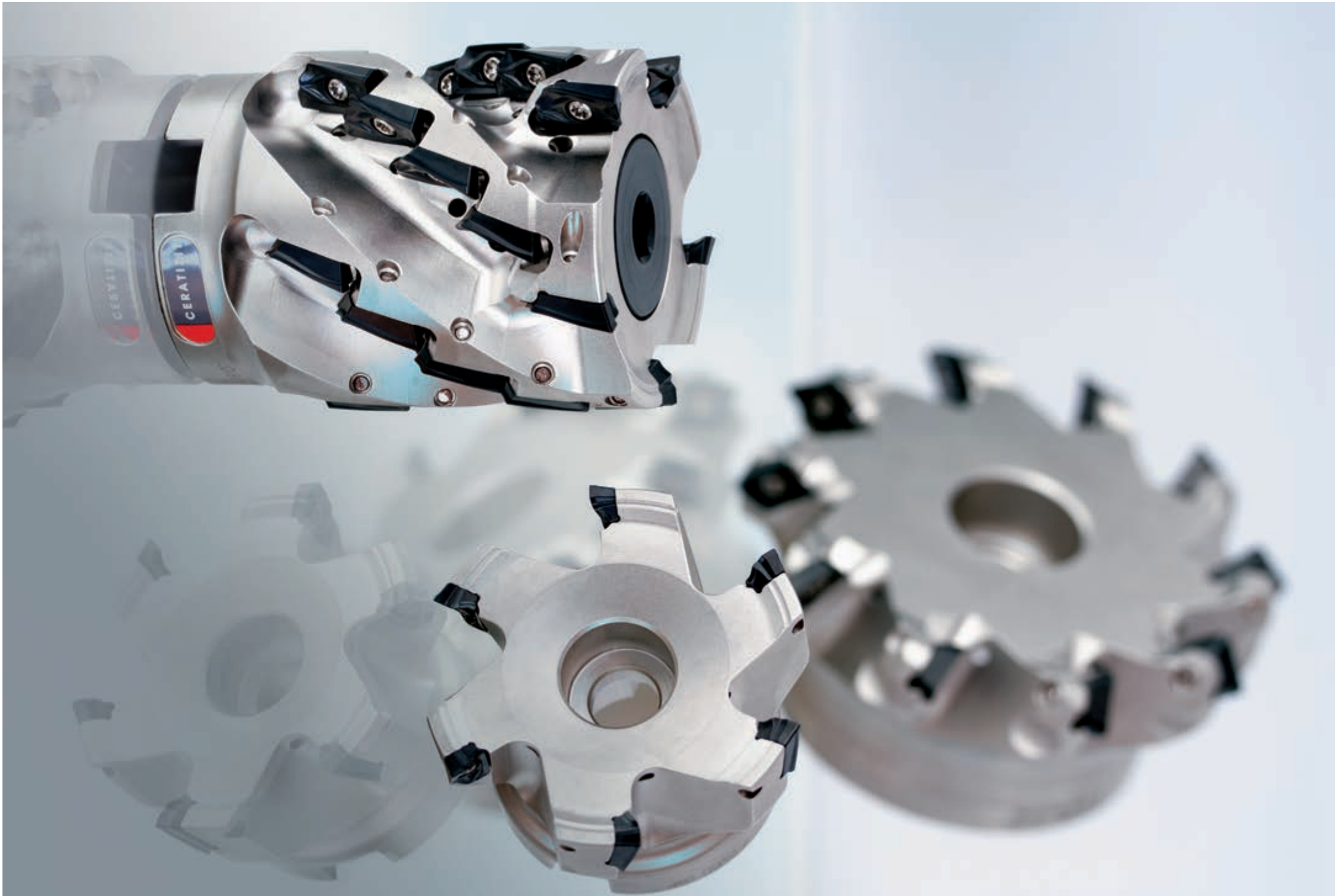


| | Material | Type, Bezeichnung |
|---|---|---|
|  | 11344329 | U-TN1603-D |
| | 26123 | 7880001/HM-U |
| | 26124 | 7480313/HM-U TN 1603 |
| | 26126 | 7480316/HM-U TPMX1604 |
| | 26137 | 7880008/HM-U |
| | 4300 | 7485941/HM-U |
| | 4719 | 7880002/HM-U |
| | 59556 | U 013950/HM-U |
| | 59557 | U 021953/HM-U |
| | 69209 | 7883005/HM-U |
|  | 11227311 | U-VN1603-D |
| | 119008 | 7815004/HM-U |
| | 148206 | 7815005/HM-U |
| | 26147 | 7815002/HM-U |
| | 37493 | 7815003/HM-U |
|  | 11211563 | U-WN08T3-D |
| | 11227310 | U-WN0603-D |
| | 218151 | 7853519/HM-U |
| | 293139 | 7853520/HM-U |

| | Material | Type, Bezeichnung | Schlüsselgröße |
|---|---|---|---|
|  | 24643 | 7830006/TORX T08 F | T08 |
|  | 4209 | 7480412/SW 4 | SW4 |
| | 4496 | 7812301/SW 5 | SW5 |
| | 4770 | 7882201/SW 2,5 | SW2,5 |
| | 4771 | 7882202/SW 3 | SW3 |
| | 4773 | 7882301/SW 2 | SW2 |
|  | 69293 | 7883301/KOMBI T15 | T15 |
|  | 8095010100 | SD-T07-60mm | T07 |
| | 8095010200 | SD-T08-60mm | T08 |
| | 8095010500 | SD-T15-80mm | T15 |
| | 8095010600 | SD-T20-100mm | T20 |
|  | 11224503 | S-15IP-T | T15IP |
| | 11227314 | S-09IP-T | T09IP |
| | 11227323 | S-20IP-T | T20IP |
| | 11227330 | S-25IP-T | T25IP |

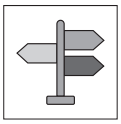
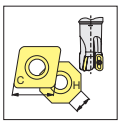
| | Material | Type, Bezeichnung | Länge [mm] | Gewindegröße | Schlüsselgröße |
|---|---|---|---|---|---|
|  | 11224494 | M4,5x12-15IP/10002887 | 12 | M4,5 | T15 |
| | 11227305 | M3,0x7,0-09IP/10003007 | 7,0 | M3,0 | T09IP |
| | 11227318 | M5x14-20IP/10003023 | 14 | M5 | T20 |
| | 11227329 | M6x16-25IP/10003048 | 16 | M6 | T25IP |
| | 165795 | 7883209/M3,5X8,6/T15 | 8,6 | M3,5 | T15 |
| | 24645 | 7815101/M2,5X6,0/T08 | 6 | M2,5 | T08 |
| | 24647 | 7815102/M3,5X11,0/T15 | 11 | M3,5 | T15 |
| | 4259 | 7485860/M6,0X16,2/T20 | 16,2 | M6 | T20 |
| | 4524 | 7830002/M4,0X10/T15 | 10 | M4 | T15 |
| | 54976 | 7722111/M3,5X7,2/T15 | 7,2 | M3,5 | T15 |
| | 54981 | 7883202/M4,5X12/T15 | 12 | M4,5 | T15 |
| | 56652 | 7722113/M2,2X5/T07 | 5 | M2,2 | T07 |
| | 76913 | 7883204/M2,5X5/T08 | 5 | M2,5 | T08 |
| | 77613 | 7883203/M3,0X7,3/T08 | 7,3 | M3 | T08 |
|  | 149397 | 70.5-865/S | 25 | M6 | SW4,5 |
| | 4147 | 7480210/M8X20 | 23 | M8 | SW4 |



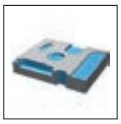

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# Inhaltsverzeichnis

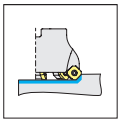
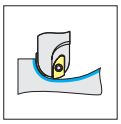
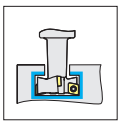
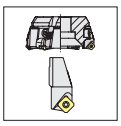
## Einführung


| | | |
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|  | Der Leitfaden durch den Katalog | B3-B4 |
|  | Bezeichnungssystem | B5-B8 |
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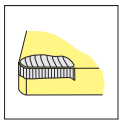

## Anwendung


| | | |
|---|---|---|
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## Verfahren


| | | |
|---|---|---|
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|  | Eckfräsen | B110-B172 |
|  | Formfräsen | B174-B191 |
|  | Profilfräsen | B194-B202 |
|  | Kassettenfräsen | B204-B233 |


## Technische Informationen


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|---|---|---|
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|  | Hochgeschwindigkeitsbearbeitung (HSC) | B267-B275 |
|  | Ersatzteile | B276 |


## Index


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|  | Index | G3 |

# Der Leitfaden durch den Katalog

## Neuerungen im Kapitel Fräsen

- Gesamtübersicht mit den wichtigsten Informationen zu allen Frässystemen
- Verbesserte Anordnung
- Alle notwendigen Informationen der Frässysteme in einem Block
- Beschreibung der Spanleitstufen zu jedem Frässystem

## In wenigen Schritten die richtige Auswahl treffen

1

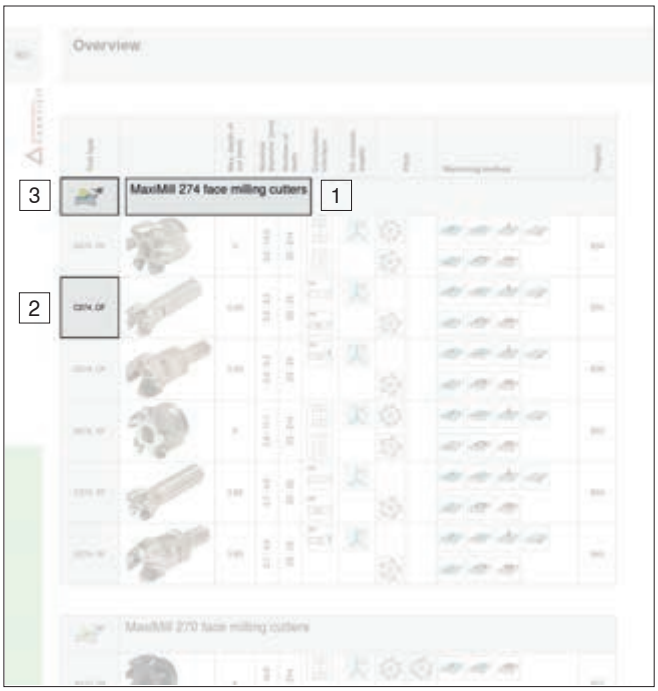
### Auswahl des Frässystems

Das Anwendungskapitel gibt einen ersten Überblick

1 Bearbeitungsverfahren / System

2 Werkzeugtyp

3 Anstellwinkel




2

### Einsatzmöglichkeiten

Die Systembeschreibung zeigt die Einsatzmöglichkeiten eines Frässystems



3

## Auswahl des Werkzeuges

Die Produktseite zeigt das Programm der Fräskörper mit den Hauptabmessungen sowie einen Hinweis auf die Wendeplattentypen

1 Mögliche Anwendungen

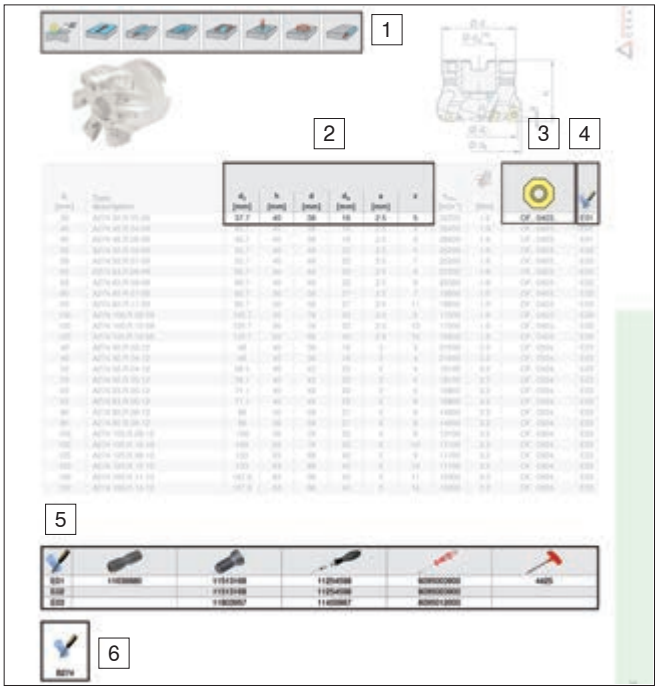
2 Die Hauptabmessungen

3 Verweis zu den Wendeplatten

4 Ersatzteile

5 Ersatzteilübersicht

6 Verweis zu weiterführenden Informationen




4

## Auswahl der Wendeplatte

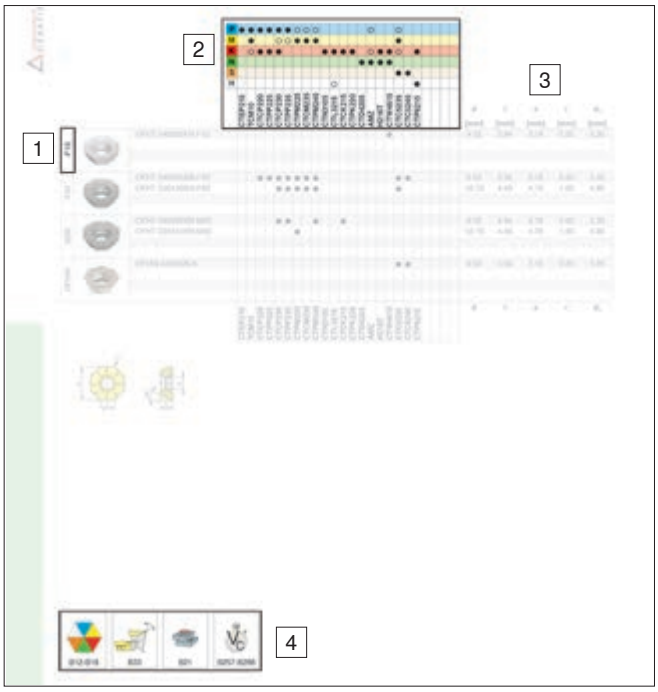
Nach der Festlegung des Werkzeuges erfolgt die Auswahl der Wendeplatte inklusive Spanleitstufe und Schneidstoff

1 Spanleitstufen

2 Mögliche Schneidstoffe

3 Die Hauptabmessungen

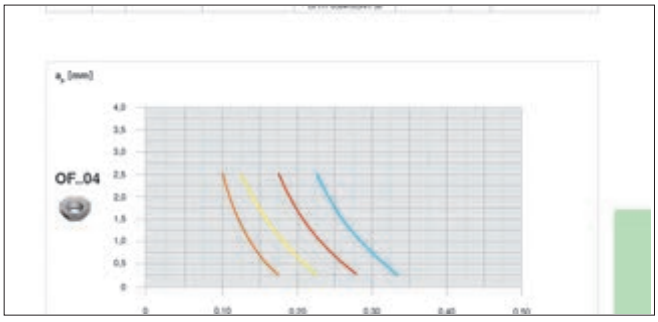
4 Verweis zu weiterführenden Informationen




5

## Festlegung Startparameter

Im letzten Schritt kann zum jeweiligen Frässystem noch der Startwert für Vorschub, Schnitttiefe und Schnittgeschwindigkeit ermittelt werden



# Bezeichnungssystem CERATIZIT

Fräswerkzeuge

C 211 . 25 . R . 05 - 07 - A20 - 50 - 225
1 2 3 4 5 6 7 8 9

C 211 . 25 . R . 02 K4 - 11- B - 50
1 2 3 4 5 10 6 7 8

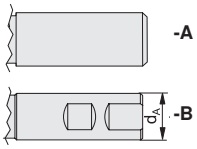
A 273 . 80 . R . 10 A 10 - 06
1 2 3 4 5 11 12 6

M HPC . 50 . R . 05 - 12 - H63A - 80
1 2 3 4 5 6 7 9

1

## Aufnahme

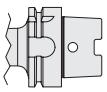
**C mit Schaft**



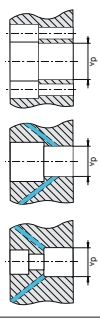

**G mit Gewinde**



**M Monoblock**



**A mit Loch**




2

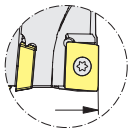
## System

MaxiMill 211
.
.
.

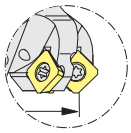
3

## Durchmesser

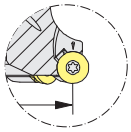
**Eck-/Nutfräser**



**Planfräser**



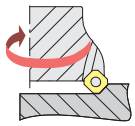
**Rundplattenfräser**



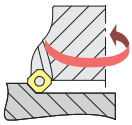
4

## Schneidrichtung

R

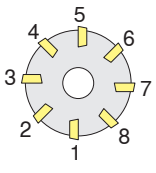


L



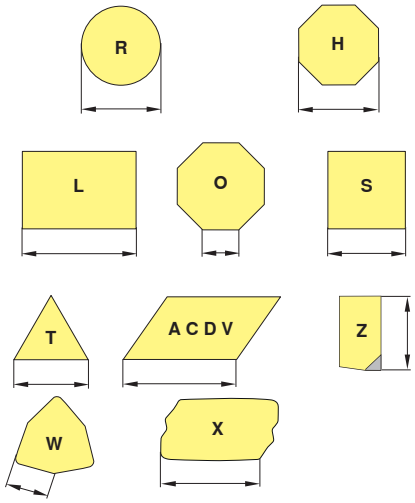
5

## Effektive Zähnezahl




6

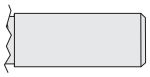
## Schneidenlänge



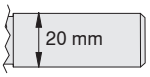

7

## Details Aufnahme

**A**
$d_A = d_1$



**A20**
$d_A$ = 20 mm



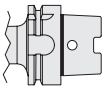

**B**
$d_A = d_1$




**B25**
$d_A$ = 25 mm

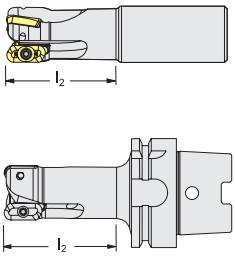



**H63A**



8

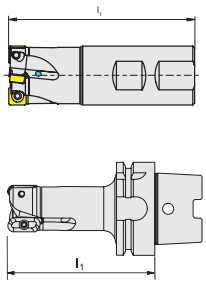
## Nutzlänge




$l_2$ [mm]

9

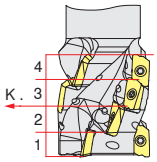
## Gesamtlänge




$l_1$ [mm]

10

## Anzahl Zahnreihen




11

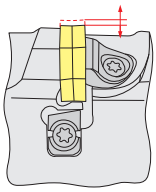
## A = Wendeplatten einstellbar

**(B* = ungleiche Zahnteilung)**

* nur wenn zur Unterscheidung notwendig

12

## Anzahl Wendeplatten einstellbar



(nur axial verstellbare Werkzeuge)

# Bezeichnungssystem nach ISO 1832

Wendeplatten

| X | D | K | T | 11 | T3 | 08 | S | R | - | F50 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | 10 |

| Z | N | H | W | 12 | 05 | PO | S | R | - | 15 | 06 | - | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | 11 | 12 | | 13 |

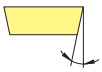
1

## Plattenform

| | | |
|---|---|---|
| A | 85° |  |
| B | 82° | |
| K | 55° | |
| H | 120° |  |
| L | 90° |  |
| O | 135° |  |
| P | 108° |  |
| C | 80° |  |
| D | 55° | |
| E | 75° | |
| M | 86° | |
| V | 35° | |
| R | - |  |
| S | 90° |  |
| T | 60° |  |
| W | 80° |  |
| X<br>Z | Sonderformen | |

2

## Freiwinkel



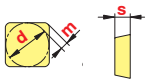
| | α |
|---|---|
| A | 3° |
| B | 5° |
| C | 7° |
| D | 15° |
| E | 20° |
| F | 25° |
| G | 30° |
| N | 0° |
| P | 11° |
| O | Sonderausführung |

3

## Toleranzen



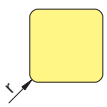
| | d [±mm] | m [±mm] | s [±mm] | d=6,35/9,52 | d=12,7 | d=15,8/19,05 |
|---|---|---|---|---|---|---|
| A | 0,025 | 0,005 | 0,025 | ● | ● | ● |
| C | 0,025 | 0,013 | 0,025 | ● | ● | ● |
| E | 0,025 | 0,025 | 0,025 | ● | ● | ● |
| F | 0,013 | 0,005 | 0,025 | ● | ● | ● |
| G | 0,025 | 0,025 | 0,13 | ● | ● | ● |
| H | 0,013 | 0,013 | 0,025 | ● | ● | ● |
| | 0,05 | 0,005 | 0,025 | ● | | |
| J | 0,08 | 0,005 | 0,025 | | ● | |
| | 0,10 | 0,005 | 0,025 | | | ● |
| | 0,05 | 0,013 | 0,025 | ● | | |
| K | 0,08 | 0,013 | 0,02 | | ● | |
| | 0,10 | 0,013 | 0,02 | | | ● |



| | d [±mm] | m [±mm] | s [±mm] | d=6,35/9,52 | d=12,7 | d=15,8/19,05 |
|---|---|---|---|---|---|---|
| | 0,05 | 0,08 | 0,13 | ● | | |
| M | 0,08 | 0,13 | 0,13 | | ● | |
| | 0,10 | 0,15 | 0,13 | | | ● |
| | 0,05 | 0,08 | 0,025 | ● | | |
| N | 0,08 | 0,13 | 0,025 | | ● | |
| | 0,10 | 0,15 | 0,025 | | | ● |
| | 0,08 | 0,13 | 0,13 | ● | | |
| U | 0,13 | 0,20 | 0,13 | | ● | |
| | 0,18 | 0,27 | 0,13 | | | ● |

7

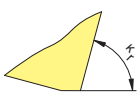
## Planfase / Eckenradius



Radius

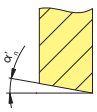
| | r [mm] |
|---|---|
| M0* | |
| 02 | 0,2 |
| 04 | 0,4 |
| 08 | 0,8 |
| 12 | 1,2 |

* nur Form "R"



1. Zeichen

| | $\kappa_r$ |
|---|---|
| A | 45° |
| D | 60° |
| E | 75° |
| F | 85° |
| P | 90° |
| Z | Sonstige |

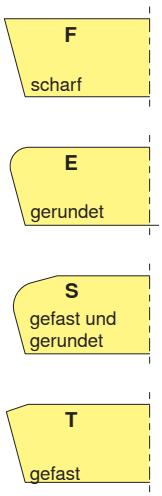


2. Zeichen

| | $\alpha'_n$ |
|---|---|
| A | 3° |
| B | 5° |
| C | 7° |
| D | 15° |
| E | 20° |
| F | 25° |
| G | 30° |
| N | 0° |
| P | 11° |
| Z<br>O | Sonstige |

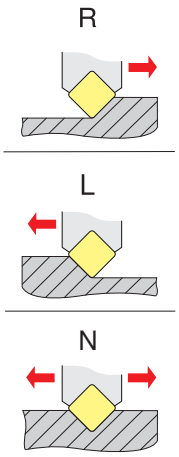
8

## Schneidkante




9

## Schneidrichtung



4

## Merkmal

| | |
|---|---|
| **A** |  |
| **F** |  |
| **G** |  |
| **M** |  |
| **N** |  |
| **Q** |  |
| **R** |  |
| **T** |  |
| **U** |  |
| **W** |  |
| **X** | Sonderformen |

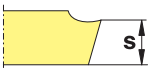
5

## Schneidenlänge

| d [mm] | A | T | C/S | H | L | R | V | W | O | X | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4,90 | | | | | | | | | | 07 | |
| 5,00 | | | | | | 05 | | | | | |
| 5,56 | | | 05 | | 08 | | | 03 | | | |
| 6,00 | | | | | | | | | | | |
| 6,35 | | 11 | 06 | | 10 | | | 04 | | 06 | |
| 6,65 | 10 | | | | | | | | | | |
| 6,80 | | | | | | | | | | 11 | |
| 7,00 | | | | | | | | | | | 04 |
| 7,94 | | | 07 | | | | | | | | |
| 8,00 | | | | | | 08 | | | | | |
| 9,00 | | | | | 12 | | | | | | |
| 9,30 | | | | | | | | | | 15 | |
| 9,52 | 16 | 16 | 09 | | 15 | | | 06 | 04 | | |
| 9,57 | 15 | | | | | | | | | | |
| 9,60 | | | | | | | | | | 09 | |
| 10,00 | | | 10 | | 11 | 10 | | | | | 12 |
| 12,00 | | | | | | 12 | | | | | |
| 12,50 | | | | | | | | | | 20 | |
| 12,70 | | 12/22 | 12 | | 20 | | 22 | 08 | | 12 | |
| 15,81 | | | 15 | | 22 | | | 10 | | | |
| 16,00 | | | | | | 16 | | | | | |
| 16,20 | | | | 09 | | | | | | | |
| 16,74 | | | 16 | | | | | | | | |
| 17,00 | | | 17 | | | | | | | | |
| 17,18 | | | | | | | | | 06 | | |
| 18,18 | | | | | | | | | 07 | | |
| 19,05 | | | 19 | | | | | 13 | | | |
| 20,00 | | | | | | 20 | | | | | |

6

## Plattenstärke




| | s [mm] |
|---|---|
| **01** | 1,59 |
| **T1** | 1,98 |
| **02** | 2,38 |
| **03** | 3,18 |
| **T3** | 3,97 |
| **04** | 4,76 |
| **05** | 5,56 |
| **06** | 6,35 |
| **07** | 7,94 |
| **09** | 9,52 |

10

## Spanleitstufe

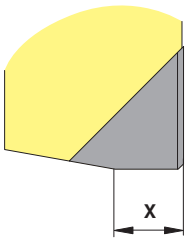
**Stufenbezeichnung**
**F**.. = Fein
**M**.. = Mittel
**R**.. = Grob

**zusätzliche Merkmale:**
R = Übergangsradius Haupt-/ Nebenschneide
Q = Masterfinish

11

## Herstellerangabe

**Länge der Schlichtschneide**

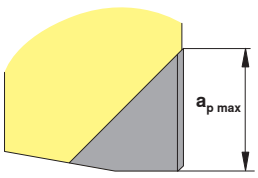



00 = 0,0 mm
10 = 1,0 mm
12 = 1,2 mm
15 = 1,5 mm
30 = 3,0 mm
50 = 5,0 mm

12

## Herstellerangabe

$a_{p\ max}$




02 = 2,0 mm
03 = 3,0 mm
04 = 4,0 mm
06 = 6,0 mm
07 = 7,0 mm
11 = 11,0 mm

13

## Herstellerangabe

F = Fein
M = Mittel
R = Grob

# Bezeichnungssystem CERATIZIT

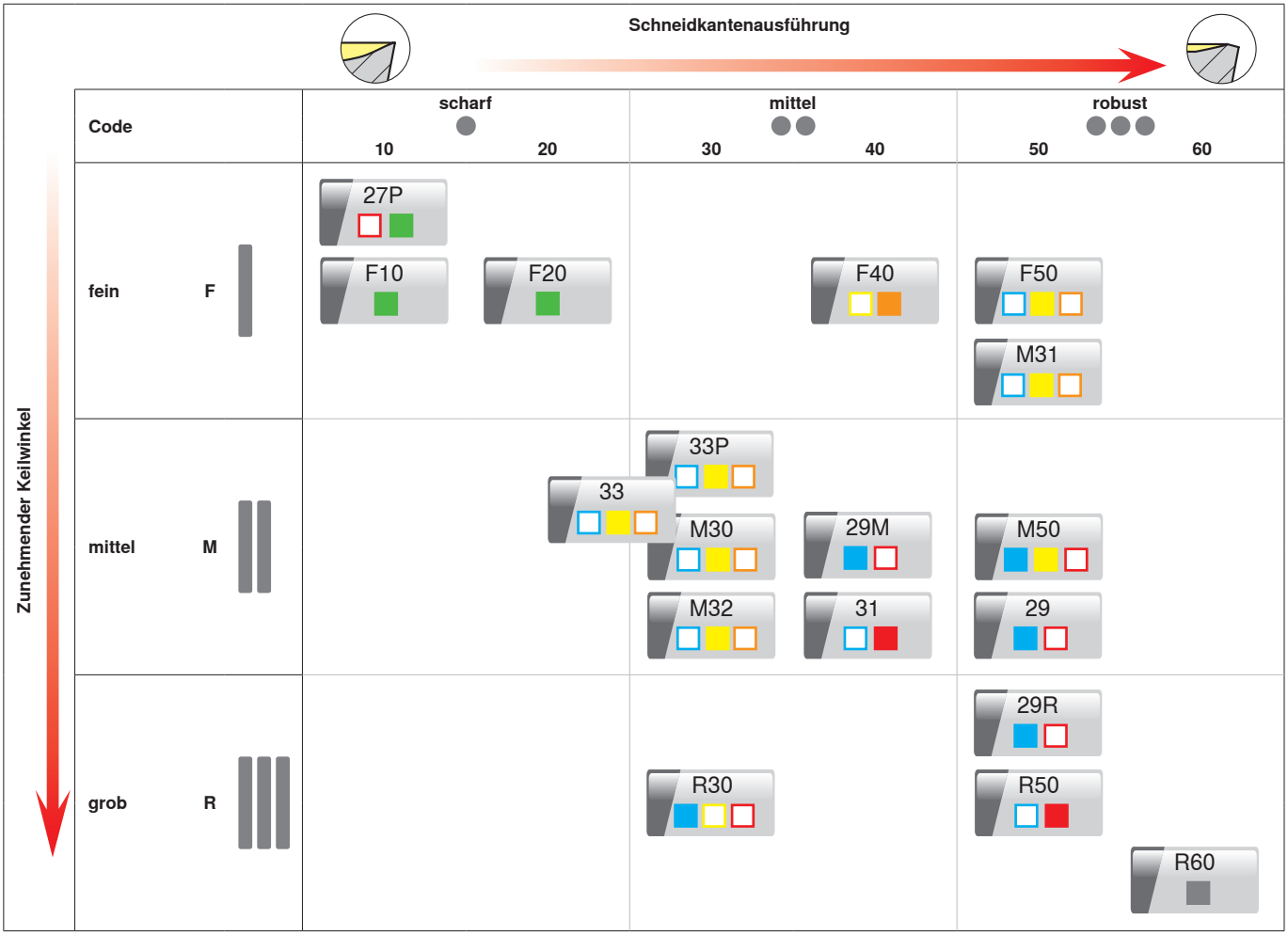
Spanleitstufen

**F 50**

[1] [2]

[1] Keilwinkel

[2] Schneidkantenausführung




| | | | |
|---|---|---|---|
| P | ■ | □ | Stahl |
| M | ■ | □ | Rostfreier Stahl |
| K | ■ | □ | Eisenguss |
| N | ■ | □ | Nichteisen Metalle |
| S | ■ | □ | Schwerzerspanbare Werkstoffe |
| H | ■ | □ | Harte Werkstoffe |
| | [1] | [2] | |

[1] Hauptanwendung

[2] Nebenanwendung

Beispiel:

OFHT 040305SN-M50





CTP P235

1 2 3 4 5

## 1 Hersteller: CERATIZIT

## 2 Schneidstoffart

W Hartmetall unbeschichtet
C Hartmetall beschichtet CVD
P Hartmetall beschichtet PVD
T Cermet unbeschichtet
E Cermet beschichtet
N Siliziumnitrid unbeschichtet
M Siliziumnitrid beschichtet
S Mischkeramik
I Sialon
D PKD
B CBN
L CBN beschichtet
H PM-HSS

## 3 Primäre Eignung für Werkstoff Variante 1: Nummer

1 Stahl
2 rostfreier Stahl
3 Eisenguss
4 Leicht- und Buntmetalle/Nichtmetalle
5 Superlegierungen/Titan
6 harte Werkstoffe
7 Mehrbereichssorte ohne besonderen Werkstoffschwerpunkt

## Primäre Eignung für Werkstoff Variante 2: ISO-Buchstabe

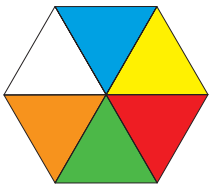
P Stahl
M rostfreier Stahl
K Eisenguss
N Leicht- und Buntmetalle/Nichtmetalle
S Superlegierungen/Titan
H harte Werkstoffe
X Mehrbereichssorte ohne besonderen Werkstoffschwerpunkt

## 4 Primäre Eignung für Anwendung

1 Drehen
2 Fräsen
3 Stechen
4 Bohren
5 Gewindedrehen
6 Andere
7 Mehrbereichssorte ohne besonderen Anwendungsschwerpunkt

## 5 ISO 513 Anwendungsbereich

z.B.
05
10
15
25
35 ISO P35
.
.
.



## Ebene Werkstoff

Der MasterGuide von CERATIZIT teilt die Werkstoffe nach VDI 3323 in sechs Hauptgruppen (P, M, K, N, S, H) ein. Jeder Gruppe ist eine zum Teil schon aus der ISO 513 bekannte Kennfarbe zugeordnet.

**P** **Stahl**

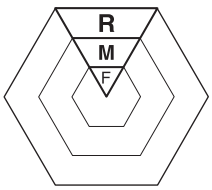
**M** **Rostfrei**

**K** **Eisenguss**

**N** **Nichteisenmetalle und Nichtmetalle**

**S** **hochwarmfeste Legierungen/Titan**

**H** **harte Werkstoffe**




## Ebene Bearbeitung

Jedes Kennfarbenfeld ist durch Linien in drei Ebenen eingeteilt. Diese kennzeichnen die jeweiligen Bearbeitungsarten:

**R = Grobzerspanung**

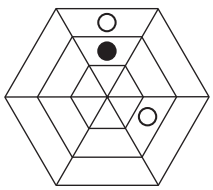


**M = Mittlere Zerspanung**



**F = Feinzerspanung**





● **Hauptanwendung**
o **Erweiterte Anwendung**

## Ebene Anwendung

Den idealen Anwendungsbereich einer Wendeplatte kennzeichnet ein voller Kreis. Erweiterte Anwendungsbereiche sind durch ein leeres Kreissymbol gekennzeichnet. So schafft MasterGuide von CERATIZIT Übersicht bei Einkauf, Auswahl und Bearbeitung und reduziert Sorten- und Geometriebestände im Lager.

| Sortenbezeichnung | Normbezeichnung ISO | Normbezeichnung ANSI | Schneidstoffart | Anwendungsbereich 01 05 10 15 20 25 30 35 40 45 50 | P Stahl | M Rostfrei | K Eisenguss | N NE-Metalle | S Hochwarmfest | H Harte Werkstoffe |
|---|---|---|---|---|---|---|---|---|---|---|
| **CTEP210** COLORSTAR™ | HC-P10 | C8 | E | | ● | | | | | |
| **TCM10** | HT-P15 | C7 | T | | ● | | | | | |
| | HT-M10 | - | T | | | ● | | | | |
| | HT-K10 | C3 | T | | | | ○ | | | |
| **CTCP220** BLACKSTAR™ | HC-P20 | C7 | C | | ● | | | | | |
| | HC-K20 | C2 | C | | | | ● | | | |
| **CTPP225** SILVERSTAR™ | HC-P25 | C6 | P | | ● | | | | | |
| | HC-K25 | C2 | P | | | | ● | | | |
| **CTCP230** BLACKSTAR™ | HC-P30 | C6 | C | | ● | | | | | |
| | HC-K25 | C2 | C | | | | ● | | | |
| | HC-M25 | - | C | | | ○ | | | | |
| **CTPP235** SILVERSTAR™ | HC-P35 | C5 | P | | ● | | | | | |
| | HC-M30 | - | P | | | ○ | | | | |
| **CTPM225** SILVERSTAR™ | HC-M25 | - | P | | | ● | | | | |
| | HC-P25 | C6 | P | | ○ | | | | | |
| **CTCM235** BLACKSTAR™ | HC-M35 | - | C | | | ● | | | | |
| | HC-P40 | C5 | C | | ○ | | | | | |
| **CTPM240** SILVERSTAR™ | HC-M40 | - | P | | | ● | | | | |
| | HC-P40 | C5 | P | | ○ | | | | | |
| **CTN3105** | CN-K05 | C4 | N | | | | ● | | | |
| **CTL3215** | BC-K10 | C3 | L | | | | ● | | | |
| | BC-H10 | C3 | L | | | | | | | ○ |
| **CTCK215** BLACKSTAR™ | HC-K15 | C3 | C | | | | ● | | | |
| **CTPK220** SILVERSTAR™ | HC-K20 | C2 | P | | | | ● | | | |
| **CTD4205** | DP-N05 | C4 | D | | | | | ● | | |

01 05 10 15 20 25 30 35 40 45 50

● Hauptanwendung

○ Erweiterte Anwendung

# Sortenübersicht

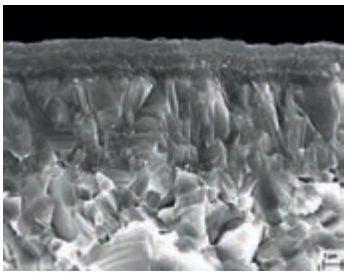
| Sortenbezeichnung | Normbezeichnung ISO | Normbezeichnung ANSI | Schneidstoffart | Anwendungsbereich 01 05 10 15 20 25 30 35 40 45 50 | P Stahl | M Rostfrei | K Eisenguss | N NE-Metalle | S Hochwarmfest | H Harte Werkstoffe |
|---|---|---|---|---|---|---|---|---|---|---|
| **AMZ** | HC-N10 | C3 | P | | | | | ● | | |
| | HC-P10 | C8 | P | | ○ | | | | | |
| | HC-K10 | C3 | P | | | | ○ | | | |
| **H216T** | HW-N15 | C3 | W | | | | | ● | | |
| | HW-K15 | C3 | W | | | | ● | | | |
| **CTW4615** | HW-N15 | C3 | W | | | | | ● | | |
| | HW-K15 | C3 | W | | | | ● | | | |
| **CTC5235** | HC-S30 | - | C | | | | | | ● | |
| | HC-M35 | - | C | | | ○ | | | | |
| **CTC5240** | HC-S40 | - | C | | | | | | ● | |

● Hauptanwendung

○ Erweiterte Anwendung

## CTEP210
COLORSTAR™

HC-P10 | ●

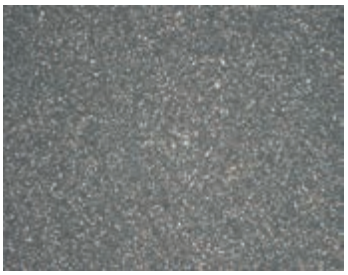


**Spezifikation:**
Zusammensetzung: Co/Ni 12,2%; MK 71,4%; Andere 0,4%; WC Rest | Korngröße: fein | Härte: $HV_{30}$ 1620 | Schichtsystem: CVD TiCN-$Al_2O_3$ Multilayer

**Einsatzempfehlung:**
Die beschichtete Cermet-Sorte mit Zähigkeitsreserven für die Schlichtbearbeitung bei hohen Schnittgeschwindigkeiten.

## TCM10

HT-P15 | HT-M10 | HT-K10 | ● ● ○

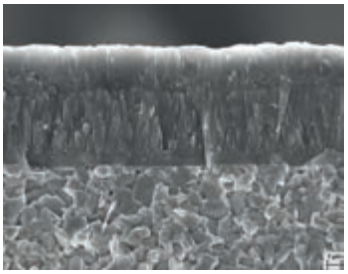


**Spezifikation:**
Zusammensetzung: Cermet Co/Ni 12,2%; WC 15,0%; TaNbC 10,0%; TiCN Rest | Härte: $HV_{30}$ 1620

**Einsatzempfehlung:**
Die unbeschichtete Cermet-Sorte zum Schlichten von gehärtetem Stahl.

## CTCP220
BLACKSTAR™

HC-P20 | HC-K20 | ● ●

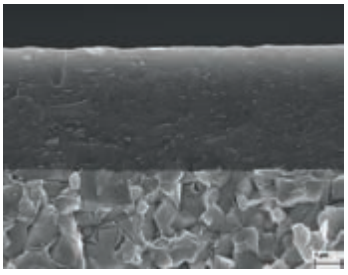


**Spezifikation:**
Zusammensetzung: Co 8,0%; Mischkarbide 2,0%; WC Rest | Korngröße: 1-2 µm | Härte: $HV_{30}$ 1500 | Schichtsystem: CVD TiCN-$Al_2O_3$

**Einsatzempfehlung:**
Die verschleißfeste Sorte für die Trockenbearbeitung von Stählen.

## CTPP225
SILVERSTAR™

HC-P25 | HC-K25 | ● ●



**Spezifikation:**
Zusammensetzung: Co 8,0%; Mischkarbide 2,0%; WC Rest | Korngröße: 1-2 µm | Härte: $HV_{30}$ 1500 | Schichtsystem: PVD TiAlTaN

**Einsatzempfehlung:**
Die verschleißfeste Sorte für die Nassbearbeitung von Stählen.

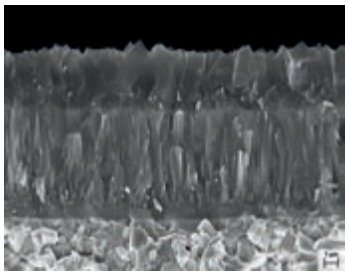
# Sortenbeschreibung



## CTCP230
BLACKSTAR™

HC-P30 | HC-K25 | HC-M25

● ● ○



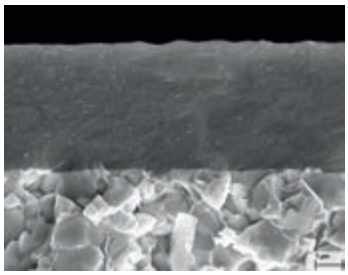
**Spezifikation:**
Zusammensetzung: Co 10,5%; Mischkarbide 2,0%; WC Rest | Korngröße: 1-2 µm | Härte: $HV_{30}$ 1400 | Schichtsystem: CVD TiCN-$Al_2O_3$

**Einsatzempfehlung:**
Die erste Wahl für die Trockenbearbeitung von Stählen bei hohen Schnittdaten.

## CTPP235
SILVERSTAR™

HC-P35 | HC-M30

● ○



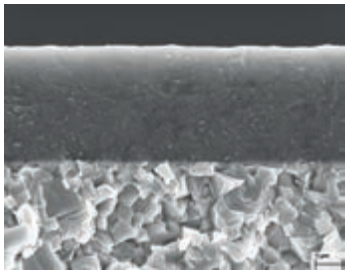
**Spezifikation:**
Zusammensetzung: Co 10,5%; Mischkarbide 2,0%; WC Rest | Korngröße: 1-2 µm | Härte: $HV_{30}$ 1400 | Schichtsystem: PVD TiAlTaN

**Einsatzempfehlung:**
Besonders geeignet für die Nassbearbeitung von Stählen.

## CTPM225
SILVERSTAR™

HC-M25 | HC-P25

● ○



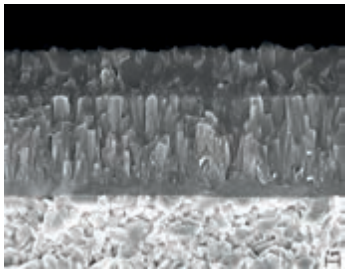
**Spezifikation:**
Zusammensetzung: Co 9,0%; Mischkarbide 0,75%; WC Rest | Korngröße: 0,7-1 µm | Härte: $HV_{30}$ 1590 | Schichtsystem: PVD TiAlTaN

**Einsatzempfehlung:**
Die verschleißfeste Wahl für die Bearbeitung austenitischer Stähle.

## CTCM235
BLACKSTAR™

HC-M35 | HC-P40

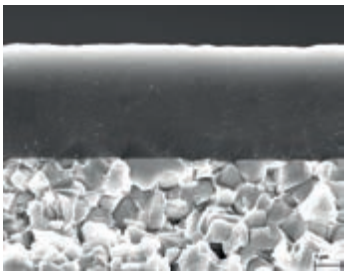
● ○



**Spezifikation:**
Zusammensetzung: Co 12,5%; Mischkarbide 2,0%; WC Rest | Korngröße: 1 µm | Härte: $HV_{30}$ 1380 | Schichtsystem: CVD TiCN-$Al_2O_3$

**Einsatzempfehlung:**
Geeignet für martensitische Stahlwerkstoffe und die zähe Alternative in der allgemeinen Stahlbearbeitung.

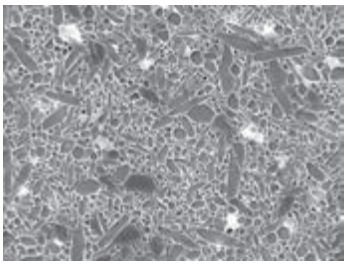
| **CTPM240**<br>SILVERSTAR™ | HC-M40 \| HC-P40 | ● ○ |
|---|---|---|



**Spezifikation:**
Zusammensetzung: Co 12,5%; Mischkarbide 2,0%; WC Rest | Korngröße: 1 $\mu$m | Härte: $HV_{30}$ 1380 | Schichtsystem: PVD TiAlTaN

**Einsatzempfehlung:**
Die erste Wahl für die Bearbeitung austenitischer Stähle.

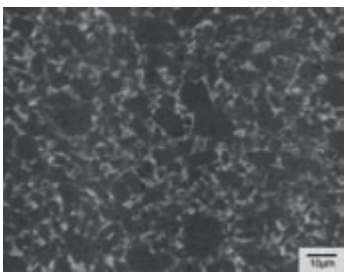
| **CTN3105** | CN-K05 | ● |
|---|---|---|



**Spezifikation:**
Zusammensetzung: β - $Si_3N_4$ | Korngröße: fein | Härte: $HV_{10}$ 1620

**Einsatzempfehlung:**
Universelle Siliziumnitrid-Sorte zur Gussbearbeitung.

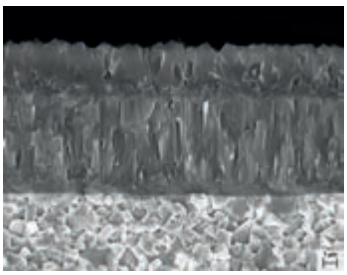
| **CTL3215** | BC-K10 \| BC-H10 | ● ○ |
|---|---|---|



**Spezifikation:**
Zusammensetzung: Kubisches Bornitrid (CBN) | 85 Vol.% + Bindephase metallisch | Schichtsystem: PVD

**Einsatzempfehlung:**
Kubisches Bohrnitrid beschichtet mit sehr guter Schneidenzähigkeit und guter Verschleißfestigkeit.

| **CTCK215**<br>BLACKSTAR™ | HC-K15 | ● |
|---|---|---|



**Spezifikation:**
Zusammensetzung: Co 6,0%; Mischkarbide 2,0%; WC Rest | Korngröße: 1 $\mu$m | Härte: $HV_{30}$ 1630 | Schichtsystem: CVD TiCN-$Al_2O_3$

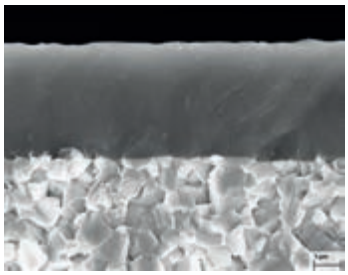
**Einsatzempfehlung:**
Die erste Wahl für die Bearbeitung von Gusswerkstoffen bei hohen Schnittgeschwindigkeiten.

# Sortenbeschreibung



## CTPK220
SILVERSTAR™

HC-K20 | ●

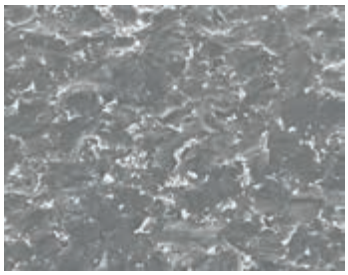


**Spezifikation:**
Zusammensetzung: Co 6,0%; Mischkarbide 2,0%; WC Rest | Korngröße: 1 µm | Härte: $HV_{30}$ 1630 | Schichtsystem: PVD TiAlTaN

**Einsatzempfehlung:**
Optimal für die Bearbeitung von hochfesten Gusswerkstoffen im zäheren Anwendungsbereich.

## CTD4205

DP-N05 | ●

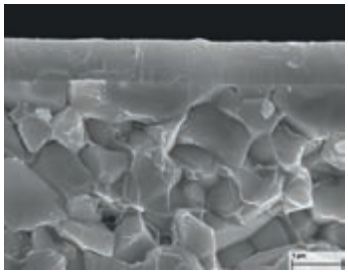


**Spezifikation:**
Zusammensetzung: Polykristalliner Diamant (PKD) | Korngröße: ~ 25 µm | Schichtsystem: CVD TiCN-$Al_2O_3$ Multilayer

**Einsatzempfehlung:**
Polykristaline Diamant-Sorte für die Bearbeitung von Nichteisenmetallen und nicht-metallischen Werkstoffen.

## AMZ

HC-N10 | HC-P10 | HC-K10 | ● ○ ○

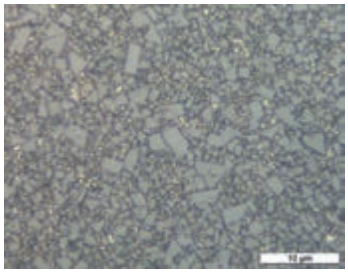


**Spezifikation:**
Zusammensetzung: Co 6%; WC Rest | Korngröße: 1 µm | Härte: $HV_{30}$ 1630 | Schichtsystem: PVD TiAlN

**Einsatzempfehlung:**
Die beschichtete Hartmetallsorte für die Aluminiumzerspanung.

## H216T

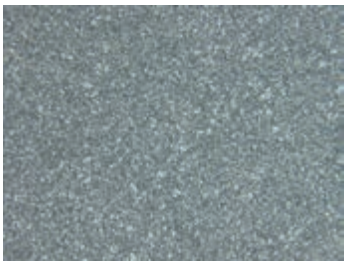
HW-N15 | HW-K15 | ● ●



**Spezifikation:**
Zusammensetzung: Co 6,0%; WC Rest | Korngröße: 1 µm | Härte: $HV_{30}$ 1630

**Einsatzempfehlung:**
Die unbeschichtete Hartmetallsorte für die Bearbeitung von Aluminium und anderen Nichteisenmetallen.

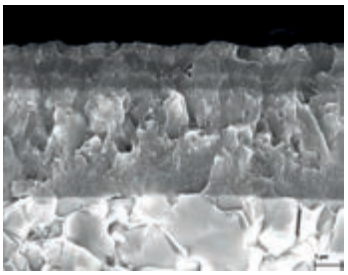
| CTW4615 | HW-N15 \| HW-K15 | ● ● |
|---|---|---|



**Spezifikation:**
Zusammensetzung: Co 6,0%; WC Rest | Korngröße: 1 $\mu$m | Härte: $HV_{30}$ 1630

**Einsatzempfehlung:**
Unbeschichtete Hartmetallsorte für die Bearbeitung von Nichteisenmetallen

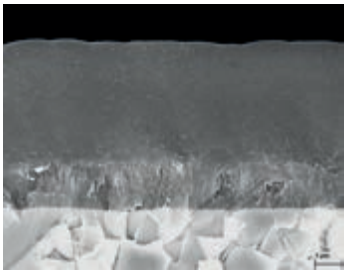
| CTC5235 | HC-S30 \| HC-M35 | ● ○ |
|---|---|---|



**Spezifikation:**
Zusammensetzung: 10.0% Binder; WC Rest | Korngröße: 2 $\mu$m | Härte: $HV_{30}$ 1330 | Schichtsystem: CVD TiCN-$Al_2O_3$ Multilayer

**Einsatzempfehlung:**
Insbesondere geeignet für die Bearbeitung von warmfesten Stählen und Eisenbasislegierungen.

| CTC5240 | HC-S40 | ● |
|---|---|---|



**Spezifikation:**
Zusammensetzung: 10.0% Binder; WC Rest | Korngröße: 2 $\mu$m | Härte: $HV_{30}$ 1330 | Schichtsystem: CVD TiN-$TiB_2$

**Einsatzempfehlung:**
Empfohlen zur Bearbeitung von Titanwerkstoffen



## Planfräsen


| | | |
|---|---|---|
|  | System MaxiMill 274 | B32-B49 |
|  | System MaxiMill 270 | B52-B62 |
|  | System MaxiMill 273 | B64-B73 |
|  | System MaxiMill 271 | B76-B80 |
|  | System MaxiMill HFC | B82-B96 |
|  | System MaxiMill HEC | B98-B104 |
|  | System MaxiMill HDM | B106-B108 |


## Eckfräsen


| | | |
|---|---|---|
|  | System MaxiMill 211 | B110-B131 |
|  | System MaxiMill 490 | B134-B145 |
|  | System MaxiMill HSC/HPC | B148-B161 |
|  | System MaxiMill HPC | B164-B172 |


## Formfräsen


| | | |
|---|---|---|
|  | System MaxiMill 251 | B174-B183 |
|  | System MaxiMill 252 | B186-B191 |


## Profilfräsen


| | | |
|---|---|---|
|  | System MaxiMill 272 / CKF / CNF / CZF | B194-B202 |


## Kassettenfräsen

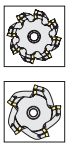
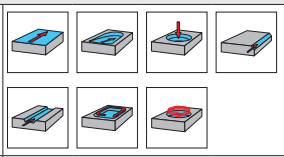
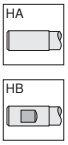
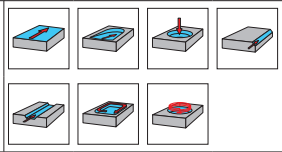
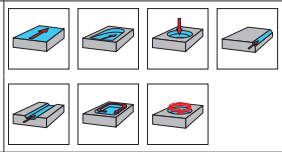
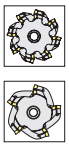
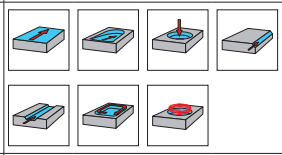
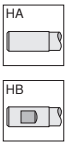
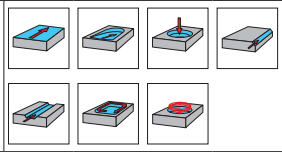
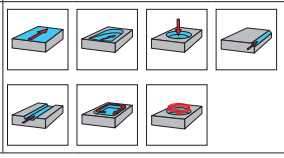
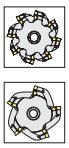
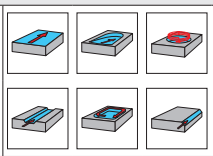
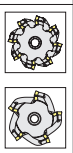
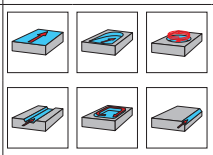
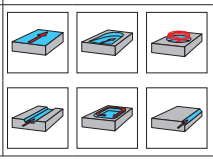

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|---|---|---|
|  | System, MaxiMill A260 | B204-B226 |

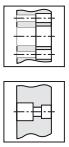
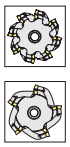
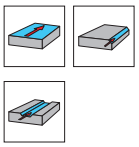
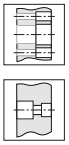
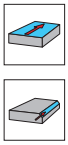
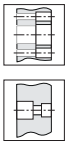
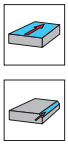
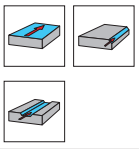
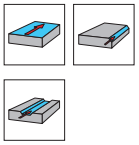
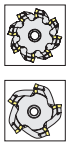
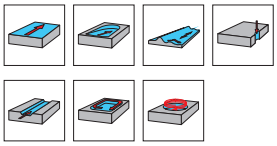
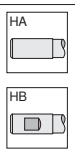
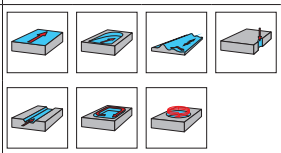
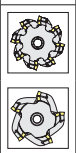
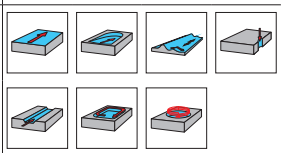

## Sonstige Wendeplatten


| | | |
|---|---|---|
|  | Sonstige Wendeplatten | B228-B233 |

# Übersicht

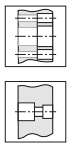
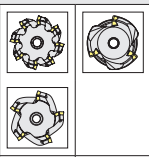
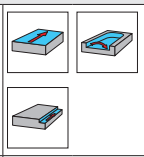
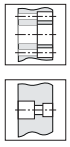
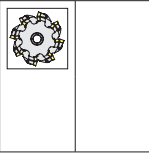
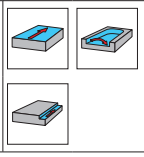
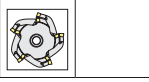
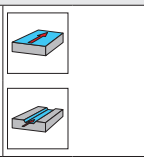
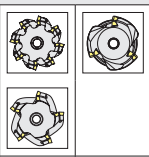
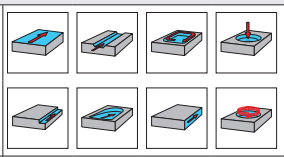
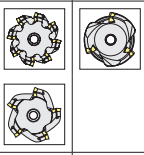
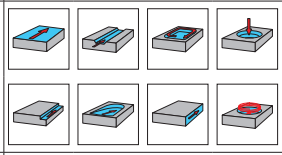
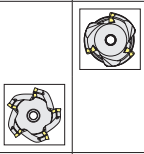
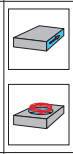
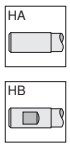
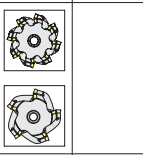
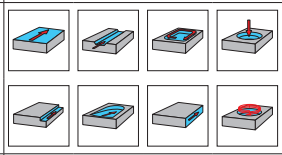
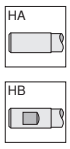
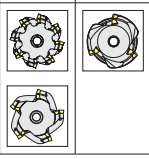
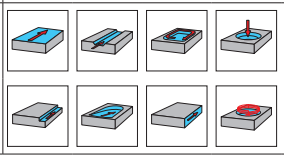


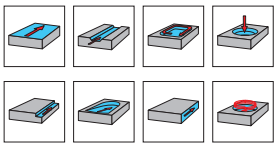
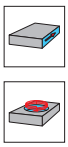
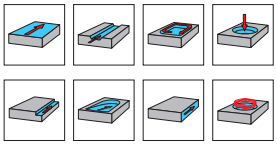
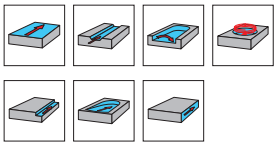
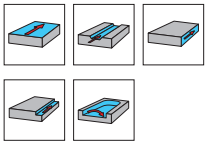
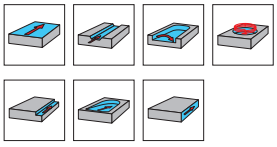
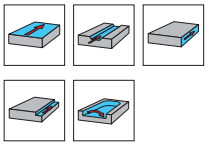
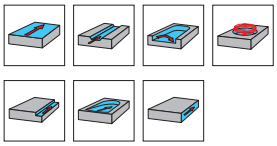
| Werkzeugtyp | | Max. Schnitttiefe [mm] | Nenndurchmesser [mm] | Zähnezahl | Aufnahme | Innenkühlung | Teilung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|
| 45° | **Planfräser, MaxiMill 274** | | | | | | | | |
| A274..OF |  | 3 | 3,2 - 16,0 | Z3 - Z14 |  |  |  |  | B34 |
| C274..OF |  | 2,50 | 2,0 - 3,2 | Z3 - Z5 |  |  |  |  | B35 |
| G274..OF |  | 2,50 | 2,0 - 3,2 | Z3 - Z5 |  |  |  |  | B36 |
| A274..SF |  | 6 | 3,9 - 17,1 | Z3 - Z14 |  |  |  |  | B43 |
| C274..SF |  | 3,80 | 2,7 - 4,0 | Z3 - Z5 |  |  |  |  | B44 |
| G274..SF |  | 3,80 | 2,7 - 4,0 | Z3 - Z5 |  |  |  |  | B45 |
| 45° | **Planfräser, MaxiMill 270** | | | | | | | | |
| A270..09 |  | 4 | 3,2 - 16,0 | Z3 - Z14 |  |  |  |  | B57 |
| A270..12 |  | 6 | 3,2 - 16,0 | Z3 - Z12 |  |  |  |  | B58 |
| C270 |  | 4 | 0,6 - 3,2 | Z1 - Z5 |  |  |  |  | B59 |

| Werkzeugtyp | | Max. Schnitttiefe [mm] | Nenndurchmesser [mm] | Zähnezahl | Aufnahme | Innenkühlung | Teilung | | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|
| 45° | **Planfräser, MaxiMill 273** | | | | | | | | | |
| A273 |  | 3,50 | 4,0 - 16,0 | Z3 - Z14 |  |  |  | |  | B66 |
| A273..A |  | 3,50 | 8,0 - 31,5 | Z10 - Z40 |  | |  | |  | B67 |
| A273 |  | 3,50 | 8,0 - 31,5 | Z10 - Z40 |  | |  | |  | B68 |
| C273 |  | 6 | 3,2 - 4,0 | Z3 - Z4 |  |  |  | |  | B69 |
| 45° | **Planfräser, MaxiMill 271** | | | | | | | | | |
| A271 |  | 8,40 | 5,0 - 25,0 | Z4 - Z15 |  | |  | |  | B78 |
| | **Planfräser, MaxiMill HFC** | | | | | | | | | |
| AHFC |  | 2 | 3,2 - 10,0 | Z3 - Z8 |  |  |  | |  | B84 |
| CHFC |  | 2 | 1,6 - 3,5 | Z2 - Z5 |  |  |  | |  | B85 |
| GHFC |  | 2 | 1,6 - 3,5 | Z2 - Z5 |  |  |  |  |  | B86 |

# Übersicht

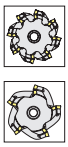
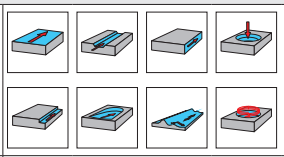
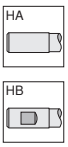
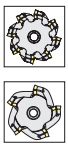
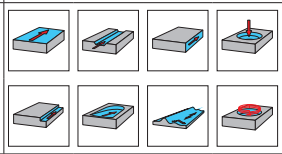
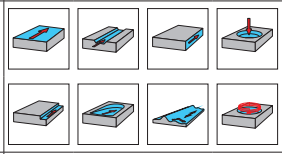
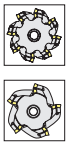
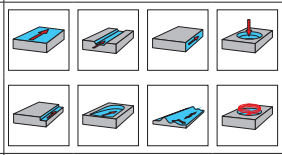
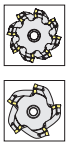
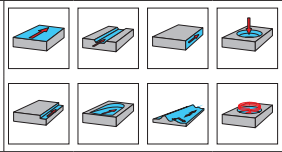
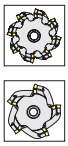
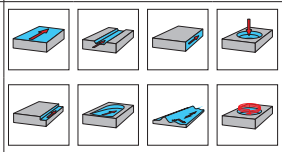
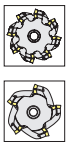
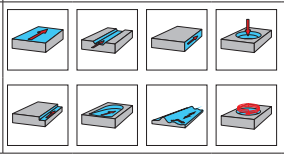


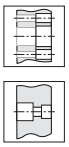
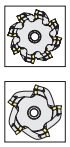
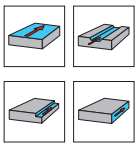
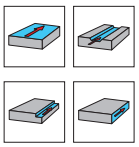
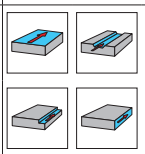
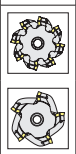
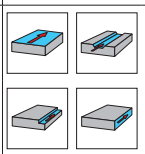
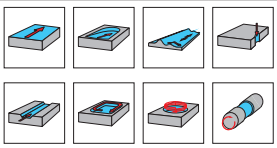
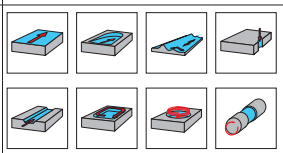
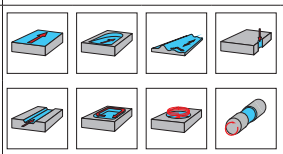
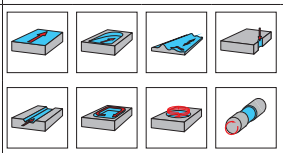
| Werkzeugtyp | | Max. Schnitttiefe [mm] | Nenndurchmesser [mm] | Zähnezahl | Aufnahme | Innenkühlung | Teilung | | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|
| 88° | **Planfräser, MaxiMill HEC** | | | | | | | | | |
| AHEC |  | 8 | 5,0 - 16,0 | Z4 - Z20 |  | |  |  |  | B101 |
| AHEC..A |  | 4 | 5,0 - 16,0 | Z6 - Z20 |  | |  | |  | B102 |
| 75° | **Planfräser, MaxiMill HDM** | | | | | | | | | |
| AHDM |  | 20 | 16,0 - 31,5 | Z8 - Z14 |  | |  | |  | B107 |
| 90° | **Eckfräser, MaxiMill 211** | | | | | | | | | |
| A211..07/11 |  | 10 | 3,2 - 12,5 | Z4 - Z14 |  |  |  |  |  | B113 |
| A211..15/20 |  | 19 | 4,0 - 16,0 | Z3 - Z12 |  |  |  |  |  | B114 |
| A211..K |  | 75,50 | 4,0 - 8,0 | Z3 - Z5 |  |  |  |  |  | B115 |
| C211..07 |  | 6 | 1,0 - 3,2 | Z1 - Z8 |  |  |  | |  | B116 |
| C211..11 |  | 10 | 1,2 - 4,0 | Z1 - Z6 |  |  |  |  |  | B117 |

| Werkzeugtyp | | Max. Schnitttiefe [mm] | Nenndurchmesser [mm] | Zähnezahl | Aufnahme | Innenkühlung | Teilung | | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|
| 90° | **Eckfräser, MaxiMill 211** | | | | | | | | | |
| C211..15 |  | 14 | 2,5 - 4,0 | Z2 - Z4 | HA<br>HB | IC | | |  | B118 |
| C211..K |  | 50,50 | 2,5 - 5,0 | Z2 - Z4 | HB | IC | | |  | B119 |
| G211 |  | 14 | 1,6 - 4,0 | Z2 - Z8 | GS | IC | | |  | B120 |
| 90° | **Eckfräser, MaxiMill 490** | | | | | | | | | |
| A490..09 |  | 10,70 | 4,0 - 12,5 | Z4 - Z10 | | IC | | |  | B137 |
| A490..K..09 |  | 41 | 4,0 - 6,3 | Z3 - Z5 | | | | |  | B138 |
| C490..12 |  | 10,70 | 2,5 - 4,0 | Z2 - Z4 | HA<br>HB | IC | | |  | B139 |
| C490..K..09 |  | 41 | 4,0 - 4,0 | Z3 - Z3 | HB | | | |  | B140 |
| G490..09 |  | 10,70 | 2,5 - 4,0 | Z3 - Z4 | GS | IC | | |  | B141 |

# Übersicht

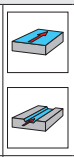
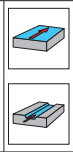
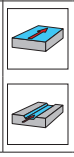
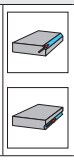


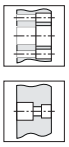
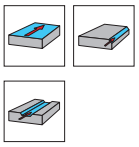
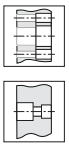
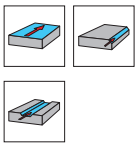
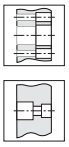
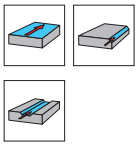
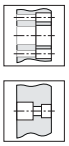
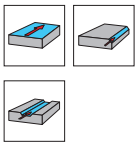
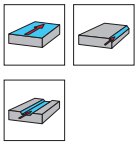
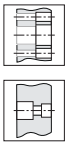
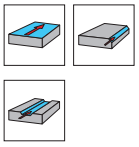
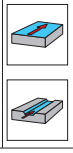
| Werkzeugtyp | | Max. Schnitt-tiefe [mm] | Nenndurch-messer [mm] | Zähnezahl | Aufnahme | Innenkühlung | Teilung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|
|  | Eckfräser, MaxiMill HSC/HPC | | | | | | | | |
| AHSC |  | 18 | 4,0 - 12,5 | Z3 - Z6 |  |  |  |  | B150 |
| CHSC |  | 18 | 1,6 - 3,2 | Z2 - Z5 |  |  |  |  | B151 |
| GHSC |  | 18 | 1,6 - 4,0 | Z2 - Z3 |  |  |  |  | B152 |
| MHSC |  | 18 | 2,5 - 5,0 | Z2 - Z4 |  |  |  |  | B153 |
| AHPC..19 |  | 18 | 4,0 - 6,3 | Z3 - Z4 |  |  |  |  | B155 |
| CHPC..19 |  | 18 | 2,2 - 3,2 | Z2 - Z3 |  |  |  |  | B156 |
| MHPC..19 |  | 18 | 2,5 - 5,0 | Z2 - Z3 |  |  |  |  | B157 |

| Werkzeugtyp | | Max. Schnitttiefe [mm] | Nenndurchmesser [mm] | Zähnezahl | Aufnahme | Innenkühlung | Teilung | | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|
| 90° | **Eckfräser, MaxiMill HPC** | | | | | | | | | |
| AHPC..12 |  | 11 | 4,0 - 31,5 | Z4 - Z18 |  |  |  | |  | B167 |
| CHPC..04 |  | 4 | 2,0 - 4,0 | Z3 - Z6 |  |  |  | |  | B168 |
| GHPC..04 |  | 4 | 2,0 - 4,0 | Z3 - Z6 |  |  |  | |  | B169 |
| MHPC..12 |  | 11 | 4,0 - 16,0 | Z4 - Z12 |  |  |  | |  | B170 |
| | **Formfräser, MaxiMill 251** | | | | | | | | | |
| A251 |  | 6 | 2,8 - 8,8 | Z3 - Z10 |  |  |  | |  | B178 |
| A251 |  | 10 | 3,4 - 10,5 | Z4 - Z7 |  |  |  | |  | B179 |
| C251 |  | 6 | 0,5 - 2,5 | Z2 - Z6 |  |  |  | |  | B180 |
| G251 |  | 6 | 1,0 - 3,0 | Z2 - Z7 |  |  |  | |  | B181 |

# Übersicht

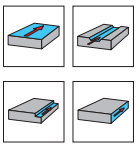
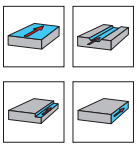
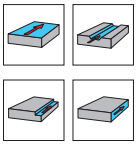
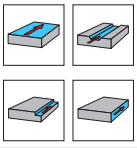
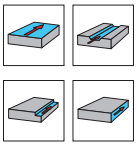
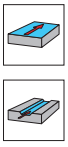


| Werkzeugtyp | | Max. Schnitttiefe [mm] | Nenndurchmesser [mm] | Zähnezahl | Aufnahme | Innenkühlung | Teilung | | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Formfräser, MaxiMill 252** | | | | | | | | | |
| A252 |  | 3 | 2,8 - 6,8 | Z4 - Z8 |  |  |  | |  | B188 |
| C252 |  | 2,50 | 2,2 - 2,2 | Z4 - Z4 |  |  |  | |  | B189 |
| G252 |  | 2,50 | 2,2 - 2,2 | Z4 - Z4 |  |  |  | |  | B190 |
| | **Profilfräser, MaxiMill 272** | | | | | | | | | |
| C272 |  | 4 | 0,6 - 2,5 | Z1 - Z3 |  |  |  | |  | B195 |
| | **Profilfräser, MaxiMill C KF** | | | | | | | | | |
| C KF |  | 16 | 1,2 - 3,2 | Z1 - Z1 |  |  |  | |  | B197 |
| | **Profilfräser, MaxiMill C NF** | | | | | | | | | |
| C NF |  | 20 | 1,8 - 4,8 | Z1 - Z2 |  |  |  | |  | B199 |

| Werkzeugtyp | | Max. Schnitttiefe [mm] | Nenndurchmesser [mm] | Zähnezahl | Aufnahme | Innenkühlung | Teilung | | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Profilfräser, MaxiMill C ZF** | | | | | | | | | |
| C ZF |  | 2,65 | 1,6 - 2,5 | Z3 - Z3 |   |   |  | |  | B201 |
| | **Kassettenfräser, MaxiMill 260 45°** | | | | | | | | | |
| A260..059 OF.. |  | 3 | 8,0 - 39,8 | Z5 - Z22 |  | |  | |  | B209 |
| A260..059 SF.. |  | 6 | 9,1 - 40,9 | Z5 - Z22 |  | |  | |  | B210 |
| A260..031/041 SD../XD.. |  | 6 | 8,0 - 39,8 | Z5 - Z22 |  | |  | |  | B211 |
| A260..029/032 SE../SD.. |  | 9 | 7,5 - 39,8 | Z5 - Z22 |  | |  | |  | B212 |
| A260..057 OA../XA.. |  | 3,50 | 8,2 - 40,0 | Z5 - Z22 |  | |  | |  | B213 |
| A260..058 SA.. |  | 8,40 | 7,7 - 39,5 | Z5 - Z22 |  | |  | |  | B214 |
| | **Kassettenfräser, MaxiMill 260 75°** | | | | | | | | | |
| A260..018 SP.. |  | 9 | 8,2 - 40,0 | Z5 - Z22 |  | |  | |  | B215 |

# Übersicht

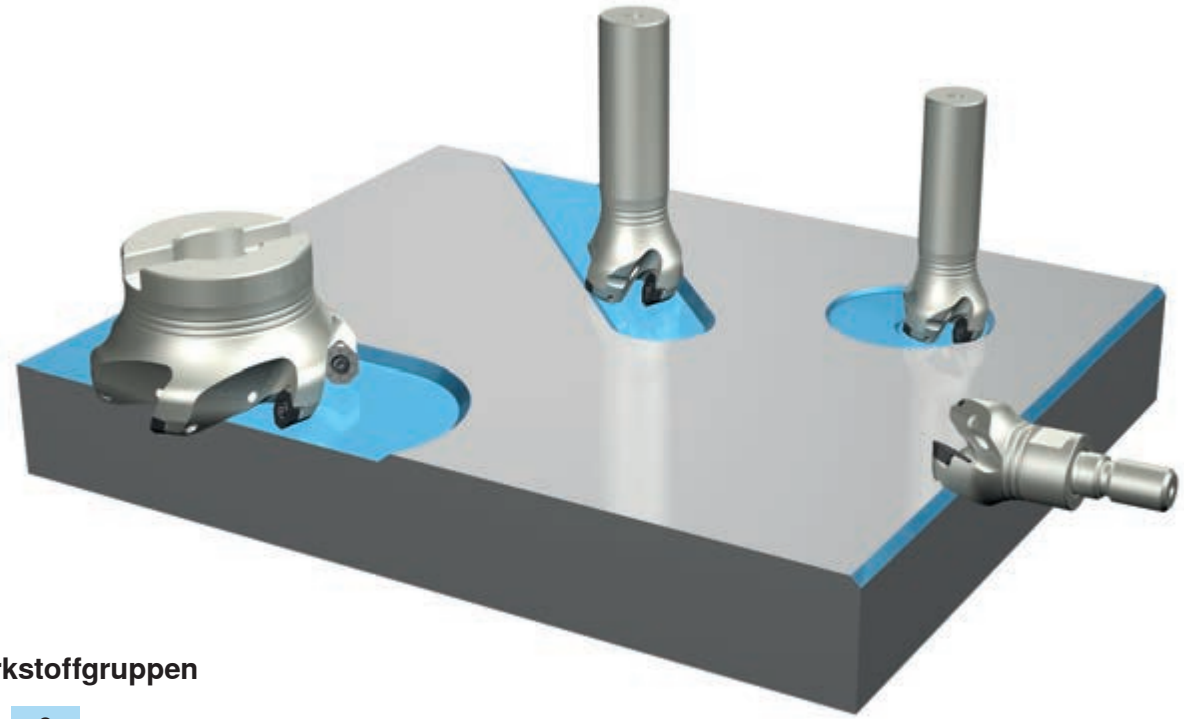


| Werkzeugtyp | | Max. Schnitttiefe [mm] | Nenndurchmesser [mm] | Zähnezahl | Aufnahme | Innenkühlung | Teilung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|
|  | **Kassettenfräser, MaxiMill 260 90°** | | | | | | | | |
| A260..042/051 AP../LD.. |  | 14 | 8,9 - 40,7 | Z5 - Z22 |  | |  |  | B216 |
| A260..039/055 SD.. |  | 10,70 | 8,9 - 40,7 | Z5 - Z22 |  | |  |  | B217 |
| A260..025 TP.. |  | 18 | 8,9 - 40,7 | Z5 - Z22 |  | |  |  | B218 |
| A260..026/040 LP../AD.. |  | 18 | 8,9 - 40,7 | Z5 - Z22 |  | |  |  | B219 |
| A260..054/056 XD.. |  | 14 | 8,9 - 40,7 | Z5 - Z22 |  | |  |  | B220 |
|  | **Kassettenfräser, MaxiMill 260 Rundplatte** | | | | | | | | |
| A260..052/053 RP.. |  | 8 | 8,0 - 39,8 | Z5 - Z22 |  | |  |  | B221 |


OF..0504../SF..1204..
100121445/3.2 Nm

## Geringer Leistungsbedarf, hohe Laufruhe, gute Oberfläche

- 4 oder 8 Schneidkanten kombiniert in einem System
- hochpositive Einbaulage



## Werkstoffgruppen

| | |
|---|---|
| P | ● |
| M | ● |
| K | ○ |
| N | ● |
| S | ● |
| H | |

## Einsatzmöglichkeiten


Planfräsen


Gassenfräsen


Schräges Eintauchen

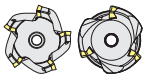

Auskammern


Axiales Eintauchen


Zirkulares Eintauchen


Fasfräsen

## Detailinformationen

| Teilung | Ø-Bereich | Schneidplatten |
|---|---|---|
|  | Ø 20 - 160 mm | OF..04..<br>OF..05..<br>SF..09..<br>SF..12.. |

# System MaxiMill 274

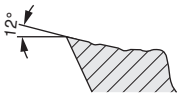
Spanleitstufenübersicht (OF..)



## -F10

- Hochpositive Geometrie
- Scharfe Schneidkante
- Erste Wahl für Nichteisenmetalle






$f_z$ [mm]

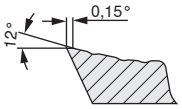
0,05 - 0,40

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| **CTW4615** | **CTW4615** | **CTW4615** |
| | | |
| | | |

## -F50

- Positive Geometrie
- Leichte Schruppbearbeitung
- Für labile Aufspannungen
- Erste Wahl für rostfreie Stahlwerkstoffe






$f_z$ [mm]

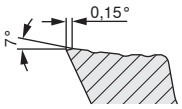
0,10 - 0,25

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP220** CTPP225 | CTCP230 **CTPP235** | |
| **CTCM235** CTPM225 | CTPM225 **CTPM240** | |
| | | |
| | | |
| **CTC5235** **CTC5240** | **CTC5235** **CTC5240** | **CTC5235** CTC5240 |
| | | |

## -M50

- Universelle Geometrie
- Leichte bis mittlere Schruppbearbeitung
- Erste Wahl für allgemeine Stahlwerkstoffe





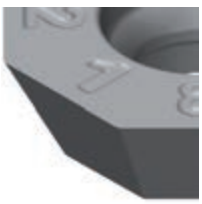

$f_z$ [mm]

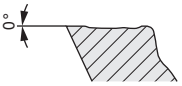
0,10 - 0,30

| Bearbeitungsbedingungen | | |
|---|---|---|
| | **CTCP230** CTPP235 | CTCP230 **CTPP235** |
| | **CTPM240** | **CTPM240** |
| | **CTCK215** | **CTCK215** |
| | | |
| | | |
| | | |

## EN

- Universelle Geometrie
- Geringe Schnittkraft
- Erste Wahl für gute Ebenheiten

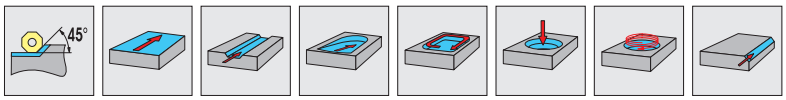




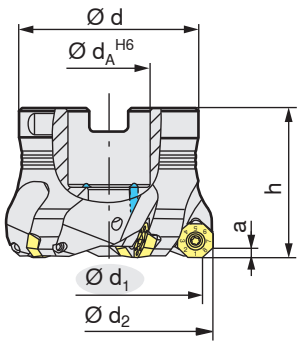

$f_z$ [mm]

0,10 - 0,25

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| CTC5235 **CTC5240** | CTC5235 **CTC5240** | |
| | | |





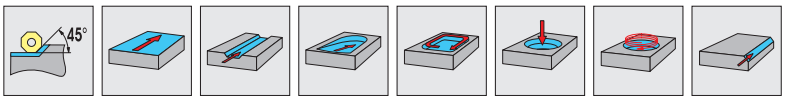

| $d_1$ [mm] | Type, Bezeichnung | $d_2$ [mm] | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | A274.32.R.05-09 | 37,7 | 40 | 38 | 16 | 2,5 | 5 | 32.200 | 1,6 | OF.. 0403.. | E01 |
| 40 | A274.40.R.04-09 | 45,7 | 40 | 38 | 16 | 2,5 | 4 | 28.400 | 1,6 | OF.. 0403.. | E01 |
| 40 | A274.40.R.06-09 | 45,7 | 40 | 38 | 16 | 2,5 | 6 | 28.400 | 1,6 | OF.. 0403.. | E01 |
| 50 | A274.50.R.05-09 | 55,7 | 40 | 48 | 22 | 2,5 | 5 | 25.200 | 1,6 | OF.. 0403.. | E02 |
| 50 | A274.50.R.07-09 | 55,7 | 40 | 48 | 22 | 2,5 | 7 | 25.200 | 1,6 | OF.. 0403.. | E02 |
| 63 | A274.63.R.06-09 | 68,7 | 40 | 48 | 22 | 2,5 | 6 | 22.300 | 1,6 | OF.. 0403.. | E02 |
| 63 | A274.63.R.09-09 | 68,7 | 40 | 48 | 22 | 2,5 | 9 | 22.300 | 1,6 | OF.. 0403.. | E02 |
| 80 | A274.80.R.07-09 | 85,7 | 50 | 58 | 27 | 2,5 | 7 | 19.600 | 1,6 | OF.. 0403.. | E02 |
| 80 | A274.80.R.11-09 | 85,7 | 50 | 58 | 27 | 2,5 | 11 | 19.600 | 1,6 | OF.. 0403.. | E02 |
| 100 | A274.100.R.09-09 | 105,7 | 50 | 78 | 32 | 2,5 | 9 | 17.500 | 1,6 | OF.. 0403.. | E02 |
| 100 | A274.100.R.13-09 | 105,7 | 50 | 78 | 32 | 2,5 | 13 | 17.500 | 1,6 | OF.. 0403.. | E02 |
| 125 | A274.125.R.12-09 | 130,7 | 63 | 88 | 40 | 2,5 | 12 | 15.600 | 1,6 | OF.. 0403.. | E02 |
| 40 | A274.40.R.03-12 | 48 | 40 | 38 | 16 | 3 | 3 | 21.600 | 3,2 | OF.. 0504.. | E03 |
| 40 | A274.40.R.04-12 | 48 | 40 | 38 | 16 | 3 | 4 | 21.600 | 3,2 | OF.. 0504.. | E03 |
| 50 | A274.50.R.04-12 | 58,1 | 40 | 43 | 22 | 3 | 4 | 19.100 | 3,2 | OF.. 0504.. | E03 |
| 50 | A274.50.R.05-12 | 58,1 | 40 | 43 | 22 | 3 | 5 | 19.100 | 3,2 | OF.. 0504.. | E03 |
| 63 | A274.63.R.05-12 | 71,1 | 40 | 48 | 22 | 3 | 5 | 16.800 | 3,2 | OF.. 0504.. | E03 |
| 63 | A274.63.R.06-12 | 71,1 | 40 | 48 | 22 | 3 | 6 | 16.800 | 3,2 | OF.. 0504.. | E03 |
| 80 | A274.80.R.06-12 | 88 | 50 | 58 | 27 | 3 | 6 | 14.800 | 3,2 | OF.. 0504.. | E03 |
| 80 | A274.80.R.08-12 | 88 | 50 | 58 | 27 | 3 | 8 | 14.800 | 3,2 | OF.. 0504.. | E03 |
| 100 | A274.100.R.08-12 | 108 | 50 | 78 | 32 | 3 | 8 | 13.100 | 3,2 | OF.. 0504.. | E03 |
| 100 | A274.100.R.10-12 | 108 | 50 | 78 | 32 | 3 | 10 | 13.100 | 3,2 | OF.. 0504.. | E03 |
| 125 | A274.125.R.09-12 | 133 | 63 | 88 | 40 | 3 | 9 | 11.700 | 3,2 | OF.. 0504.. | E03 |
| 125 | A274.125.R.12-12 | 133 | 63 | 88 | 40 | 3 | 12 | 11.700 | 3,2 | OF.. 0504.. | E03 |
| 160 | A274.160.R.11-12 | 167,9 | 63 | 98 | 40 | 3 | 11 | 10.300 | 3,2 | OF.. 0504.. | E03 |
| 160 | A274.160.R.14-12 | 167,9 | 63 | 98 | 40 | 3 | 14 | 10.300 | 3,2 | OF.. 0504.. | E03 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 11036880 | 11513168 | 11254598 | 8095003900 | 4425 |
| E02 | | 11513168 | 11254598 | 8095003900 | |
| E03 | | 11803957 | 11450867 | 8095012000 | |

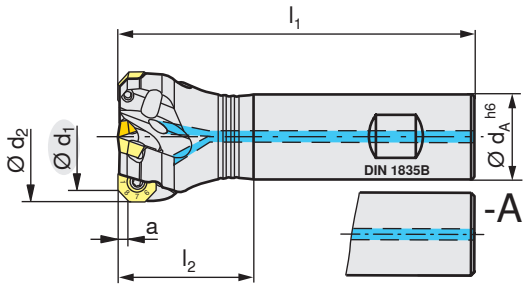
B276

# System MaxiMill 274

C274 OF..



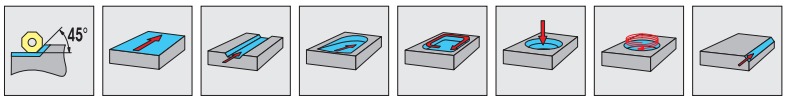


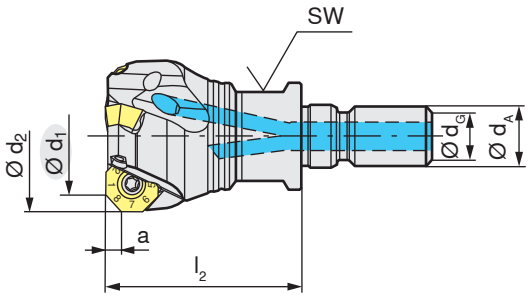

| d1 [mm] | Type, Bezeichnung | d2 [mm] | l1 [mm] | l2 [mm] | dA [mm] | a [mm] | z | nmax [min-1] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | C274.20.R.03-09-A-25 | 25,6 | 77 | 25 | 20 | 2,5 | 3 | 42.600 | 1,6 | OF.. 0403.. | E01 |
| 20 | C274.20.R.03-09-B-25 | 25,6 | 77 | 25 | 20 | 2,5 | 3 | 42.600 | 1,6 | OF.. 0403.. | E01 |
| 25 | C274.25.R.04-09-A20-32 | 30,7 | 84 | 32 | 20 | 2,5 | 4 | 37.200 | 1,6 | OF.. 0403.. | E01 |
| 25 | C274.25.R.04-09-B20-32 | 30,7 | 84 | 32 | 20 | 2,5 | 4 | 37.200 | 1,6 | OF.. 0403.. | E01 |
| 32 | C274.32.R.05-09-A25-40 | 37,7 | 98 | 40 | 25 | 2,5 | 5 | 32.200 | 1,6 | OF.. 0403.. | E01 |
| 32 | C274.32.R.05-09-B25-40 | 37,7 | 98 | 40 | 25 | 2,5 | 5 | 32.200 | 1,6 | OF.. 0403.. | E01 |

| | | | |
|---|---|---|---|
| E01 | 11513168 | 11254598 | 8095003900 |

B276






| d1 [mm] | Type, Bezeichnung | d2 [mm] | l2 [mm] | dA [mm] | dG [mm] | a [mm] | z | nmax [min-1] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | G274.20.R.03-09 | 25,6 | 35 | 12,5 | 12 | 2,5 | 3 | 42.600 | 1,6 | OF.. 0403.. | E01 |
| 25 | G274.25.R.04-09 | 30,6 | 35 | 12,5 | 12 | 2,5 | 4 | 37.200 | 1,6 | OF.. 0403.. | E01 |
| 32 | G274.32.R.05-09 | 37,7 | 35 | 17,0 | 16 | 2,5 | 5 | 32.200 | 1,6 | OF.. 0403.. | E01 |

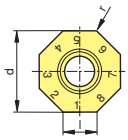
| | | | |
|---|---|---|---|
| E01 | 11513168 | 11254598 | 8095003900 |

B276

# System MaxiMill 274

OF..

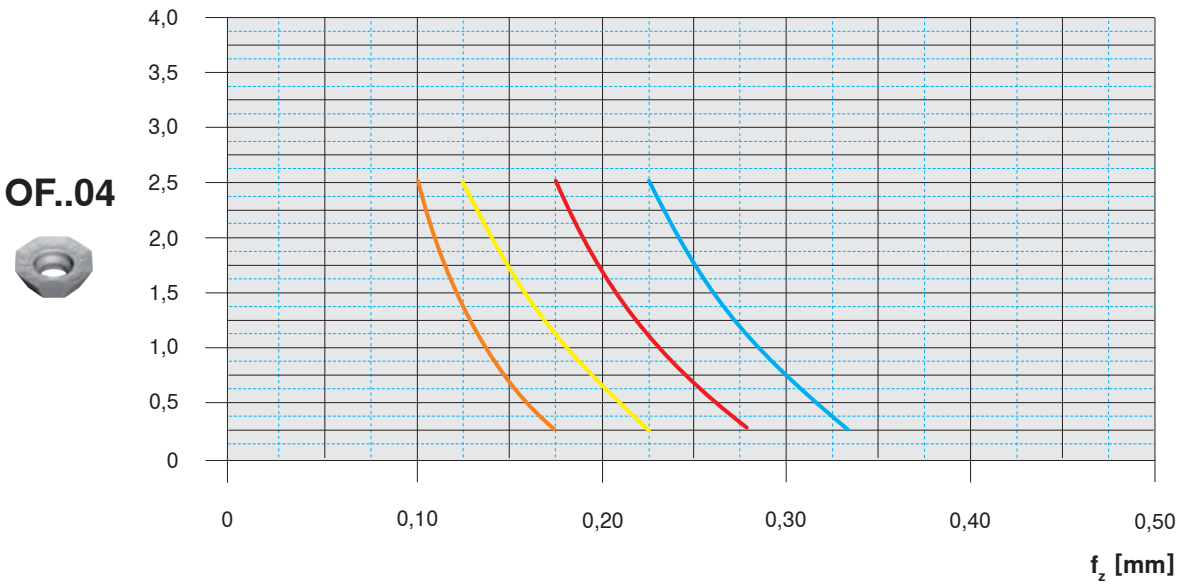
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | ○ | | | ○ | | | | | | | | | | |
| | | M | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | ● | | | | | | | | | | |
| | | K | | ○ | ● | ● | ● | | | | | ● | ● | ● | ● | | ○ | ● | ● | ○ | | ● | | | | | | | | |
| | | N | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | | | |
| | | S | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | |
| | | H | | | | | | | | | | | ○ | | | | | | | | | ● | | | | | | | | |
| -F10 |  | OFHT 040305FN-F10 | | | | | | | | | | | | | | | | | ● | | | | | | | 9,52 | 3,94 | 3,18 | 0,50 | 3,35 |
| -F50 |  | OFHT 040305SN-F50 | | | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | ● | ● | | | | | 9,52 | 3,94 | 3,18 | 0,50 | 3,35 |
| | | OFHT 050410SN-F50 | | | | | ● | ● | ● | ● | ● | | | | | | | | | ● | | | | | | 12,70 | 4,40 | 4,76 | 1,00 | 4,80 |
| -M50 |  | OFHT 040305SN-M50 | | | | | ● | ● | | | ● | | | ● | | | | | | | | | | | | 9,52 | 3,94 | 3,18 | 0,50 | 3,35 |
| | | OFHT 050410SN-M50 | | | | | | | ● | | | | | | | | | | | | | | | | | 12,70 | 4,40 | 4,76 | 1,00 | 4,80 |
| OFHW |  | OFHW 040302EN | | | | | | | | | | | | | | | | | | ● | ● | | | | | 9,52 | 3,94 | 3,18 | 0,20 | 3,35 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d | l | s | r | $d_1$ |



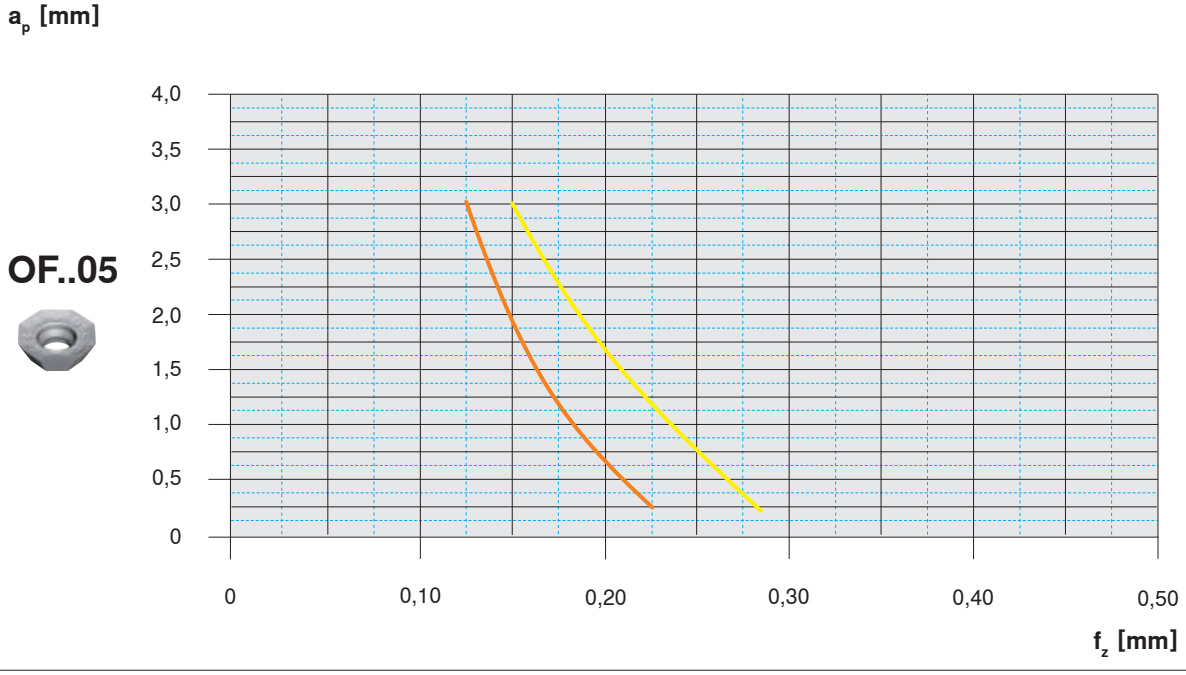

B12-B18
B33
B21
B257-B266

| Werkstoff | | | | Wendeplatte | | $v_c$ [m/min] | Kühlung |
|---|---|---|---|---|---|---|---|
| ▼ | 1.2312 | 40CrMnMoS8-6 | 1.000 N/mm² | OFHT 040305SN-M50 | CTPP235 | 200 | trocken |
| ▼ | 1.4571 | X6CrNiMoTi17-12-2 | 600 N/mm² | OFHT 040305SN-F50<br>OFHT 050410SN-F50 | CTPM240 | 180 | trocken |
| ▼ | 5.1301 | EN-GJL-250 | HB 180 | OFHT 040305SN-M50 | CTCK215 | 250 | trocken |
| ▼ | 2.4856 | Inconel 625 | 1.450 N/mm² | OFHT 040305SN-F50<br>OFHT 050410SN-F50 | CTC5235 | 35 | Emulsion |

**OF..04**




**OF..05**



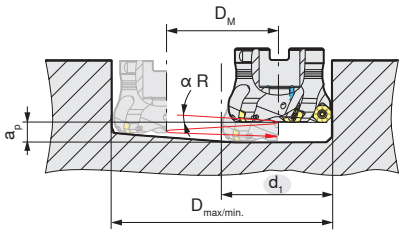

Weitere Sorten und Geometrien können für den erfolgreichen Anwendungsfall verwendet werden und sind im jeweiligen Anwendungsbereich des Systems abgebildet.

# System MaxiMill 274

Einsatzdaten OF..04..



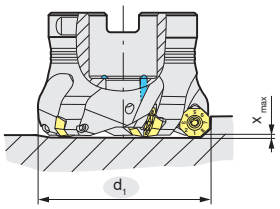
## zirkulares Eintauchen




**$D_{max}$ [mm] = größter Durchmesser für ebene Bodenfläche**
**$D_{min}$ [mm] = kleinster Bohrungsdurchmesser**
**$D_M = D_{max} - d_1$ bzw. $D_{min} - d_1$**

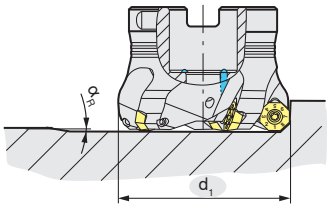
| $d_1$ [mm] | $D_{max\ /\ r\ 0,8}$ [mm] | $D_{min}$ [mm] | $\alpha_{R\ max}$ [°] |
|---|---|---|---|
| **20** | 45 | 39 | 14,2 |
| **25** | 55 | 49 | 9,5 |
| **32** | 69 | 63 | 6,5 |
| **40** | 85 | 79 | 4,7 |
| **50** | 105 | 99 | 3,5 |
| **63** | 131 | 125 | 2,7 |
| **80** | 165 | 159 | 2 |
| **100** | 205 | 199 | 1,6 |
| **125** | 255 | 249 | 1,2 |
| $a_p$ [mm] = $D_M$ x π x tan $\alpha_R$ | | | |

## axiales Eintauchen



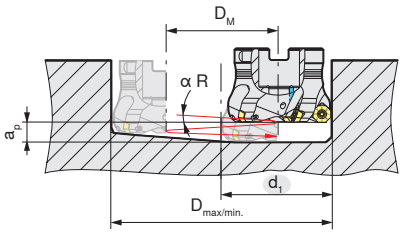

| $d_1$ [mm] | $X_{max}$ [mm] |
|---|---|
| **20** | 2,5 |
| **25** | 2,5 |
| **32** | 2,5 |
| **40** | 2,5 |
| **50** | 2,5 |
| **63** | 2,5 |
| **80** | 2,5 |
| **100** | 2,5 |
| **125** | 2,5 |

## schräges Eintauchen




| $d_1$ [mm] | $\alpha_R$ [°] |
|---|---|
| **20** | 14,2 |
| **25** | 9,5 |
| **32** | 6,5 |
| **40** | 4,7 |
| **50** | 3,5 |
| **63** | 2,7 |
| **80** | 2,0 |
| **100** | 1,6 |
| **125** | 1,2 |

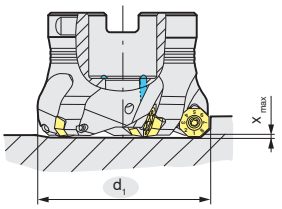
## zirkulares Eintauchen




**$D_{max}$ [mm] = größter Durchmesser für ebene Bodenfläche**
**$D_{min}$ [mm] = kleinster Bohrungsdurchmesser**
**$D_M = D_{max} - d_1$ bzw. $D_{min} - d_1$**

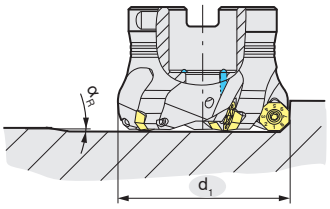
| $d_1$ [mm] | $D_{max\ /\ r\ 0,8}$ [mm] | $D_{min}$ [mm] | $\alpha_{R\ max}$ [°] |
|---|---|---|---|
| **32** | 87 | 79 | 1,4 |
| **40** | 107 | 99 | 1,1 |
| **50** | 133 | 125 | 0,9 |
| **63** | 167 | 159 | 0,7 |
| **80** | 207 | 199 | 0,5 |
| **100** | 257 | 249 | 0,4 |
| **125** | 327 | 319 | 0,3 |
| $a_p$ [mm] = $D_M$ x π x tan $\alpha_R$ | | | |

## axiales Eintauchen




| $d_1$ [mm] | $X_{max}$ [mm] |
|---|---|
| **32** | 2,8 |
| **40** | 2,2 |
| **50** | 1,9 |
| **63** | 1,8 |
| **80** | 1,1 |
| **100** | 1,4 |
| **125** | 1,4 |

## schräges Eintauchen




| $d_1$ [mm] | $\alpha_R$ [°] |
|---|---|
| **32** | 5,9 |
| **40** | 3,2 |
| **50** | 2,0 |
| **63** | 1,5 |
| **80** | 0,7 |
| **100** | 0,7 |
| **125** | 0,5 |

# System MaxiMill 274

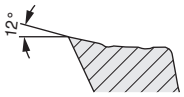
Spanleitstufenübersicht (SF..)



## -F10

- Hochpositive Geometrie
- Scharfe Schneidkante
- Erste Wahl für Nichteisenmetalle





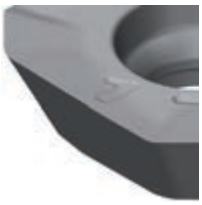

$f_z$ [mm]

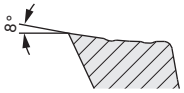
0,05 - 0,40

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| **CTW4615** | **CTW4615** | **CTW4615** |
| | | |
| | | |

## -F40

- Positive Geometrie
- Schlicht- und Schruppbearbeitung
- Für labile Aufspannungen
- Für hochwarmfeste Werkstoffe, Titan und Superlegierungen






$f_z$ [mm]

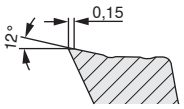
0,10 - 0,25

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| **CTC5240** | **CTC5240** | |
| | | |

## -F50

- Positive Geometrie
- Leichte Schruppbearbeitung
- Für labile Aufspannungen
- Erste Wahl für rostfreie Stahlwerkstoffe





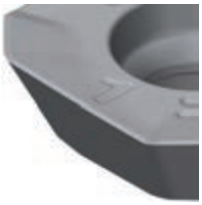

$f_z$ [mm]

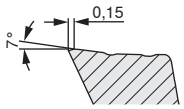
0,10 - 0,25

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| **CTCP220** CTPP225 | CTCP230 **CTPP235** | |
| **CTCM235** CTPM225 | CTPM225 **CTPM240** | |
| | | |
| | | |
| **CTC5235** | **CTC5235** | **CTC5235** |
| | | |

## -M50

- Universelle Geometrie
- Leichte bis mittlere Schruppbearbeitung
- Erste Wahl für allgemeine Stahlwerkstoffe





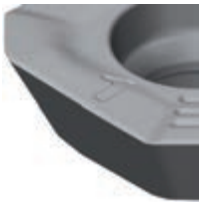

$f_z$ [mm]

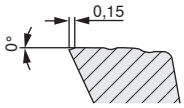
0,10 - 0,30

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | **CTCP230** CTPP235 | CTCP230 **CTPP235** |
| | **CTPM225** | **CTPM225** |
| | **CTCK215** | **CTCK215** |
| | | |
| | | |
| | | |

## -R50

- Stabile Geometrie
- Mittlere Schruppbearbeitung
- Für unterbrochene Schnitte
- Erste Wahl für Eisengusswerkstoffe





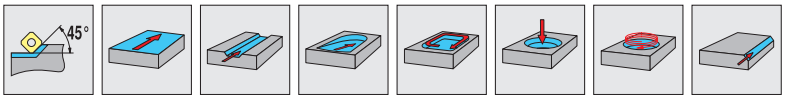

$f_z$ [mm]

0,10 - 0,35

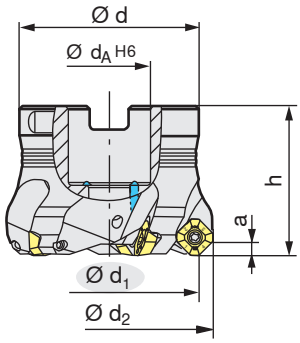
| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | **CTCK215**<br>CTPK220 | CTCK215<br>**CTPK220** |
| | | |
| | | |
| | | |

# System MaxiMill 274

A274 SF..



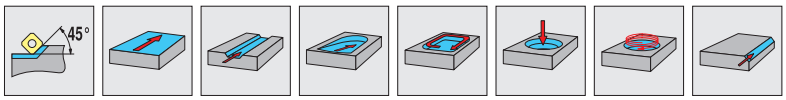


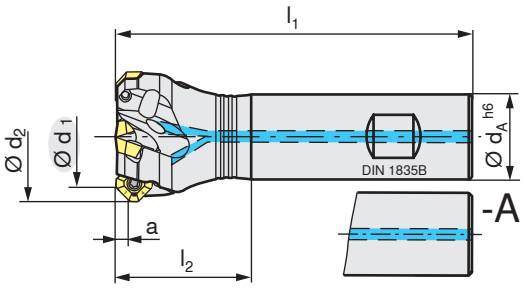

| $d_1$ [mm] | Type, Bezeichnung | $d_2$ [mm] | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 30,7 | A274.32.R.05-09 | 39,2 | 40,7 | 38 | 16 | 3,8 | 5 | 32.200 | 1,6 | SF.. 0903.. | E01 |
| 38,7 | A274.40.R.04-09 | 47,6 | 40,7 | 38 | 16 | 3,8 | 4 | 28.400 | 1,6 | SF.. 0903.. | E01 |
| 38,7 | A274.40.R.06-09 | 47,6 | 40,7 | 38 | 16 | 3,8 | 6 | 28.400 | 1,6 | SF.. 0903.. | E01 |
| 48,7 | A274.50.R.05-09 | 57,6 | 40,7 | 48 | 22 | 3,8 | 5 | 25.200 | 1,6 | SF.. 0903.. | E02 |
| 48,7 | A274.50.R.07-09 | 57,6 | 40,7 | 48 | 22 | 3,8 | 7 | 25.200 | 1,6 | SF.. 0903.. | E02 |
| 61,7 | A274.63.R.06-09 | 70,5 | 40,7 | 48 | 22 | 3,8 | 6 | 22.300 | 1,6 | SF.. 0903.. | E02 |
| 61,7 | A274.63.R.09-09 | 70,5 | 40,7 | 48 | 22 | 3,8 | 9 | 22.300 | 1,6 | SF.. 0903.. | E02 |
| 78,7 | A274.80.R.07-09 | 87,5 | 50,7 | 58 | 27 | 3,8 | 7 | 19.600 | 1,6 | SF.. 0903.. | E02 |
| 78,7 | A274.80.R.11-09 | 87,5 | 50,7 | 58 | 27 | 3,8 | 11 | 19.600 | 1,6 | SF.. 0903.. | E02 |
| 98,7 | A274.100.R.09-09 | 107,5 | 50,7 | 78 | 32 | 3,8 | 9 | 17.500 | 1,6 | SF.. 0903.. | E02 |
| 98,7 | A274.100.R.13-09 | 107,5 | 50,7 | 78 | 32 | 3,8 | 13 | 17.500 | 1,6 | SF.. 0903.. | E02 |
| 123,7 | A274.125.R.12-09 | 132,5 | 63,7 | 88 | 40 | 3,8 | 12 | 15.600 | 1,6 | SF.. 0903.. | E02 |
| 36,9 | A274.40.R.03-12 | 50,9 | 41,5 | 38 | 16 | 6,0 | 3 | 21.600 | 3,2 | SF.. 1204.. | E03 |
| 36,9 | A274.40.R.04-12 | 50,9 | 41,5 | 38 | 16 | 6,0 | 4 | 21.600 | 3,2 | SF.. 1204.. | E03 |
| 46,9 | A274.50.R.04-12 | 61 | 41,5 | 43 | 22 | 6,0 | 4 | 19.100 | 3,2 | SF.. 1204.. | E03 |
| 46,9 | A274.50.R.05-12 | 61 | 41,5 | 43 | 22 | 6,0 | 5 | 19.100 | 3,2 | SF.. 1204.. | E03 |
| 59,9 | A274.63.R.05-12 | 74 | 41,5 | 48 | 22 | 6,0 | 5 | 16.800 | 3,2 | SF.. 1204.. | E03 |
| 59,9 | A274.63.R.06-12 | 74 | 41,5 | 48 | 22 | 6,0 | 6 | 16.800 | 3,2 | SF.. 1204.. | E03 |
| 76,9 | A274.80.R.06-12 | 90,9 | 51,5 | 58 | 27 | 6,0 | 6 | 14.800 | 3,2 | SF.. 1204.. | E03 |
| 76,9 | A274.80.R.08-12 | 90,9 | 51,5 | 58 | 27 | 6,0 | 8 | 14.800 | 3,2 | SF.. 1204.. | E03 |
| 96,9 | A274.100.R.08-12 | 110,9 | 51,5 | 78 | 32 | 6,0 | 8 | 13.100 | 3,2 | SF.. 1204.. | E03 |
| 96,9 | A274.100.R.10-12 | 110,9 | 51,5 | 78 | 32 | 6,0 | 10 | 13.100 | 3,2 | SF.. 1204.. | E03 |
| 121,9 | A274.125.R.09-12 | 135,9 | 64,5 | 88 | 40 | 6,0 | 9 | 11.700 | 3,2 | SF.. 1204.. | E03 |
| 121,9 | A274.125.R.12-12 | 135,9 | 64,5 | 88 | 40 | 6,0 | 12 | 11.700 | 3,2 | SF.. 1204.. | E03 |
| 156,9 | A274.160.R.11-12 | 170,9 | 64,5 | 98 | 40 | 6,0 | 11 | 10.300 | 3,2 | SF.. 1204.. | E03 |
| 156,9 | A274.160.R.14-12 | 170,9 | 64,5 | 98 | 40 | 6,0 | 14 | 10.300 | 3,2 | SF.. 1204.. | E03 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 11036880 | 11513168 | 11254598 | 8095003900 | 4425 |
| E02 | | 11513168 | 11254598 | 8095003900 | |
| E03 | | 11803957 | 11450867 | 8095012000 | |

B276





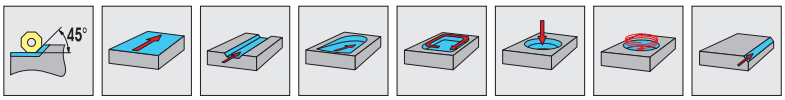

| d1 [mm] | Type, Bezeichnung | d2 [mm] | l1 [mm] | l2 [mm] | dA [mm] | a [mm] | z | nmax [min-1] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 18,9 | C274.20.R.03-09-A-25 | 27,4 | 77,7 | 25,7 | 20 | 3,8 | 3 | 42.600 | 1,6 | SF.. 0903.. | E01 |
| 18,9 | C274.20.R.03-09-B-25 | 27,4 | 77,7 | 25,7 | 20 | 3,8 | 3 | 42.600 | 1,6 | SF.. 0903.. | E01 |
| 23,8 | C274.25.R.04-09-A20-32 | 32,5 | 84,7 | 32,7 | 20 | 3,8 | 4 | 37.200 | 1,6 | SF.. 0903.. | E01 |
| 23,8 | C274.25.R.04-09-B20-32 | 32,5 | 84,7 | 32,7 | 20 | 3,8 | 4 | 37.200 | 1,6 | SF.. 0903.. | E01 |
| 30,7 | C274.32.R.05-09-A25-40 | 39,5 | 98,7 | 40,7 | 25 | 3,8 | 5 | 32.200 | 1,6 | SF.. 0903.. | E01 |
| 30,7 | C274.32.R.05-09-B25-40 | 39,5 | 98,7 | 40,7 | 25 | 3,8 | 5 | 32.200 | 1,6 | SF.. 0903.. | E01 |

| | | | |
|---|---|---|---|
| E01 | 11513168 | 11254598 | 8095003900 |

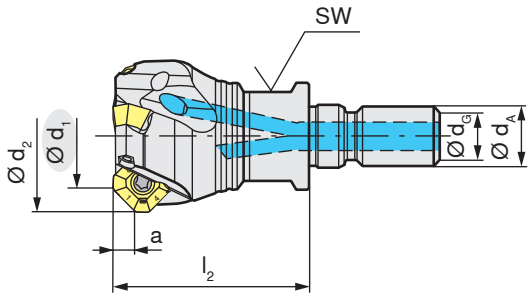
B276

# System MaxiMill 274

G274 SF..





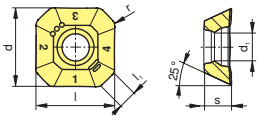




| d1 [mm] | Type, Bezeichnung | d2 [mm] | l2 [mm] | dA [mm] | dG [mm] | a [mm] | z | nmax [min-1] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 18,9 | G274.20.R.03-09 | 27,4 | 35,7 | 12,5 | 12 | 3,8 | 3 | 42.600 | 1,6 | SF.. 0903.. | E01 |
| 23,8 | G274.25.R.04-09 | 32,5 | 35,7 | 12,5 | 12 | 3,8 | 4 | 37.200 | 1,6 | SF.. 0903.. | E01 |
| 30,7 | G274.32.R.05-09 | 39,5 | 35,7 | 17,0 | 16 | 3,8 | 5 | 32.200 | 1,6 | SF.. 0903.. | E01 |

| | | | |
|---|---|---|---|
| E01 | 11513168 | 11254598 | 8095003900 |

B276

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | ○ | | | ○ | | | | | | | | | | |
| M | | | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | ● | | | | | | | | | | |
| K | | | | ○ | ● | ● | ● | | | | | ● | ● | ● | ● | | ○ | ● | ● | ○ | | ● | | | | | | | | |
| N | | | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | | | |
| S | | | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | |
| H | | | | | | | | | | | | | ○ | | | | | | | | | ● | | | | | | | | |
| -F10 | | SFHT 0903AFFR-F10 | | | | | | | | | | | | | | | | | ● | | | | | | | 9,52 | 9,52 | 3,18 | 1,00 | 3,35 |
| -F40 | | SFHT 0903AFER-F40 | | | | | | | | | | | | | | | | | | | ● | | | | | 9,52 | 9,52 | 3,18 | 1,00 | 3,35 |
| -F50 | | SFHT 0903AFSR-F50 | | | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | ● | | | | | | 9,52 | 9,52 | 3,18 | 1,00 | 3,35 |
| | | SFHT 1204AFSR-F50 | | | | | | | ● | ● | | | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 0,90 | 4,80 |
| -M50 | | SFKT 0903AFSR-M50 | | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | 9,52 | 9,52 | 3,18 | 1,00 | 3,35 |
| | | SFKT 1204AFSR-M50 | | | | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,00 | 4,80 |
| -R50 | | SFKT 0903AFSR-R50 | | | | | | | | | | | | ● | ● | | | | | | | | | | | 9,52 | 9,52 | 3,18 | 1,00 | 3,35 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d | l | s | r | $d_1$ |




B12-B18
B41-B42
B21
B257-B266

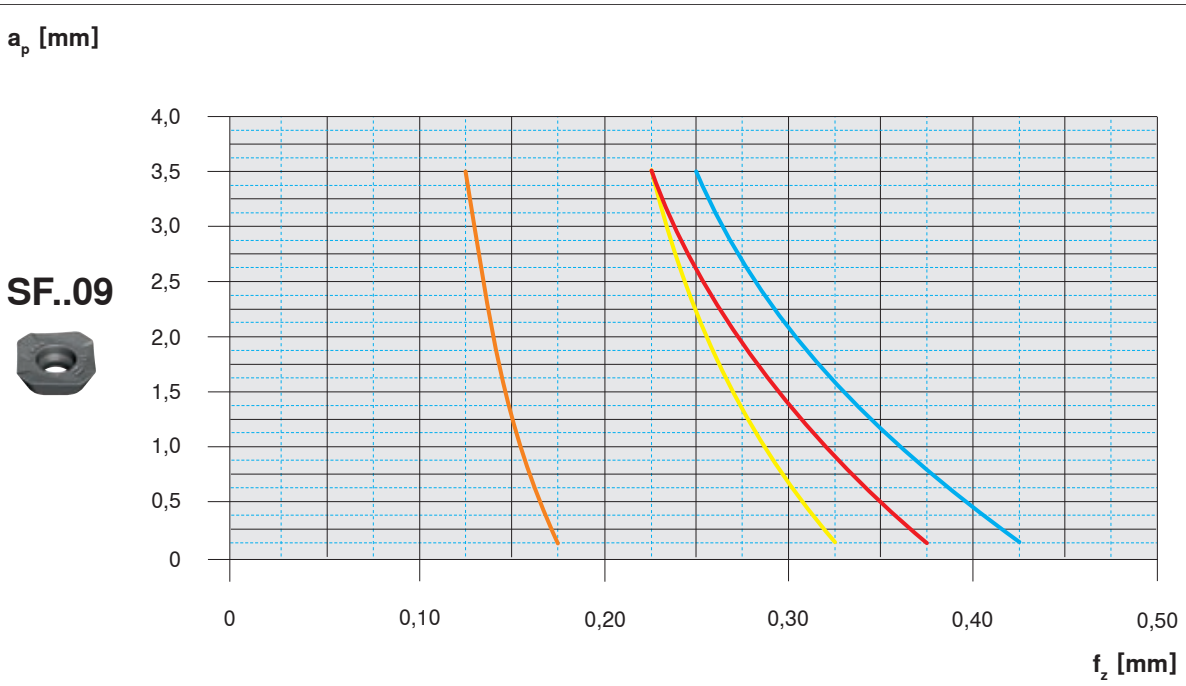
# System MaxiMill 274

Startparameter für Beispielwerkstoffe SF..

| Werkstoff | | | | Wendeplatte | | $v_c$ [m/min] | Kühlung |
|---|---|---|---|---|---|---|---|
| ▼ | 1.2312 | 40CrMnMoS8-6 | 1.000 N/mm² | SFKT 0903AFSR-M50<br>SFKT 1204AFSR-M50 | CTPP235 | 200 | trocken |
| ▼ | 1.4571 | X6CrNiMoTi17-12-2 | 600 N/mm² | SFHT 0903AFSR-F50<br>SFKT 1204AFSR-M50 | CTPM240 | 180 | trocken |
| ▼ | 5.1301 | EN-GJL-250 | HB 180 | SFKT 0903AFSR-R50 | CTCK215 | 250 | trocken |
| ▼ | 2.4856 | Inconel 625 | 1.450 N/mm² | SFHT 0903AFSR-F50 | CTC5235 | 35 | Emulsion |

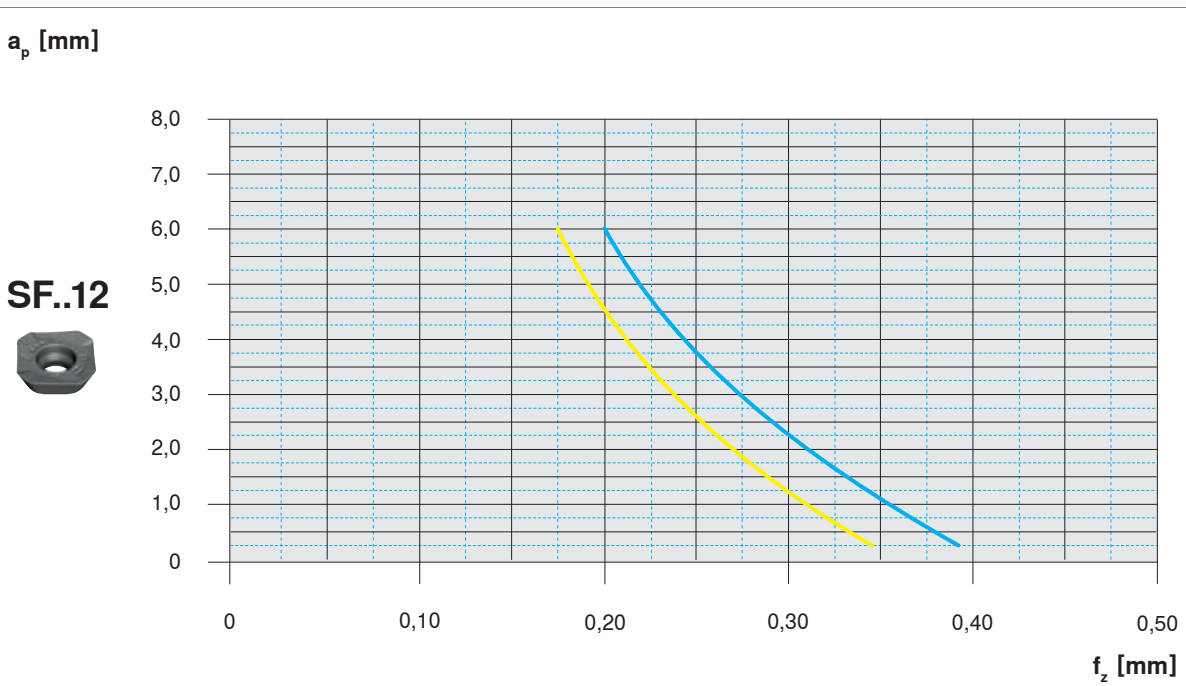
**SF..09**





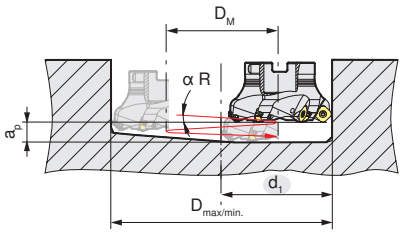

**SF..12**






Weitere Sorten und Geometrien können für den erfolgreichen Anwendungsfall verwendet werden und sind im jeweiligen Anwendungsbereich des Systems abgebildet.

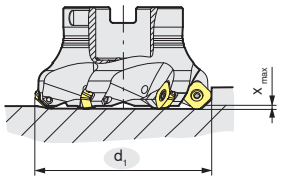
## zirkulares Eintauchen




**$D_{max}$ [mm] = größter Durchmesser für ebene Bodenfläche**
**$D_{min}$ [mm] = kleinster Bohrungsdurchmesser**
**$D_M = D_{max} - d_1$ bzw. $D_{min} - d_1$**

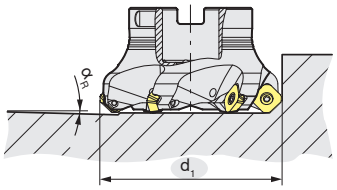
| $d_1$ [mm] | $D_{max\ /\ r\ 0,8}$ [mm] | $D_{min}$ [mm] | $\alpha_{R\ max}$ [°] |
|---|---|---|---|
| **18,9** | 45 | 42 | 1,9 |
| **23,8** | 55 | 52 | 1,5 |
| **30,7** | 69 | 66 | 1,1 |
| **38,7** | 85 | 82 | 0,9 |
| **48,7** | 105 | 102 | 0,7 |
| **61,7** | 131 | 128 | 0,5 |
| **78,7** | 165 | 162 | 0,4 |
| **98,7** | 205 | 202 | 0,3 |
| **123,7** | 255 | 252 | 0,3 |
| $a_p$ [mm] = $D_M$ x π x tan $\alpha_R$ | | | |

## axiales Eintauchen




| $d_1$ [mm] | $X_{max}$ [mm] |
|---|---|
| **18,9** | 3,7 |
| **23,8** | 3,5 |
| **30,7** | 3,2 |
| **38,7** | 3,1 |
| **48,7** | 3,1 |
| **61,7** | 3,0 |
| **78,7** | 2,9 |
| **98,7** | 2,7 |
| **123,7** | 2,7 |

## schräges Eintauchen

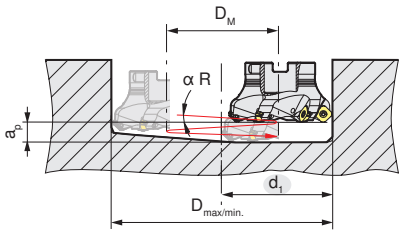



| $d_1$ [mm] | $\alpha_R$ [°] |
|---|---|
| **18,9** | 20,4 |
| **23,8** | 13 |
| **30,7** | 8 |
| **38,7** | 5,8 |
| **48,7** | 4,3 |
| **61,7** | 3,2 |
| **78,7** | 2,3 |
| **98,7** | 1,7 |
| **123,7** | 1,3 |

# System MaxiMill 274

Einsatzdaten SF..12..

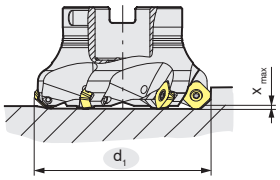
## zirkulares Eintauchen




**$D_{max}$ [mm] = größter Durchmesser für ebene Bodenfläche**
**$D_{min}$ [mm] = kleinster Bohrungsdurchmesser**
**$D_M = D_{max} - d_1$ bzw. $D_{min} - d_1$**

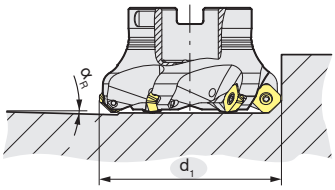
| $d_1$ [mm] | $D_{max\ /\ r\ 0,8}$ [mm] | $D_{min}$ [mm] | $\alpha_{R\ max}$ [°] |
|---|---|---|---|
| **36,9** | 87 | 85 | 0,6 |
| **46,9** | 107 | 105 | 0,5 |
| **59,9** | 133 | 131 | 0,4 |
| **76,9** | 167 | 165 | 0,3 |
| **96,9** | 207 | 205 | 0,2 |
| **121,9** | 257 | 255 | 0,2 |
| **156,9** | 327 | 325 | 0,2 |
| $a_p$ [mm] = $D_M$ x π x tan $\alpha_R$ | | | |

## axiales Eintauchen




| $d_1$ [mm] | $X_{max}$ [mm] |
|---|---|
| **36,9** | 5,0 |
| **46,9** | 3,4 |
| **59,9** | 3,2 |
| **76,9** | 3,0 |
| **96,9** | 2,5 |
| **121,9** | 2,6 |
| **156,9** | 2,5 |

## schräges Eintauchen



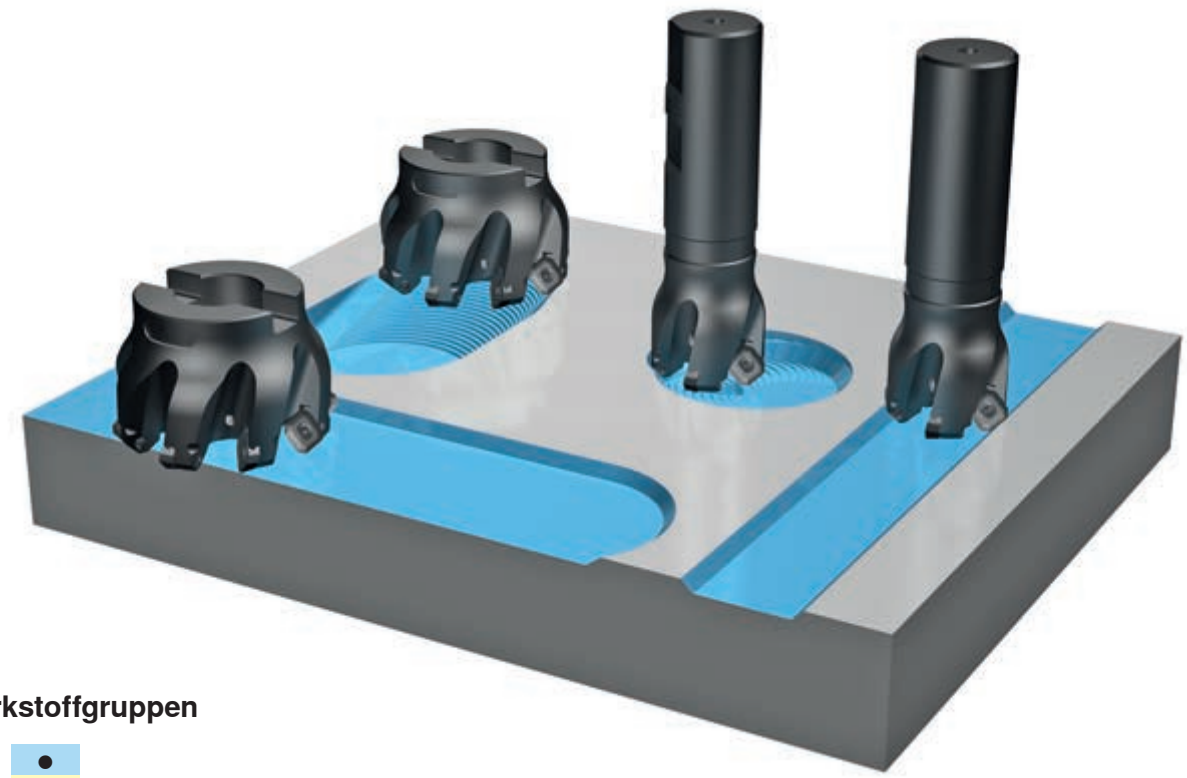

| $d_1$ [mm] | $\alpha_R$ [°] |
|---|---|
| **36,9** | 10,0 |
| **46,9** | 4,9 |
| **59,9** | 3,4 |
| **76,9** | 2,4 |
| **96,9** | 1,6 |
| **121,9** | 1,3 |
| **156,9** | 0,9 |

# Notizen


CERATIZIT

## 45°-Planfrässystem für universelle Anwendungen

- maximales Zeitspanvolumen
- optimales Preis-Leistungsverhältnis



## Werkstoffgruppen

| | |
|---|---|
| P | ● |
| M | ○ |
| K | ● |
| N | ○ |
| S | ○ |
| H | |

## Einsatzmöglichkeiten


Planfräsen


Gassenfräsen


Schräges Eintauchen


Auskammern


Zirkulares Eintauchen


Fasfräsen

## Detailinformationen

| Teilung | Ø-Bereich | Schneidplatten |
|---|---|---|
|  | Ø 6 - 160 mm | SD..09..<br>SD..12..<br>SD..15..<br>XD..09..<br>XD..12.. |

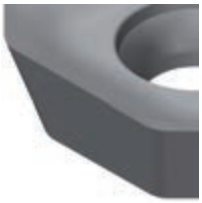
# System MaxiMill 270

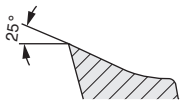
Spanleitstufenübersicht (SD..09.. / XD..09..)



## -27P

- Hochpositive Geometrie
- Scharfe Schneidkante
- Geringe Aufklebeneigung
- Erste Wahl für Nichteisenmetalle





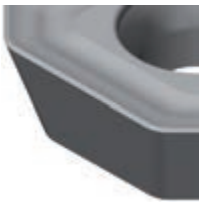

$f_z$ [mm]

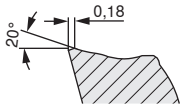
0,05 - 0,40

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| AMZ **H216T** | AMZ **H216T** | **AMZ** H216T |
| | | |
| | | |

## -29

- Universelle Geometrie
- Leichte bis mittlere Schruppbearbeitung
- Erste Wahl für allgemeine Stahlwerkstoffe






$f_z$ [mm]

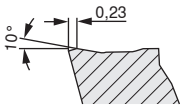
0,10 - 0,30

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| **CTCP230** CTPP235 | CTCP230 **CTPP235** | CTCP230 **CTPP235** |
| | | |
| | | |
| | | |
| | | |

## -31

- Stabile Geometrie
- Starke Schruppbearbeitung
- Für stark unterbrochene Schnitte
- Erste Wahl für Eisengusswerkstoffe





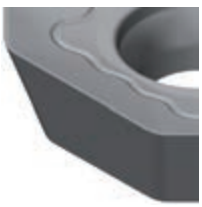

$f_z$ [mm]

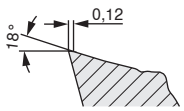
0,10 - 0,35

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | **CTCK215** | **CTCK215** |
| | | |
| | | |
| | | |

## -M31

- Positive Geometrie
- Hohe Laufruhe
- Universell einsetzbar
- Für hochwarmfeste Werkstoffe, Titan und Superlegierungen






$f_z$ [mm]

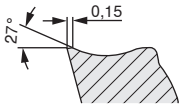
0,10 - 0,25

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| **CTC5235 CTC5240** | **CTC5235 CTC5240** | **CTC5235 CTC5240** |
| | | |

## -33

- Positive Geometrie
- Leichte Schruppbearbeitung
- Erste Wahl für rostfreie Stahlwerkstoffe






$f_z$ [mm]

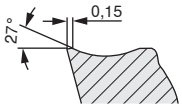
0,10 - 0,25

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| CTPM240 | CTPM240 | CTPM240 |
| | | |
| | | |
| | | |
| | | |

## -33P

- Positive Geometrie
- Geringe Aufklebeneigung
- Erste Wahl für rostfreie Stahlwerkstoffe






$f_z$ [mm]

0,10 - 0,25

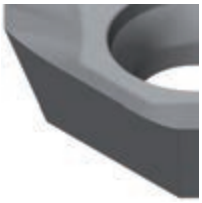
| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | CTPM240 | CTPM240 |
| | | |
| | | |
| | | |
| | | |

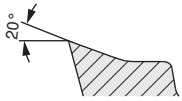
# System MaxiMill 270

Spanleitstufenübersicht (SD..12.. / XD..12..)

## -27

- Hochpositive Geometrie
- Scharfe Schneidkante
- Erste Wahl für Nichteisenmetalle






$f_z$ [mm]

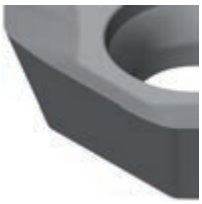
0,05 - 0,40

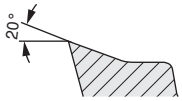
Bearbeitungsbedingungen

| | | |
|---|---|---|
| | | |
| | | |
| | | |
| **H216T** | **H216T** | **H216T** |
| | | |
| | | |

## -27P

- Hochpositive Geometrie
- Scharfe Schneidkante
- Geringe Aufklebeneigung
- Erste Wahl für Nichteisenmetalle






$f_z$ [mm]

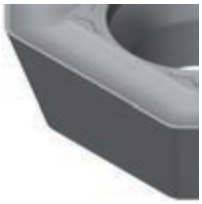
0,05 - 0,40

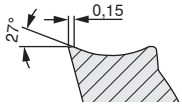
Bearbeitungsbedingungen

| | | |
|---|---|---|
| | | |
| | | |
| **AMZ** H216T | | |
| AMZ **H216T** | AMZ **H216T** | **AMZ** H216T |
| | | |
| | | |

## -33

- Positive Geometrie
- Leichte Schruppbearbeitung
- Erste Wahl für rostfreie Stahlwerkstoffe






$f_z$ [mm]

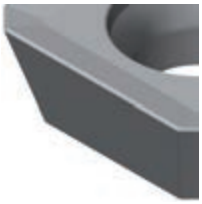
0,10 - 0,25

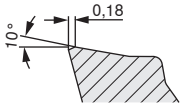
Bearbeitungsbedingungen

| | | |
|---|---|---|
| | | |
| **CTPM240** | **CTPM240** | **CTPM240** |
| | | |
| | | |
| | | |
| | | |

## SN

- Stabile Geometrie
- Leichte bis mittlere Schlichtbearbeitung
- Abgestimmt auf Cermet als Schneidstoff
- Für Stahlwerkstoffe






$f_z$ [mm]

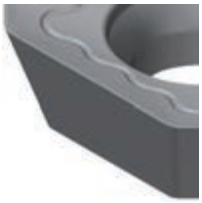
0,10 - 0,25

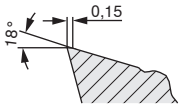
Bearbeitungsbedingungen

| | | |
|---|---|---|
| | | |
| **TCM10** | **TCM10** | |
| | | |
| | | |
| | | |
| | | |
| | | |

## -M31

- Positive Geometrie
- Hohe Laufruhe
- Universell einsetzbar
- Für hochwarmfeste Werkstoffe, Titan und Superlegierungen

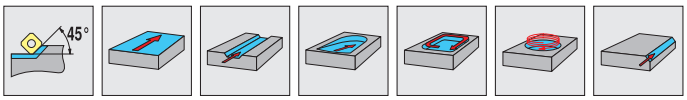




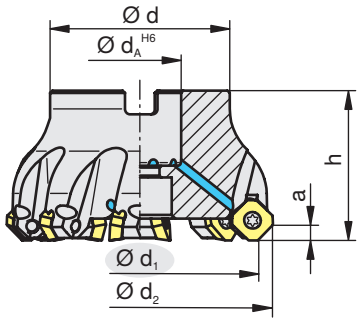

| $f_z$ [mm] | Bearbeitungsbedingungen | | |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| 0,10 - 0,25 | **CTC5235 CTC5240** | **CTC5235 CTC5240** | **CTC5235 CTC5240** |
| | | | |

# System MaxiMill 270

A270-09



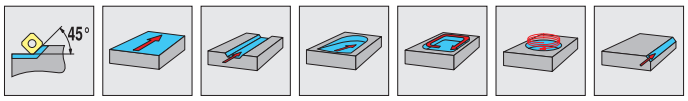


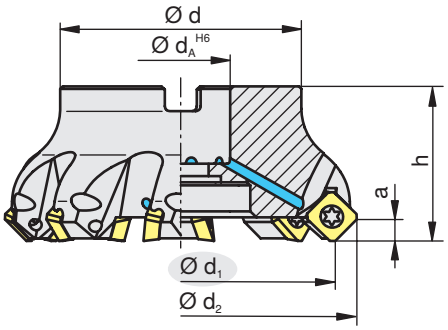

| $d_1$ [mm] | Type, Bezeichnung | $d_2$ [mm] | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 32 | A270.32.R.03-09 | 40,4 | 40 | 34 | 16 | 4 | 3 | 1,2 | SD/XD.. 0903.. | E01 |
| 32 | A270.32.R.05-09 | 40,4 | 40 | 34 | 16 | 4 | 5 | 1,2 | SD/XD.. 0903.. | E01 |
| 40 | A270.40.R.04-09 | 48,4 | 40 | 38 | 16 | 4 | 4 | 1,2 | SD/XD.. 0903.. | E01 |
| 40 | A270.40.R.06-09 | 48,4 | 40 | 38 | 16 | 4 | 6 | 1,2 | SD/XD.. 0903.. | E01 |
| 50 | A270.50.R.06-09 | 58,4 | 40 | 43 | 22 | 4 | 6 | 1,2 | SD/XD.. 0903.. | E01 |
| 50 | A270.50.R.08-09 | 58,4 | 40 | 43 | 22 | 4 | 8 | 1,2 | SD/XD.. 0903.. | E01 |
| 63 | A270.63.R.05-09 | 71,4 | 40 | 48 | 22 | 4 | 5 | 1,2 | SD/XD.. 0903.. | E01 |
| 63 | A270.63.R.08-09 | 71,4 | 40 | 48 | 22 | 4 | 8 | 1,2 | SD/XD.. 0903.. | E01 |
| 63 | A270.63.R.10-09 | 71,4 | 40 | 48 | 22 | 4 | 10 | 1,2 | SD/XD.. 0903.. | E01 |
| 80 | A270.80.R.06-09 | 88,4 | 50 | 58 | 27 | 4 | 6 | 1,2 | SD/XD.. 0903.. | E01 |
| 80 | A270.80.R.10-09 | 88,4 | 50 | 58 | 27 | 4 | 10 | 1,2 | SD/XD.. 0903.. | E01 |
| 80 | A270.80.R.12-09 | 88,4 | 50 | 58 | 27 | 4 | 12 | 1,2 | SD/XD.. 0903.. | E01 |
| 100 | A270.100.R.07-09 | 108,4 | 50 | 78 | 32 | 4 | 7 | 1,2 | SD/XD.. 0903.. | E01 |
| 100 | A270.100.R.12-09 | 108,4 | 50 | 78 | 32 | 4 | 12 | 1,2 | SD/XD.. 0903.. | E01 |
| 100 | A270.100.R.14-09 | 108,4 | 50 | 78 | 32 | 4 | 14 | 1,2 | SD/XD.. 0903.. | E01 |
| 125 | A270.125.R.10-09 | 133,4 | 63 | 88 | 40 | 4 | 10 | 1,2 | SD/XD.. 0903.. | E01 |
| 125 | A270.125.R.12-09 | 133,4 | 63 | 88 | 40 | 4 | 12 | 1,2 | SD/XD.. 0903.. | E01 |
| 160 | A270.160.R.12-09 | 168,4 | 63 | 93,4 | 40 | 4 | 12 | 1,2 | SD/XD.. 0903.. | E01 |

| | | | |
|---|---|---|---|
| E01 | 77613 | 11149541 | 8095010200 |

B276





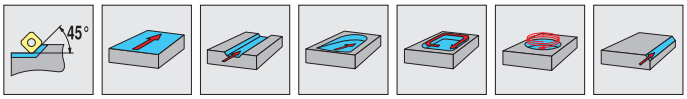

| $d_1$ [mm] | Type, Bezeichnung | $d_2$ [mm] | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 32 | A270.32.R.03-12 | 46 | 40 | 32 | 16 | 6 | 3 | 5 | SD/XD.. 1204.. | E01 |
| 40 | A270.40.R.03-12 | 54 | 40 | 38 | 16 | 6 | 3 | 5 | SD/XD.. 1204.. | E01 |
| 40 | A270.40.R.04-12 | 54 | 40 | 38 | 16 | 6 | 4 | 5 | SD/XD.. 1204.. | E02 |
| 50 | A270.50.R.04-12 | 64 | 40 | 43 | 22 | 6 | 4 | 5 | SD/XD.. 1204.. | E02 |
| 50 | A270.50.R.05-12 | 64 | 40 | 43 | 22 | 6 | 5 | 5 | SD/XD.. 1204.. | E02 |
| 63 | A270.63.R.04-12 | 77 | 40 | 48 | 22 | 6 | 4 | 5 | SD/XD.. 1204.. | E02 |
| 63 | A270.63.R.06-12 | 77 | 40 | 48 | 22 | 6 | 6 | 5 | SD/XD.. 1204.. | E02 |
| 80 | A270.80.R.05-12 | 94 | 50 | 58 | 27 | 6 | 5 | 5 | SD/XD.. 1204.. | E02 |
| 80 | A270.80.R.08-12 | 94 | 50 | 58 | 27 | 6 | 8 | 5 | SD/XD.. 1204.. | E02 |
| 100 | A270.100.R.06-12 | 114 | 50 | 78 | 32 | 6 | 6 | 5 | SD/XD.. 1204.. | E02 |
| 100 | A270.100.R.10-12 | 114 | 50 | 78 | 32 | 6 | 10 | 5 | SD/XD.. 1204.. | E02 |
| 125 | A270.125.R.07-12 | 139 | 63 | 88 | 40 | 6 | 7 | 5 | SD/XD.. 1204.. | E02 |
| 125 | A270.125.R.12-12 | 139 | 63 | 88 | 40 | 6 | 12 | 5 | SD/XD.. 1204.. | E02 |
| 160 | A270.160.R.08-12 | 174 | 63 | 93,4 | 40 | 6 | 8 | 5 | SD/XD.. 1204.. | E02 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 11036880 | 106022 | 11210490 | 8095010600 | 4425 |
| E02 | | 106022 | 11210490 | 8095010600 | |

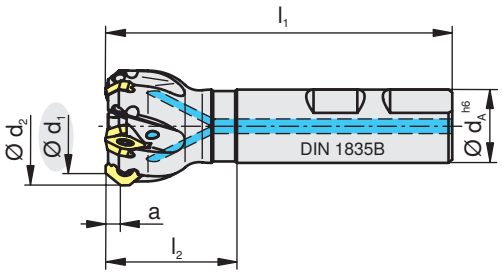
B276

# System MaxiMill 270

C270-09





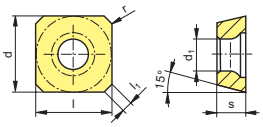




| d1 [mm] | Type, Bezeichnung | d2 [mm] | l1 [mm] | l2 [mm] | dA [mm] | a [mm] | z | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | C270.06.R.01-09 | 14,4 | 80 | 32 | 16 | 4 | 1 | 1,2 | SD.. 0903.. | E01 |
| 12 | C270.12.R.01-09 | 20,4 | 80 | 32 | 16 | 4 | 1 | 1,2 | SD.. 0903.. | E01 |
| 16 | C270.16.R.02-09 | 24,4 | 90 | 40 | 20 | 4 | 2 | 1,2 | SD.. 0903.. | E02 |
| 20 | C270.20.R.03-09 | 28,4 | 90 | 40 | 20 | 4 | 3 | 1,2 | SD.. 0903.. | E02 |
| 25 | C270.25.R.04-09 | 33,4 | 100 | 44 | 25 | 4 | 4 | 1,2 | SD.. 0903.. | E02 |
| 32 | C270.32.R.05-09 | 40,4 | 95 | 36 | 25 | 4 | 5 | 1,2 | SD.. 0903.. | E02 |

| | | | |
|---|---|---|---|
| E01 | 169857 | 11149541 | 8095010200 |
| E02 | 77613 | 11149541 | 8095010200 |

B276

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | d [mm] | l [mm] | s [mm] | $l_1$ [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -27P |  | SDHT 0903AEFN-27P | | | | | | | | | | | | | | | ● | ● | | | | | | | 9,52 | 9,52 | 3,18 | 1,68 | 1,00 | 3,40 |
| | | SDHT 1204AEFN-27 | | | | | | | | | | | | | | | | ● | | | | | | | 12,70 | 12,70 | 4,76 | 1,74 | 0,20 | 5,50 |
| | | SDHT 1204AEFN-27P | | | | | | | | | | | | | | | | ● | | | | | | | 12,70 | 12,70 | 4,76 | 1,74 | 0,20 | 5,50 |
| -29 |  | SDMT 1204AESN-29R | | | | | ● | ● | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,74 | 1,00 | 5,50 |
| | | SDNT 0903AESN-29 | | | | | ● | ● | | | | | | | | | | | | | | | | | 9,52 | 9,52 | 3,18 | 1,68 | 1,00 | 3,40 |
| -31 |  | SDMT 1204AEEN-31 | | | | | | | | | | | | ● | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,74 | 1,00 | 5,50 |
| | | SDNT 0903AESN-31 | | | | | | | | | | | | ● | | | | | | | | | | | 9,52 | 9,52 | 3,18 | 1,61 | 1,00 | 3,40 |
| -33 |  | SDHT 0903AESN-33 | | | | | | | | | ● | | | | | | | | | | | | | | 9,52 | 9,52 | 3,18 | 1,68 | 1,00 | 3,40 |
| | | SDHT 0903AESN-33P | | | | | | | | | ● | | | | | | | | | | | | | | 9,52 | 9,52 | 3,18 | 1,68 | 1,00 | 3,40 |
| | | SDHT 1204AESN-33 | | | | | | | | | ● | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,74 | 1,00 | 5,50 |
| -M31 |  | SDHT 0903AESN-M31 | | | | | | | | | | | | | | | | | | ● | ● | | | | 9,52 | 9,52 | 3,18 | 1,68 | 1,00 | 3,40 |
| | | SDHT 1204AESN-M31 | | | | | | | | | | | | | | | | | | ● | ● | | | | 12,70 | 12,70 | 4,76 | 1,74 | 1,00 | 5,50 |
| SD..T |  | SDHT 1204AESN | | ● | | | | | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,74 | 0,20 | 5,50 |
| | | SDHT 1204AESN-R | | | | | ● | ● | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,74 | 1,00 | 5,50 |
| SD..W |  | SDHW 0903AESN | | ● | | | | | | | | | | | | | | | | | | | | | 9,52 | 9,52 | 3,18 | 1,68 | 1,00 | 3,40 |
| | | SDHW 1204AEEN | | | | | | | | | | | | | | | | ● | | | | | | | 12,70 | 12,70 | 4,76 | 1,74 | 0,20 | 5,50 |
| | | SDHW 1204AEEN-R | | | | | | | | | | | | ● | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,74 | 1,00 | 5,50 |
| | | SDHW 1204AESN-R | | ● | | | ● | ● | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,74 | 1,00 | 5,50 |

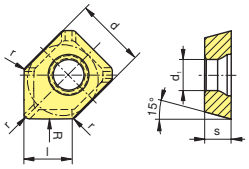



B12-B18
B53-B56
B21
B257-B266

# System MaxiMill 270

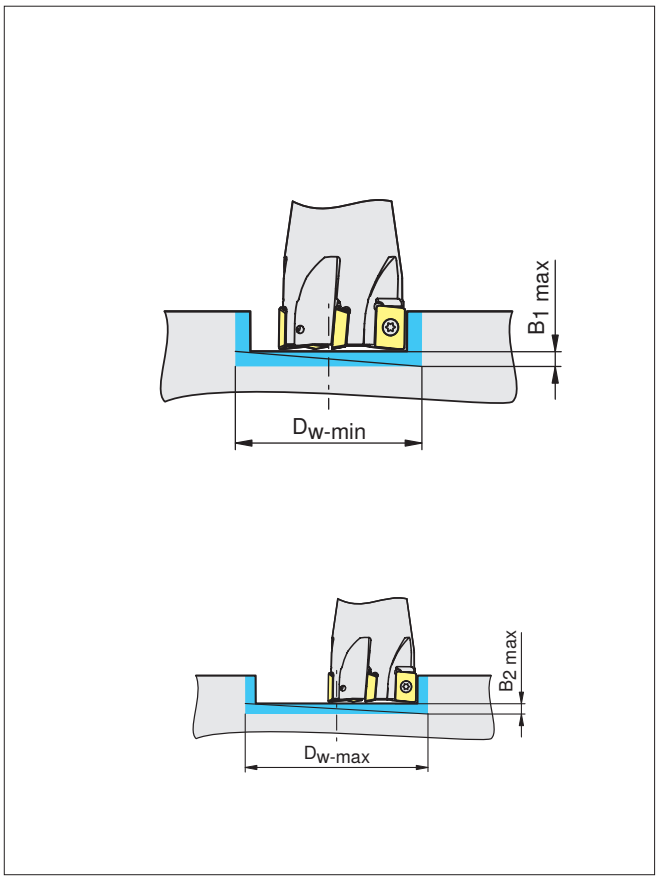
XD..

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d | l | s | r | $d_1$ | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | | | | | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |
| XDHW |  | XDHW 0903AEEN | | | | | | | | | | | | ● | | | | | | | | | | | | 9,52 | 5,50 | 3,18 | 1,00 | 3,40 | 125 |
| | | XDHW 0903AEFN | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 5,50 | 3,18 | 1,00 | 3,40 | 125 |
| | | XDHW 0903AESN | | ● | | | ● | ● | | | | | | | | | | | | | | | | | | 9,52 | 5,50 | 3,18 | 1,00 | 3,40 | 125 |
| | | XDHW 1204AEEN | | | | | | | | | | | | ● | | | | | | | | | | | | 12,70 | 7,50 | 4,76 | 1,00 | 5,50 | 150 |
| | | XDHW 1204AEFN | | | | | | | | | | | | | | | | ● | | | | | | | | 12,70 | 7,50 | 4,76 | 1,00 | 5,50 | 150 |
| | | XDHW 1204AESN | | ● | | | ● | ● | | | | | | | | | | | | | | | | | | 12,70 | 7,50 | 4,76 | 1,00 | 5,50 | 150 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d | l | s | r | $d_1$ | R |






B12-B18
B243
B21
B257-B266




| D [mm] | [mm] $D_{w\text{-}min}$ | $B_{1\text{-}max}$ | $D_{w\text{-}max}$ | $B_{2\text{-}max}$ | α |
|---|---|---|---|---|---|
| **270-09** | | | | | |
| Ø 06 | 14,4 | 1,5 | 19,0 | 1,5 | – |
| Ø 12 | 28,5 | 1,5 | 31,0 | 1,5 | – |
| Ø 16 | 36,5 | 1,5 | 39,0 | 1,5 | – |
| Ø 20 | 44,5 | 1,5 | 47,0 | 1,5 | – |
| Ø 25 | 54,5 | 1,5 | 57,0 | 1,5 | – |
| Ø 32 | 68,5 | 1,5 | 71,0 | 1,5 | – |
| Ø 40 | 84,5 | 1,5 | 87,0 | 1,5 | – |
| Ø 50 | 104,5 | 1,5 | 107,0 | 1,5 | – |
| Ø 63 | 130,5 | 1,5 | 133,0 | 1,5 | – |
| Ø 80 | 164,5 | 1,5 | 167,0 | 1,5 | – |
| Ø 100 | 204,5 | 1,5 | 207,0 | 1,5 | – |
| Ø 125 | 254,5 | 1,5 | 257,0 | 1,5 | – |
| Ø 160 | 324,5 | 1,5 | 327,0 | 1,5 | – |
| **270-12** | | | | | |
| Ø 32 | 74,5 | 1,5 | 78,0 | 1,5 | 14,9 |
| Ø 40 | 90,5 | 1,5 | 94,0 | 1,5 | 11,1 |
| Ø 50 | 110,5 | 1,5 | 114,0 | 1,5 | 8,4 |
| Ø 63 | 136,5 | 1,5 | 140,0 | 1,5 | 6,4 |
| Ø 80 | 170,5 | 1,5 | 174,0 | 1,5 | 4,9 |
| Ø 100 | 210,5 | 1,5 | 214,0 | 1,5 | 3,8 |
| Ø 125 | 260,5 | 1,5 | 264,0 | 1,5 | 3,0 |
| Ø 160 | 330,5 | 1,5 | 334,0 | 1,5 | 2,3 |

**α**
**Eintauchwinkel**

**B**
**Errechnete Steigung / $D_w > D_{w\text{-}min}$ und $D_w < D_{w\text{-}max}$**

**$B_{1max}$**
**max. Steigung beim Eintauchen mit kleinster Zirkularbohrung**

**$B_{2max}$**
**max. Steigung beim Eintauchen mit größter Zirkularbohrung**

**$d_1$**
**Fräsdurchmesser**

**$D_w$**
**Bohrungsdurchmesser Zirkularbohrung**

**$D_{w\text{-}max}$**
**größte Zirkularbohrung (ohne Zapfenbildung)**

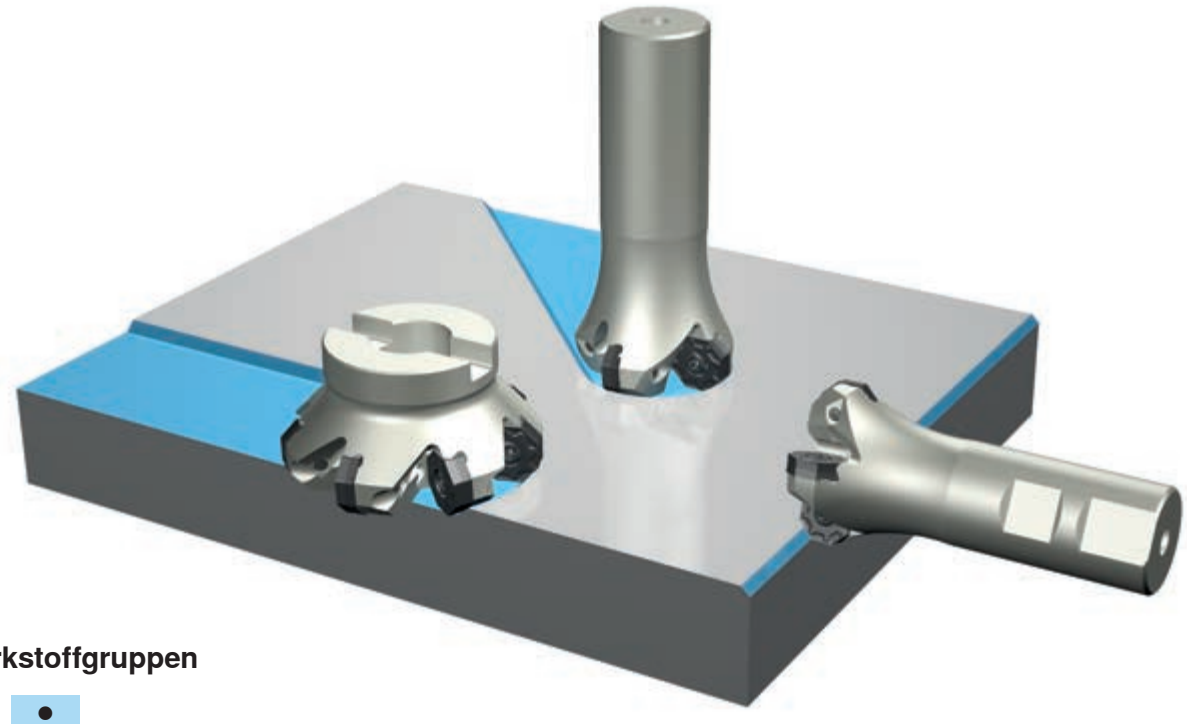
**$D_{w\text{-}min}$**
**kleinste mögliche Zirkularbohrung**

$$B = (D_w - d_1) \cdot \pi \cdot \tan \alpha$$


A273.40.R.04-06
nmax=17100 rpm
4500375397/40
CERATIZIT

## Wirtschaftliches Planfräsen für ein breites Werkstoffspektrum

- 16 Schneidkanten
- stabil und prozesssicher bei geringem Leistungsbedarf



## Werkstoffgruppen

| | |
|---|---|
| P | ● |
| M | ○ |
| K | ● |
| N | |
| S | ○ |
| H | |

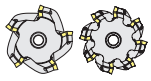
## Einsatzmöglichkeiten


Planfräsen


Gassenfräsen


Fasfräsen

## Detailinformationen

| Teilung | Ø-Bereich | Schneidplatten |
|---|---|---|
|  | Ø 32 - 315 mm | OAKU 06.. |

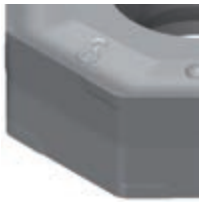
# System MaxiMill 273

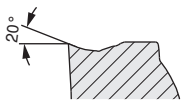
Spanleitstufenübersicht



## -F40

- Positive Geometrie
- Schlicht- und Schruppbearbeitung
- Für labile Aufspannungen
- Für hochwarmfeste Werkstoffe, Titan und Superlegierungen





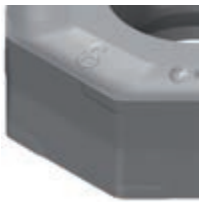

$f_z$ [mm]

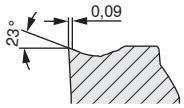
0,20 - 0,25

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| CTC5235 **CTC5240** | CTC5235 **CTC5240** | **CTC5235** CTC5240 |
| | | |

## -F50

- Positive Geometrie
- Leichte Schruppbearbeitung
- Für labile Aufspannungen
- Erste Wahl für rostfreie Stahlwerkstoffe





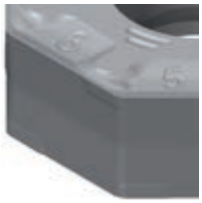

$f_z$ [mm]

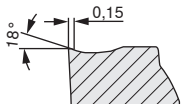
0,20 - 0,25

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP220** CTPP225 | CTCP230 **CTPP235** | |
| **CTCM235** CTPM225 | CTPM225 **CTPM240** | |
| | **CTCK215** CTPK220 | CTCK215 **CTPK220** |
| | | |
| | | |
| | | |

## -M50

- Universelle Geometrie
- Leichte bis mittlere Schruppbearbeitung
- Erste Wahl für allgemeine Stahlwerkstoffe






$f_z$ [mm]

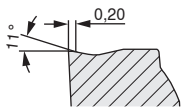
0,20 - 0,50

| Bearbeitungsbedingungen | | |
|---|---|---|
| | **CTCP230** CTPP235 | CTCP230 **CTPP235** |
| CTCM235 CTPM225 | CTPM225 **CTPM240** | CTPM225 **CTPM240** |
| | **CTCK215** CTPK220 | CTCK215 **CTPK220** |
| | | |
| | | |
| | | |

## -R50

- Stabile Geometrie
- Starke Schruppbearbeitung
- Für stark unterbrochene Schnitte
- Erste Wahl für Eisengusswerkstoffe

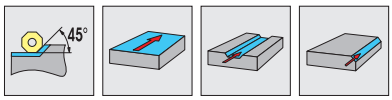




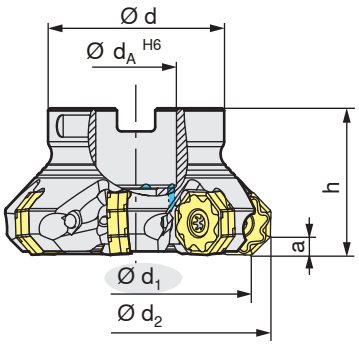

$f_z$ [mm]

0,20 - 0,50

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | **CTCK215** CTPK220 | CTCK215 **CTPK220** |
| | | |
| | | |
| | | |





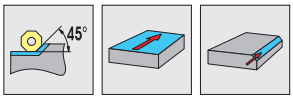

| $d_1$ [mm] | Type, Bezeichnung | $d_2$ [mm] | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | A273.40.R.03-06 | 50,2 | 40 | 38 | 16 | 3,5 | 3 | 17.100 | 5 | OA/XA.. 0605.. | E01 |
| 40 | A273.40.R.04-06 | 50,2 | 40 | 38 | 16 | 3,5 | 4 | 17.100 | 5 | OA/XA.. 0605.. | E01 |
| 50 | A273.50.R.05-06 | 60,2 | 40 | 48 | 22 | 3,5 | 5 | 14.900 | 5 | OA/XA.. 0605.. | E02 |
| 63 | A273.63.L.07-06 | 73,2 | 40 | 48 | 22 | 3,5 | 7 | 13.100 | 5 | OA/XA.. 0605.. | E03 |
| 63 | A273.63.R.07-06 | 73,2 | 40 | 48 | 22 | 3,5 | 7 | 13.100 | 5 | OA/XA.. 0605.. | E03 |
| 80 | A273.80.R.08-06 | 90,2 | 50 | 58 | 27 | 3,5 | 8 | 11.500 | 5 | OA/XA.. 0605.. | E03 |
| 100 | A273.100.R.10-06 | 110,2 | 50 | 78 | 32 | 3,5 | 10 | 10.200 | 5 | OA/XA.. 0605.. | E04 |
| 125 | A273.125.L.12-06 | 135,2 | 63 | 88 | 40 | 3,5 | 12 | 9.000 | 5 | OA/XA.. 0605.. | E04 |
| 125 | A273.125.R.12-06 | 135,2 | 63 | 88 | 40 | 3,5 | 12 | 9.000 | 5 | OA/XA.. 0605.. | E04 |
| 160 | A273.160.L.14-06 | 170,2 | 63 | 100 | 40 | 3,5 | 14 | 7.900 | 5 | OA/XA.. 0605.. | E04 |
| 160 | A273.160.R.14-06 | 170,2 | 63 | 100 | 40 | 3,5 | 14 | 7.900 | 5 | OA/XA.. 0605.. | E04 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 11036880 | 11107792 | 11210490 | | 8095010600 | 4425 |
| E02 | 11040298 | 11107792 | 11210490 | 4496 | 8095010600 | |
| E03 | | 11107792 | 11210490 | | 8095010600 | |
| E04 | | 11107792 | 11802576 | | 8095010600 | |

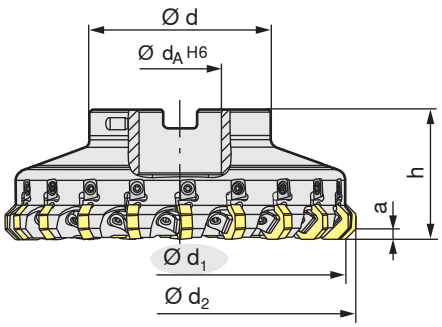
B276

# System MaxiMill 273

A273-06 einstellbar (A)



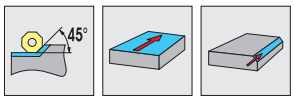


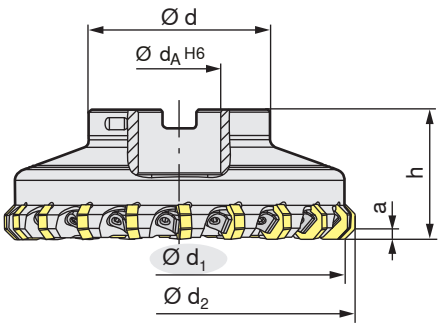

| $d_1$ [mm] | Type, Bezeichnung | $d_2$ [mm] | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 80 | A273.80.R.10A10-06 | 90,2 | 50 | 58 | 27 | 3,5 | 10 | 4.800 | 5 | OA/XA.. 0605.. | E01 |
| 100 | A273.100.R.14A14-06 | 110,3 | 50 | 78 | 32 | 3,5 | 14 | 4.200 | 5 | OA/XA.. 0605.. | E01 |
| 125 | A273.125.R.17A17-06 | 135,2 | 63 | 88 | 40 | 3,5 | 17 | 3.800 | 5 | OA/XA.. 0605.. | E01 |
| 160 | A273.160.R.20A20-06 | 170,2 | 63 | 88 | 40 | 3,5 | 20 | 3.300 | 5 | OA/XA.. 0605.. | E01 |
| 200 | A273.200.R.25A25-06 | 210,2 | 63 | 132 | 60 | 3,5 | 25 | 2.900 | 5 | OA/XA.. 0605.. | E01 |
| 250 | A273.250.R.31A31-06 | 260,2 | 63 | 132 | 60 | 3,5 | 31 | 2.600 | 5 | OA/XA.. 0605.. | E01 |
| 315 | A273.315.R.40A40-06 | 325,2 | 63 | 226 | 60 | 3,5 | 40 | 2.300 | 5 | OA/XA.. 0605.. | E01 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 11529282 | 11167992 | 11529276 | 11534870 | 8095018900 | 11210474 | 8095010500 |

B276





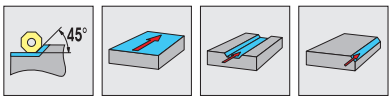

| $d_1$ [mm] | Type, Bezeichnung | $d_2$ [mm] | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 80 | A273.80.R.10-06 | 90,2 | 50 | 58 | 27 | 3,5 | 10 | 4.800 | 5 | OA/XA.. 0605.. | E01 |
| 100 | A273.100.R.14-06 | 110,3 | 50 | 78 | 32 | 3,5 | 14 | 4.200 | 5 | OA/XA.. 0605.. | E01 |
| 125 | A273.125.R.17-06 | 135,2 | 63 | 88 | 40 | 3,5 | 17 | 3.800 | 5 | OA/XA.. 0605.. | E01 |
| 160 | A273.160.R.20-06 | 170,2 | 63 | 100 | 40 | 3,5 | 20 | 3.300 | 5 | OA/XA.. 0605.. | E01 |
| 200 | A273.200.R.25-06 | 210,2 | 63 | 153 | 60 | 3,5 | 25 | 2.900 | 5 | OA/XA.. 0605.. | E01 |
| 250 | A273.250.R.31-06 | 260,2 | 63 | 153 | 60 | 3,5 | 31 | 2.600 | 5 | OA/XA.. 0605.. | E01 |
| 315 | A273.315.R.40-06 | 325,2 | 63 | 226 | 60 | 3,5 | 40 | 2.300 | 5 | OA/XA.. 0605.. | E01 |

| | | | | |
|---|---|---|---|---|
| E01 | 11529282 | 11529276 | 11534870 | 8095010500 |

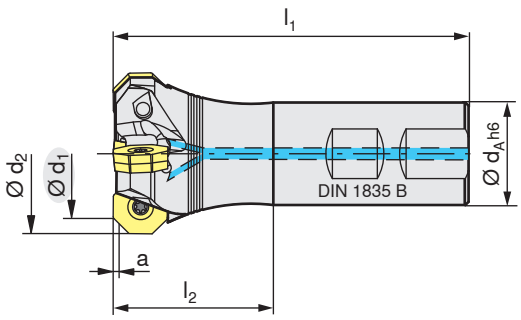

B276

# System MaxiMill 273

C273-06





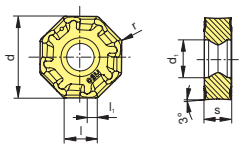




| d1 [mm] | Type, Bezeichnung | d2 [mm] | l1 [mm] | l2 [mm] | dA [mm] | a [mm] | z | nmax [min-1] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | C273.32.R.03-06-B-40 | 42,2 | 101 | 40 | 32 | 6 | 3 | 19.600 | 5 | OAKU 06.. | E01 |
| 40 | C273.40.R.04-06-B32-50 | 50,2 | 111 | 50 | 32 | 6 | 4 | 17.000 | 5 | OAKU 06.. | E01 |

| | | | |
|---|---|---|---|
| E01 | 11107792 | 11210490 | 8095010600 |

B276

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d [mm] | l [mm] | s [mm] | $l_1$ [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | ○ | | | ○ | | | | | | | | | | | |
| M | | | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | ● | | | | | | | | | | | |
| K | | | ○ | ● | ● | ● | | | | | | ● | ● | ● | ● | | ○ | ● | ● | ○ | | ● | | | | | | | | | |
| N | | | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | | | | |
| S | | | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| H | | | | | | | | | | | | | ○ | | | | | | | | | ● | | | | | | | | | |
| -F40 | | OAKU 060508ER-F40 | | | | | | | | | | | | | | | | | | ● | ● | | | | | 17,18 | 6,00 | 5,56 | 2,0 | 0,80 | 5,80 |
| -F50 | | OAKU 060508SR-F50 | | | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | 17,18 | 6,00 | 5,56 | 2,0 | 0,80 | 5,80 |
| -M50 | | OAKU 060508SL-M50 | | | | | | ● | | | | | | ● | ● | | | | | | | | | | | 17,18 | 6,00 | 5,56 | 2,0 | 0,80 | 5,80 |
| | | OAKU 060508SR-M50 | | | ● | ● | ● | ● | ● | ● | ● | | | ● | ● | | | | | | | | | | | 17,18 | 6,00 | 5,56 | 2,0 | 0,80 | 5,80 |
| -R50 | | OAKU 060508SR-R50 | | | | | | | | | | | | ● | ● | | | | | | | | | | | 17,18 | 6,00 | 5,56 | 2,0 | 0,80 | 5,80 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d | l | s | $l_1$ | r | $d_1$ |

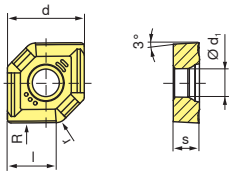



B12-B18 | B65 | B21 | B257-B266

# System MaxiMill 273

XA..

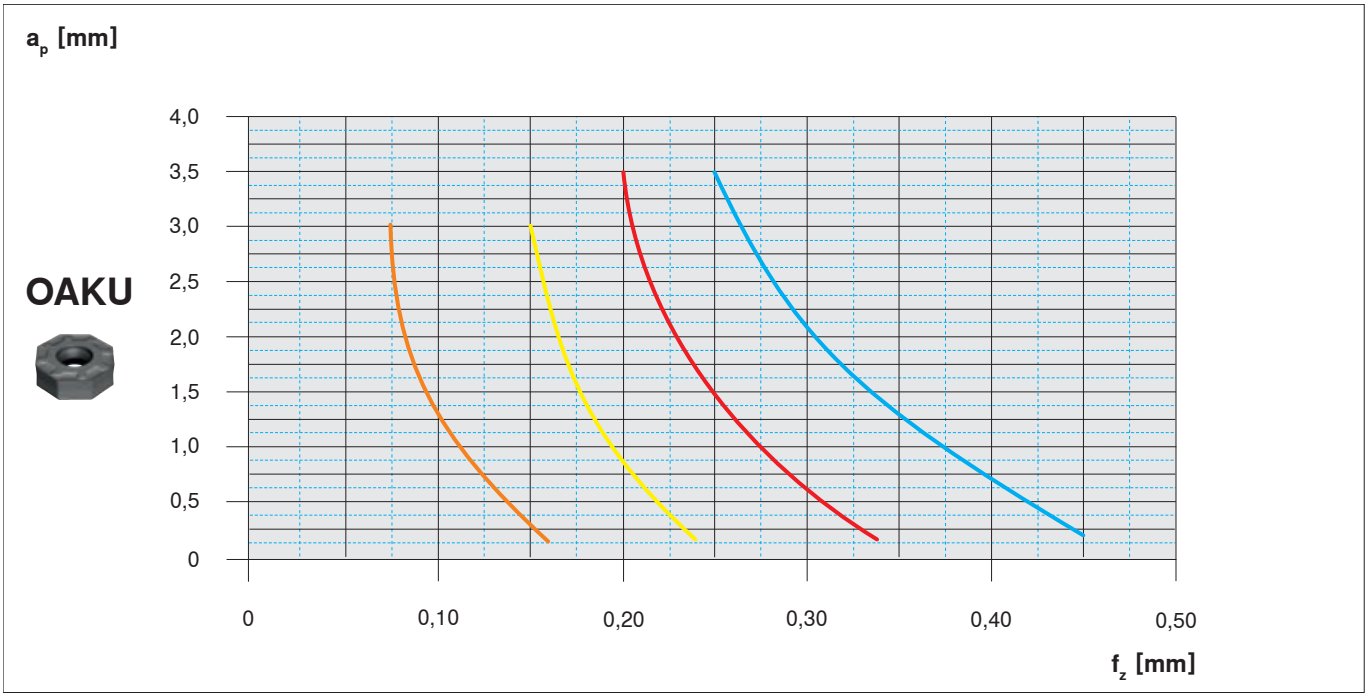
| | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] | R [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -M50 |  | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | XAHT 060525SL-M50 | | | | | | | | | | | | ● | | | | | | | | | 17,08 | 8,40 | 5,56 | 2,50 | 6,00 | 640 |
| | XAHT 060525SR-M50 | | | ● | ● | ● | ● | ● | ● | ● | | | ● | ● | | | | | | | | 17,08 | 8,40 | 5,56 | 2,50 | 6,00 | 640 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | d | l | s | r | $d_1$ | R |






B12-B18
B243
B21
B257-B266

| Werkstoff | | | | Wendeplatte | | $v_c$ [m/min] | Kühlung |
|---|---|---|---|---|---|---|---|
| ▼ | 1.2312 | 40CrMnMoS8-6 | 1.000 N/mm² | OAKU 060508SR-M50 | CTPP235 | 200 | trocken |
| ▼ | 1.4571 | X6CrNiMoTi17-12-2 | 600 N/mm² | OAKU 060508SR-F50 | CTPM240 | 180 | trocken |
| ▼ | 5.1301 | EN-GJL-250 | HB 180 | OAKU 060508SR-R50 | CTCK215 | 250 | trocken |
| ▼ | 2.4856 | Inconel 625 | 1.450 N/mm² | OAKU 060508SR-F40 | CTC5235 | 35 | Emulsion |

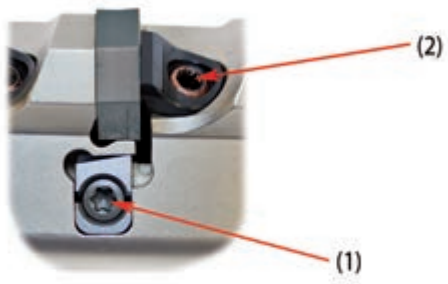



Weitere Sorten und Geometrien können für den erfolgreichen Anwendungsfall verwendet werden und sind im jeweiligen Anwendungsbereich des Systems abgebildet.

# System MaxiMill 273

Montagehinweis

## Feineinstellung




1. Montieren der Einstellkeile am Werkzeug (entspricht Auslieferungszustand) und Anziehen der Einstellschraube (1), ohne die Keile zu verformen.

2. Montieren der Platten und Spannen der Schrauben im Klemmkeil (2) mit 1,0 Nm.

3. Markieren der „höchsten Schneide" mit Hilfe eines Voreinstellgerätes.

4. Vorstellen dieser Wendeplatte um 0,02 mm durch Drehen der Einstellschraube (1) im Uhrzeigersinn. Verwenden Sie dazu den TORX-Winkelschlüssel (8095018900 / WS-L-T15-136mm)!

5. Einstellen aller anderen Schneidkanten auf dieses Niveau mit einer Abweichung von maximal 0,005 mm.

Maximaler Verstellweg = 0,10 mm.

6. Anziehen aller Spannschrauben (2) mit 4.0 Nm (273-06).

7. Kontrolle des Planlaufes aller Wendeplatten
→ Soll < 0,005 mm.

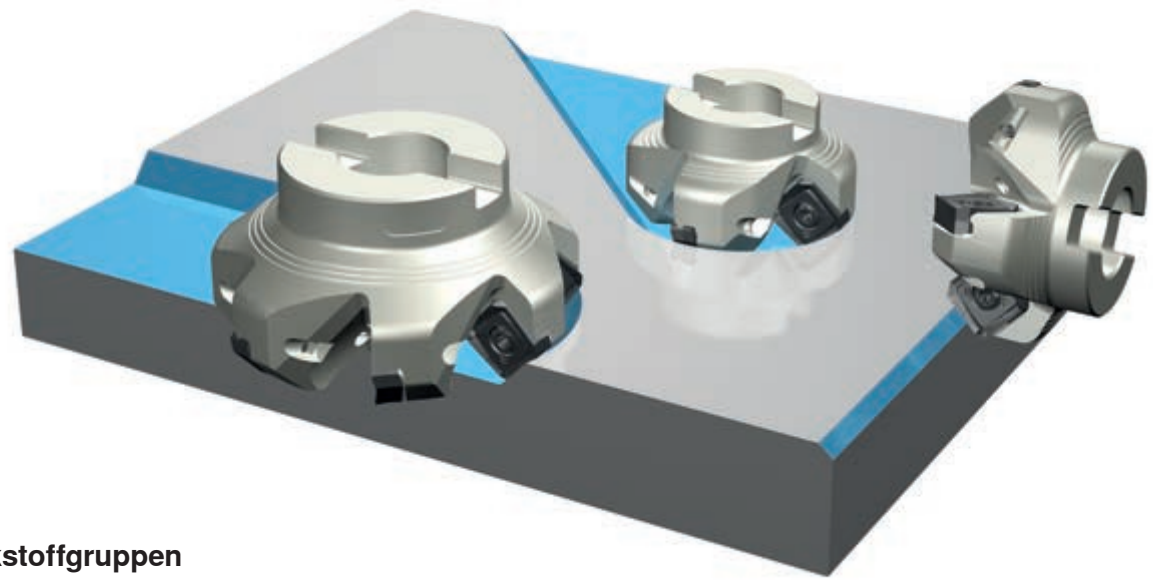
Bei Wendeplattenwechsel ist zunächst die Einstellschraube (1) gegen den Uhrzeigersinn zu lösen. Nach der Wendeplattenbestückung beginnt der Einstellvorgang wiederum bei Punkt 1.

# Notizen



## Maximale Power für hohe Produktivität

- 8 effektive Schneidkanten
- Maximale Spantiefe 8,4 mm



## Werkstoffgruppen

| | |
|---|---|
| P | ● |
| M | ○ |
| K | ● |
| N | |
| S | ● |
| H | |

## Einsatzmöglichkeiten


Planfräsen


Gassenfräsen


Fasfräsen

## Detailinformationen

| Teilung | Ø-Bereich | Schneidplatten |
|---|---|---|
|  | Ø 50 - 250 mm | SAKU 1706.. |

# System MaxiMill 271

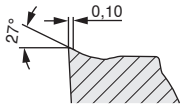
Spanleitstufenübersicht



## -F50

- Positive Geometrie
- Mittlere Schruppbearbeitung
- Für labile Aufspannungen bei Stahlbearbeitungen
- Erste Wahl für rostfreie Stahlwerkstoffe





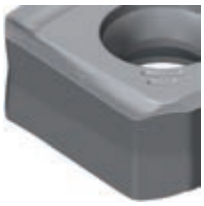

$f_z$ [mm]

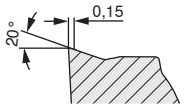
0,20 - 0,30

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP220** CTPP225 | **CTCP230** CTPP235 | |
| **CTCM235** CTPM225 | CTPM225 **CTPM240** | |
| | | |
| | | |
| CTC5235 **CTC5240** | CTC5235 **CTC5240** | **CTC5235** CTC5240 |
| | | |

## -M50

- Universell Geometrie
- Mittlere bis starke Schruppbearbeitung
- Erste Wahl für allgemeine Stahlwerkstoffe





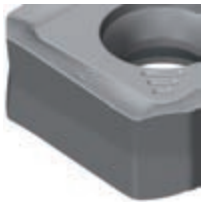

$f_z$ [mm]

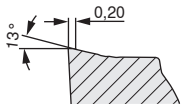
0,20 - 0,50

| Bearbeitungsbedingungen | | |
|---|---|---|
| | CTCP230 **CTPP235** | CTCP230 **CTPP235** |
| | CTPM225 **CTPM240** | CTPM225 **CTPM240** |
| | **CTCK215** CTPK220 | CTCK215 **CTPK220** |
| | | |
| | | |
| | | |

## -R50

- Stabile Geometrie
- Starke Schruppbearbeitung
- Für stark unterbrochene Schnitte
- Erste Wahl für Eisengusswerkstoffe

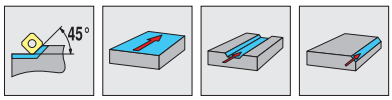




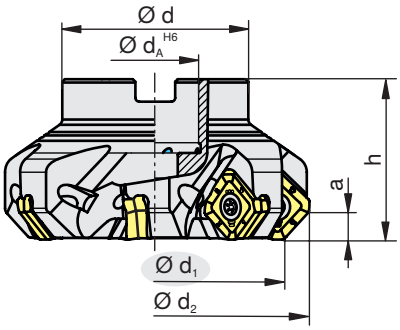

$f_z$ [mm]

0,20 - 0,50

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | **CTCK215** CTPK220 | CTCK215 **CTPK220** |
| | | |
| | | |
| | | |






| $d_1$ [mm] | Type, Bezeichnung | $d_2$ [mm] | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | A271.50.R.04-17 | 66,1 | 40 | 43 | 22 | 8,4 | 4 | 14.500 | 5 | SAKU 1706.. | E01 |
| 63 | A271.63.R.06-17 | 79,1 | 40 | 48 | 22 | 8,4 | 6 | 13.000 | 5 | SAKU 1706.. | E02 |
| 80 | A271.80.R.07-17 | 96,1 | 50 | 58 | 27 | 8,4 | 7 | 11.200 | 5 | SAKU 1706.. | E02 |
| 100 | A271.100.R.08-17 | 116,1 | 50 | 78 | 32 | 8,4 | 8 | 9.900 | 5 | SAKU 1706.. | E02 |
| 125 | A271.125.R.10-17 | 141,1 | 63 | 88 | 40 | 8,4 | 10 | 8.800 | 5 | SAKU 1706.. | E02 |
| 160 | A271.160.R.12-17 | 176,1 | 63 | 104 | 40 | 8,4 | 12 | 7.700 | 5 | SAKU 1706.. | E02 |
| 200 | A271.200.R.13-17 | 216,1 | 63 | 134 | 60 | 8,4 | 13 | 6.900 | 5 | SAKU 1706.. | E02 |
| 250 | A271.250.R.15-17 | 266,1 | 63 | 134 | 60 | 8,4 | 15 | 6.100 | 5 | SAKU 1706.. | E02 |

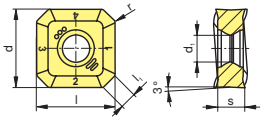
| | | | |
|---|---|---|---|
| E01 | 11040298 | 11107792 | 11210490 |
| E02 | | 11107792 | 11210490 |

B276

# System MaxiMill 271

SA..

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d [mm] | l [mm] | s [mm] | $l_1$ [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | ○ | | | ○ | | | | | | | | | | | |
| | | M | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | ● | | | | | | | | | | | |
| | | K | | ○ | ● | ● | ● | | | | | ● | ● | ● | ● | | ○ | ● | ● | ○ | | ● | | | | | | | | | |
| | | N | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | | | | |
| | | S | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| | | H | | | | | | | | | | | ○ | | | | | | | | | ● | | | | | | | | | |
| -F50 |  | SAKU 1706ABSR-F50 | | | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | ● | ● | | | | | 17,00 | 17,00 | 6,35 | 3,70 | 0,80 | 5,80 |
| -M50 |  | SAKU 1706ABSR-M50 | | | ● | ● | ● | ● | ● | ● | ● | | | ● | ● | | | | | | | | | | | 17,00 | 17,00 | 6,35 | 3,70 | 0,80 | 5,80 |
| -R50 |  | SAKU 1706ABSR-R50 | | | | | | | | | | | | ● | ● | | | | | | | | | | | 17,00 | 17,00 | 6,35 | 3,70 | 0,80 | 5,80 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d | l | s | $l_1$ | r | $d_1$ |






B12-B18
B77
B21
B257-B266

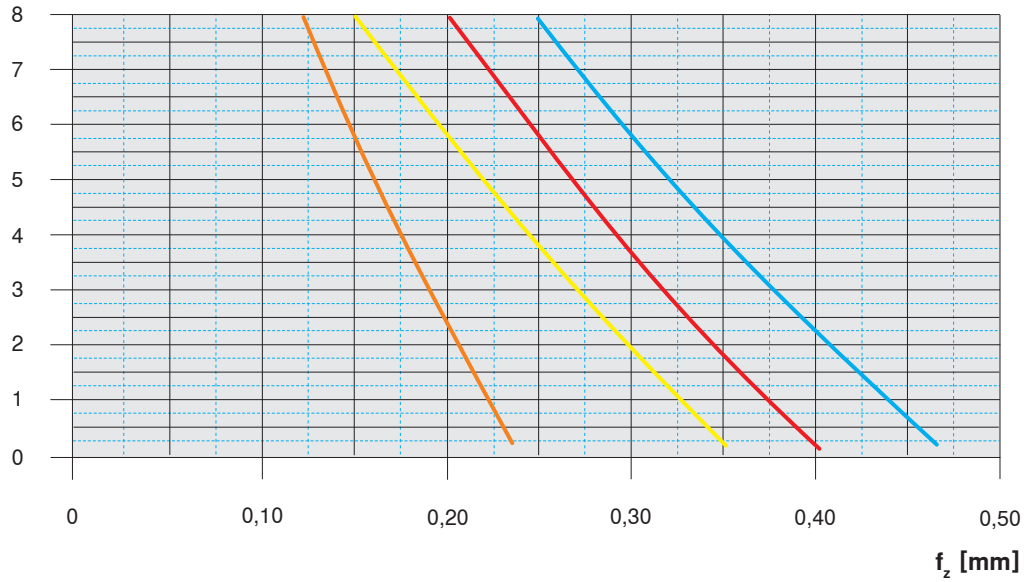
# System MaxiMill 271

Startparameter für Beispielwerkstoffe

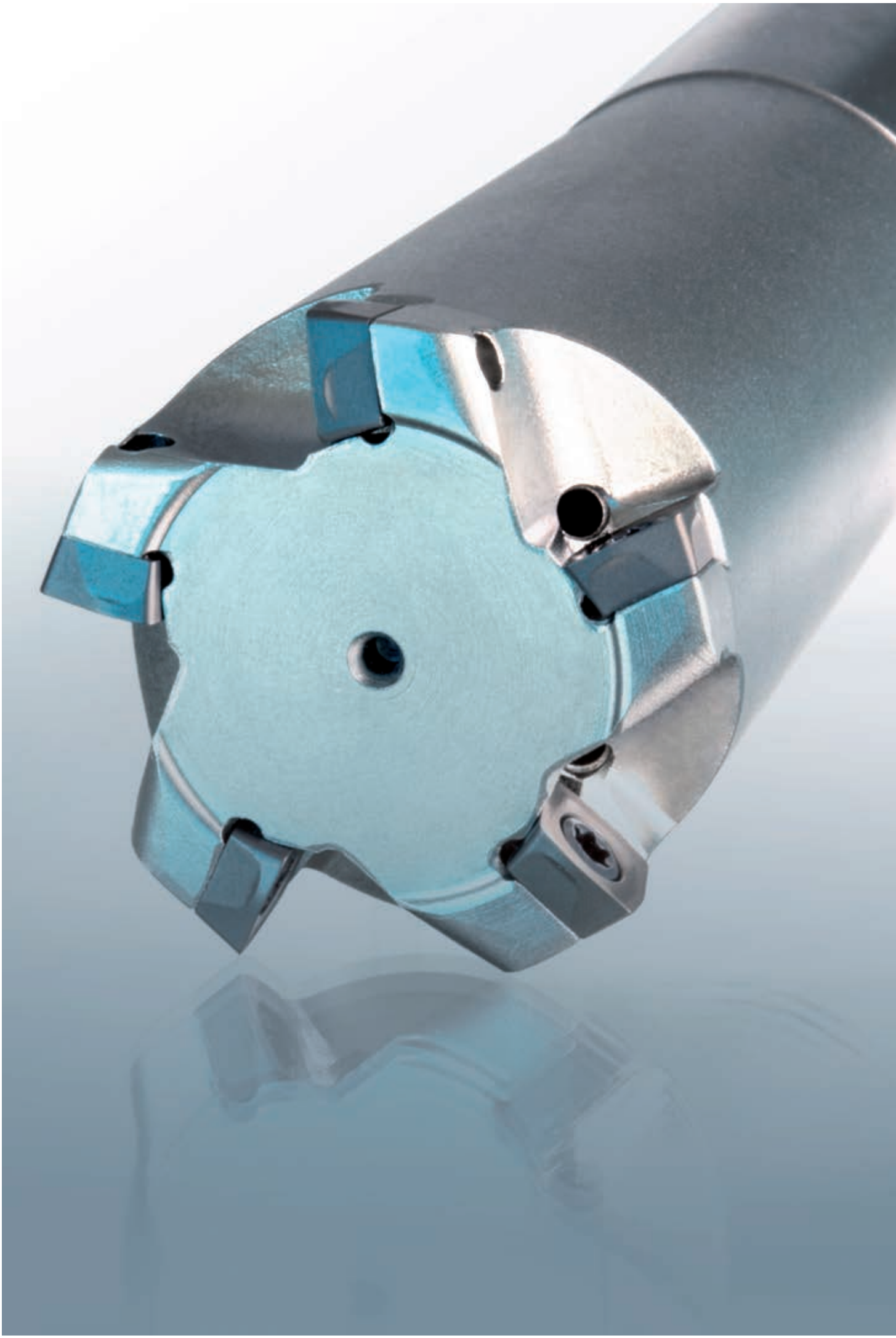
| Werkstoff | | | | Wendeplatte | | $v_c$ [m/min] | Kühlung |
|---|---|---|---|---|---|---|---|
| ▼ | 1.2312 | 40CrMnMoS8-6 | 1.000 N/mm² | SAKU 1706ABSR-M50 | CTPP235 | 200 | trocken |
| ▼ | 1.4571 | X6CrNiMoTi17-12-2 | 600 N/mm² | SAKU 1706ABSR-F50 | CTPM240 | 180 | trocken |
| ▼ | 5.1301 | EN-GJL-250 | HB 180 | SAKU 1706ABSR-R50 | CTCK215 | 250 | trocken |
| ▼ | 2.4856 | Inconel 625 | 1.450 N/mm² | SAKU 1706ABSR-F50 | CTC5235 | 35 | Emulsion |

**SAKU**



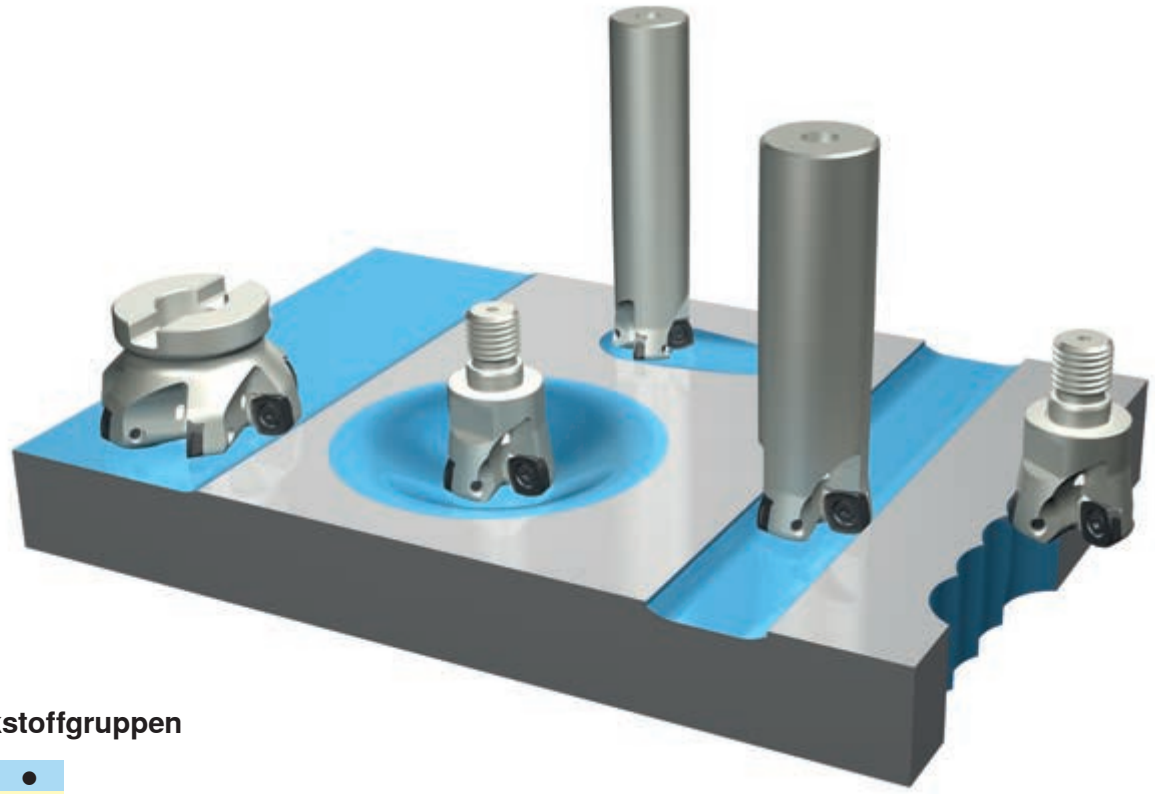



Weitere Sorten und Geometrien können für den erfolgreichen Anwendungsfall verwendet werden und sind im jeweiligen Anwendungsbereich des Systems abgebildet.



## Fräser für höchste Zerspanleistung

- extreme Vorschübe
- maximales Zeitspanvolumen



## Werkstoffgruppen

| | |
|---|---|
| P | ● |
| M | ● |
| K | ○ |
| N | |
| S | ● |
| H | |

## Einsatzmöglichkeiten


Planfräsen


Gassenfräsen


Schräges Eintauchen


Auskammern


Freiformfräsen


Zirkulares Eintauchen


Tauchfräsen

## Detailinformationen

| Teilung | Ø-Bereich | Schneidplatten |
|---|---|---|
|  | Ø 16 - 100 mm | XP..06..<br>XD..09..<br>XO..12.. |

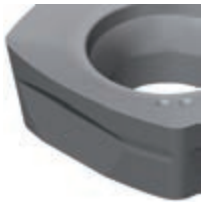
# System MaxiMill HFC

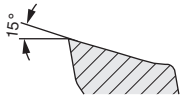
Spanleitstufenübersicht



## -F40

- Positive Geometrie
- Schlicht- und Schruppbearbeitung
- Für labile Aufspannungen
- Für hochwarmfeste Werkstoffe, Titan und Superlegierungen






$f_z$ [mm]

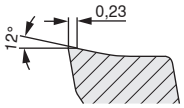
0,20 - 1,25

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| **CTC5235** | **CTC5235** | **CTC5235** |
| | | |
| | | |
| CTC5235<br>**CTC5240** | CTC5235<br>**CTC5240** | CTC5235<br>**CTC5240** |
| | | |

## -M50

- Universelle Geometrie
- Leichte bis mittlere Schruppbearbeitung
- Erste Wahl für allgemeine Stahlwerkstoffe






$f_z$ [mm]

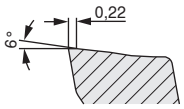
0,50 - 3,00

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP230**<br>CTPP235 | CTCP230<br>**CTPP235** | CTCP230<br>**CTPP235** |
| | **CTCM235**<br>CTPM240 | CTPM225<br>**CTPM240** |
| | **CTCK215** | **CTCK215** |
| | | |
| | | |
| | | |

## -R50

- Stabile Geometrie
- Für stabile Bearbeitungsbedingungen
- Erste Wahl für stark unterbrochene Schnitte
- Für allgemeine Stahlwerkstoffe

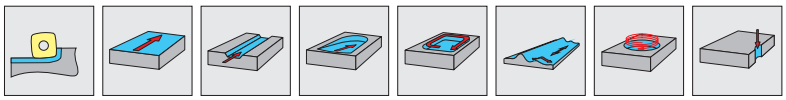




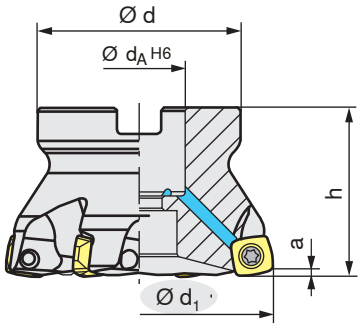

$f_z$ [mm]

0,50 - 3,00

| Bearbeitungsbedingungen | | |
|---|---|---|
| | **CTPP235** | **CTPP235** |
| | | |
| | | |
| | | |
| | | |
| | | |







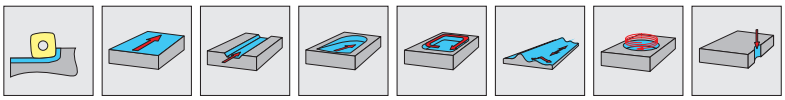

| $d_1$ [mm] | Type, Bezeichnung | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 32 | AHFC.32.R.03-09 | 40 | 38 | 16 | 1 | 3 | 27.000 | 3,2 | XD.. 09.. | E01 |
| 35 | AHFC.35.R.04-09 | 40 | 38 | 16 | 1 | 4 | 26.700 | 3,2 | XD.. 09.. | E01 |
| 40 | AHFC.40.R.04-09 | 40 | 38 | 16 | 1 | 4 | 26.400 | 3,2 | XD.. 09.. | E01 |
| 42 | AHFC.42.R.05-09 | 40 | 38 | 16 | 1 | 5 | 26.100 | 3,2 | XD.. 09.. | E01 |
| 50 | AHFC.50.R.05-09 | 40 | 43 | 22 | 1 | 5 | 23.500 | 3,2 | XD.. 09.. | E02 |
| 52 | AHFC.52.R.06-09 | 40 | 43 | 22 | 1 | 6 | 23.000 | 3,2 | XD.. 09.. | E02 |
| 63 | AHFC.63.R.06-09 | 40 | 48 | 22 | 1 | 6 | 20.500 | 3,2 | XD.. 09.. | E02 |
| 66 | AHFC.66.R.07-09 | 40 | 48 | 22 | 1 | 7 | 20.000 | 3,2 | XD.. 09.. | E02 |
| 40 | AHFC.40.R.03-12 | 40 | 38 | 16 | 2 | 3 | 21.120 | 5 | XO.. 12.. | E03 |
| 42 | AHFC.42.R.04-12 | 40 | 38 | 16 | 2 | 4 | 20.880 | 5 | XO.. 12.. | E03 |
| 50 | AHFC.50.R.04-12 | 40 | 43 | 22 | 2 | 4 | 18.800 | 5 | XO.. 12.. | E04 |
| 52 | AHFC.52.R.05-12 | 40 | 43 | 22 | 2 | 5 | 18.400 | 5 | XO.. 12.. | E04 |
| 63 | AHFC.63.R.05-12 | 40 | 48 | 22 | 2 | 5 | 16.400 | 5 | XO.. 12.. | E04 |
| 66 | AHFC.66.R.06-12 | 40 | 48 | 22 | 2 | 6 | 16.000 | 5 | XO.. 12.. | E04 |
| 80 | AHFC.80.R.07-12 | 50 | 58 | 27 | 2 | 7 | 14.000 | 5 | XO.. 12.. | E04 |
| 100 | AHFC.100.R.08-12 | 50 | 78 | 32 | 2 | 8 | 12.000 | 5 | XO.. 12.. | E04 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 11036880 | 165795 | 11149570 | 8095010500 | 4425 |
| E02 | | 165795 | 11149570 | 8095010500 | |
| E03 | 11036880 | 106022 | 11210490 | 8095010600 | 4425 |
| E04 | | 106022 | 11210490 | 8095010600 | |

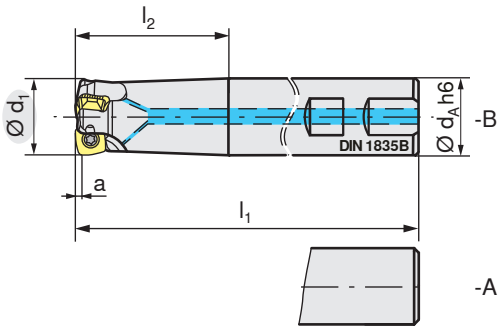
B276

# System MaxiMill HFC

CHFC-06/-09/-12



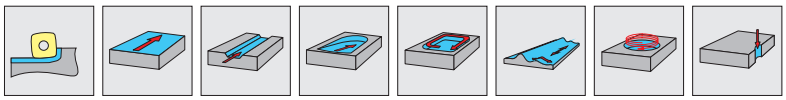




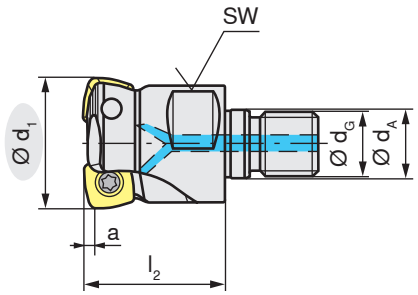

| $d_1$ [mm] | Type, Bezeichnung | $l_1$ [mm] | $l_2$ [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 16 | CHFC.16.R.02-06-A-40-200 | 200 | 40 | 16 | 0,8 | 2 | 4.600 | 1,2 | XP.. 06.. | E01 |
| 16 | CHFC.16.R.02-06-B-40 | 89 | 40 | 16 | 0,8 | 2 | 17.300 | 1,2 | XP.. 06.. | E01 |
| 20 | CHFC.20.R.03-06-A-50-225 | 225 | 50 | 20 | 0,8 | 3 | 4.200 | 1,2 | XP.. 06.. | E01 |
| 20 | CHFC.20.R.03-06-B-50 | 101 | 50 | 20 | 0,8 | 3 | 14.500 | 1,2 | XP.. 06.. | E01 |
| 25 | CHFC.25.R.04-06-A-50-225 | 225 | 50 | 25 | 0,8 | 4 | 4.600 | 1,2 | XP.. 06.. | E01 |
| 25 | CHFC.25.R.04-06-B-50 | 107 | 50 | 25 | 0,8 | 4 | 15.600 | 1,2 | XP.. 06.. | E01 |
| 32 | CHFC.32.R.05-06-A25-60-225 | 225 | 60 | 25 | 0,8 | 5 | 3.900 | 1,2 | XP.. 06.. | E01 |
| 32 | CHFC.32.R.05-06-B25-60 | 117 | 60 | 25 | 0,8 | 5 | 11.000 | 1,2 | XP.. 06.. | E01 |
| 25 | CHFC.25.R.02-09-A-50-225 | 225 | 50 | 25 | 1 | 2 | 9.000 | 3,2 | XD.. 09.. | E02 |
| 25 | CHFC.25.R.03-09-A-50-225 | 225 | 50 | 25 | 1 | 3 | 9.000 | 3,2 | XD.. 09.. | E02 |
| 32 | CHFC.32.R.03-09-A-63-250 | 250 | 63 | 32 | 1 | 3 | 8.100 | 3,2 | XD.. 09.. | E03 |
| 32 | CHFC.32.R.02-12-A-63-250 | 250 | 63 | 32 | 2 | 2 | 6.480 | 5 | XO.. 12.. | E04 |
| 35 | CHFC.35.R.03-12-A-63-250 | 250 | 63 | 32 | 2 | 3 | 6.480 | 5 | XO.. 12.. | E04 |

| | | | |
|---|---|---|---|
| E01 | 76913 | 11149541 | 8095010200 |
| E02 | 54976 | 11149570 | 8095010500 |
| E03 | 165795 | 11149570 | 8095010500 |
| E04 | 106022 | 11210490 | 8095010600 |

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| $d_1$ [mm] | Type, Bezeichnung | $l_2$ [mm] | $d_A$ [mm] | $d_G$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 16 | GHFC.16.R.02-06-27 | 27 | 8,5 | 8 | 0,8 | 2 | 20.800 | 1,2 | XP.. 06.. | E01 |
| 20 | GHFC.20.R.03-06-33 | 33 | 10,5 | 10 | 0,8 | 3 | 19.800 | 1,2 | XP.. 06.. | E01 |
| 25 | GHFC.25.R.04-06-35 | 35 | 12,5 | 12 | 0,8 | 4 | 18.700 | 1,2 | XP.. 06.. | E01 |
| 32 | GHFC.32.R.05-06-35 | 35 | 17,0 | 16 | 0,8 | 5 | 22.000 | 1,2 | XP.. 06.. | E01 |
| 25 | GHFC.25.R.02-09 | 35 | 12,5 | 12 | 1 | 2 | 30.000 | 3,2 | XD.. 09.. | E02 |
| 25 | GHFC.25.R.03-09 | 35 | 12,5 | 12 | 1 | 3 | 30.000 | 3,2 | XD.. 09.. | E02 |
| 32 | GHFC.32.R.03-09 | 35 | 17,0 | 16 | 1 | 3 | 27.000 | 3,2 | XD.. 09.. | E03 |
| 32 | GHFC.32.R.02-12 | 35 | 17,0 | 16 | 2 | 2 | 21.600 | 5 | XO.. 12.. | E04 |
| 35 | GHFC.35.R.03-12 | 35 | 17,0 | 16 | 2 | 3 | 21.360 | 5 | XO.. 12.. | E04 |

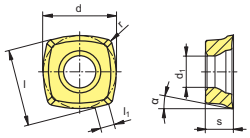
| | | | |
|---|---|---|---|
| E01 | 76913 | 11149541 | 8095010200 |
| E02 | 54976 | 11149570 | 8095010500 |
| E03 | 165795 | 11149570 | 8095010500 |
| E04 | 106022 | 11210490 | 8095010600 |


B276

# System MaxiMill HFC

XD.. XO.. XP..

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d [mm] | l [mm] | s [mm] | $l_1$ [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | ○ | | | ○ | | | | | | | | | | | |
| | | M | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | ● | | | | | | | | | | | |
| | | K | | ○ | ● | ● | ● | | | | | ● | ● | ● | ● | | ○ | ● | ● | ○ | | ● | | | | | | | | | |
| | | N | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | | | | |
| | | S | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| | | H | | | | | | | | | | | ○ | | | | | | | | | ● | | | | | | | | | |
| -F40 |  | XDLX 09T308ER-F40 | | | | | | | | | | | | | | | | | | ● | ● | | | | | 9,49 | 9,00 | 3,97 | | 0,80 | 4,40 |
| | | XOLX 120410ER-F40 | | | | | | | | | | | | | | | | | | ● | ● | | | | | 12,70 | 12,00 | 4,76 | | 1,00 | 5,50 |
| | | XPLX 060305ER-F40 | | | | | | | | | | | | | | | | | | ● | ● | | | | | 6,35 | 6,00 | 2,75 | | 0,50 | 2,80 |
| -M50 |  | XDLX 09T308SR-M50 | | | ● | ● | ● | ● | ● | ● | ● | | | ● | | | | | | | | | | | | 9,60 | 9,00 | 3,97 | 1,5 | 0,80 | 4,40 |
| | | XOLX 120410SR-M50 | | | ● | ● | ● | ● | ● | ● | ● | | | ● | | | | | | | | | | | | 12,70 | 12,00 | 4,76 | 2,2 | 1,00 | 5,50 |
| | | XPLX 060305SR-M50 | | | ● | ● | | ● | ● | | ● | | | ● | | | | | | | | | | | | 6,35 | 6,00 | 2,75 | 1,0 | 0,50 | 2,80 |
| -R50 |  | XOLX 120410SR-R50 | | | | | | ● | | | | | | | | | | | | | | | | | | 12,70 | 12,00 | 4,76 | 2,2 | 1,00 | 5,50 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d | l | s | $l_1$ | r | $d_1$ |



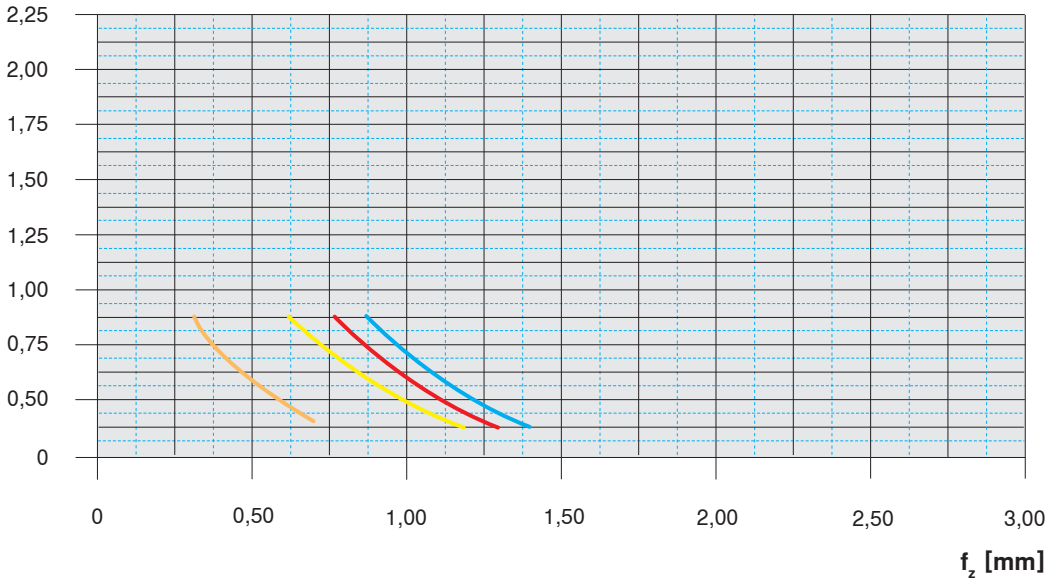



B12-B18 B83 B21 B257-B266

| Werkstoff | | | | Wendeplatte | | $v_c$ [m/min] | Kühlung |
|---|---|---|---|---|---|---|---|
| ▼ | 1.2312 | 40CrMnMoS8-6 | 1.000 N/mm² | XPLX 060305SR-M50<br>XDLX 09T308SR-M50 | CTPP235 | 180 | trocken |
| ▼ | 1.4571 | X6CrNiMoTi17-12-2 | 600 N/mm² | XPLX 060305ER-M40<br>XDLX 09T308SR-M50 | CTPM240 | 160 | trocken |
| ▼ | 5.1301 | EN-GJL-250 | HB 180 | XPLX 060305ER-M50<br>XDLX 09T308SR-M50 | CTCK215 | 250 | trocken |
| ▼ | 2.4856 | Inconel 625 | 1.450 N/mm² | XPLX 060305ER-F40<br>XDLX 09T308ER-F40 | CTC5235 | 35 | Emulsion |

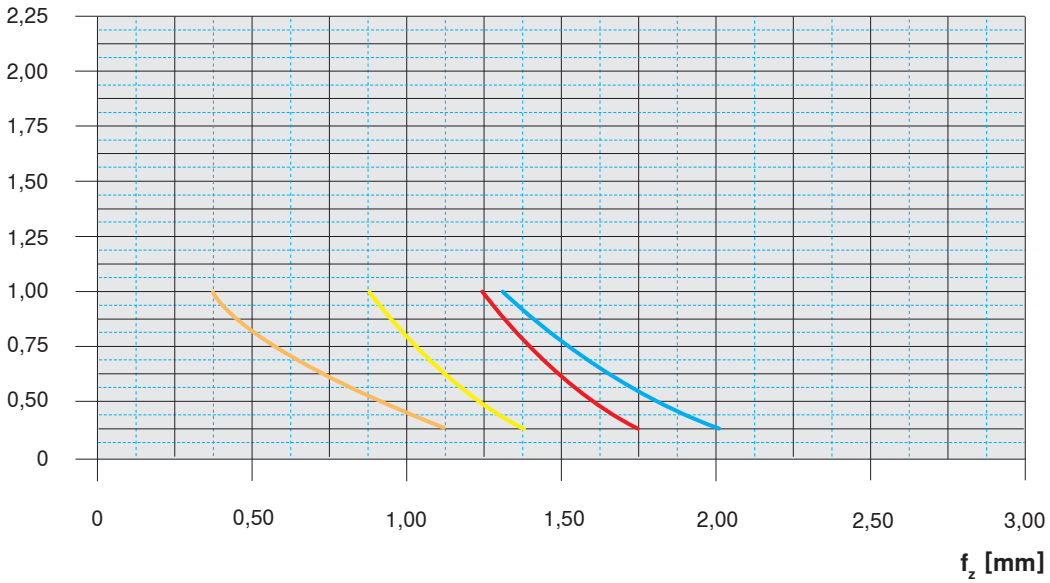
**06**






**09**



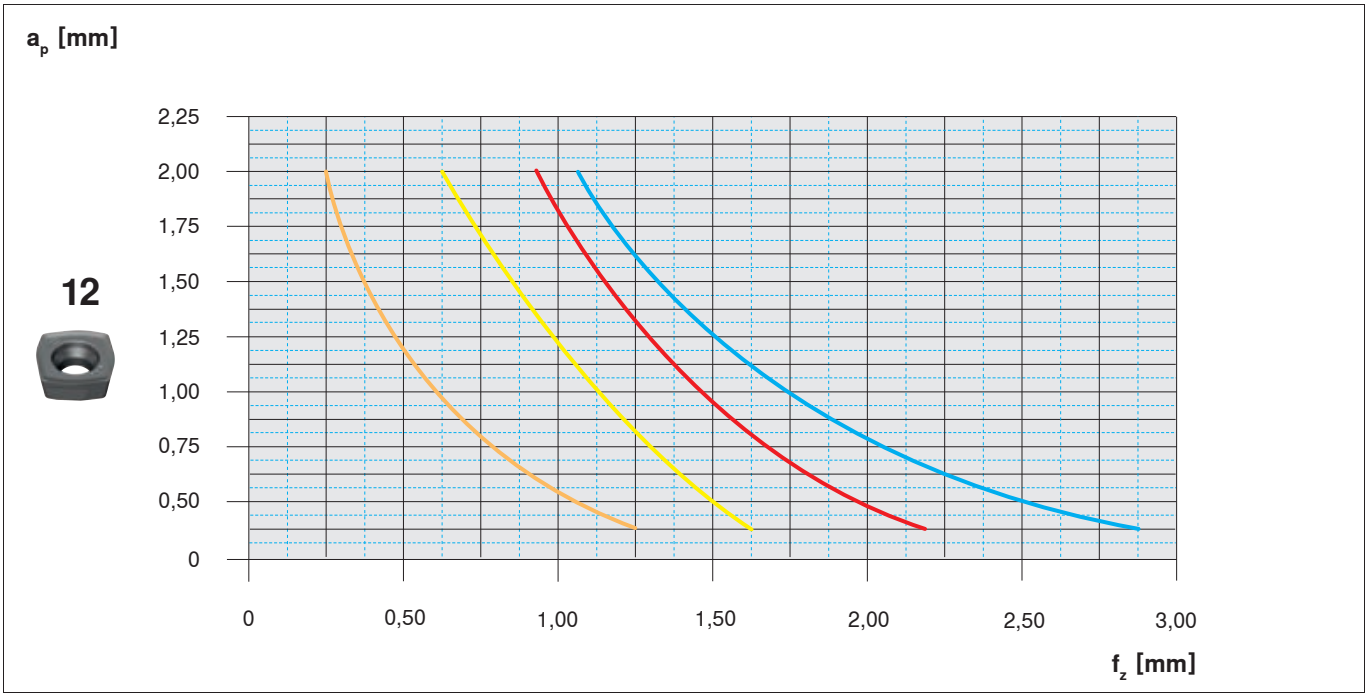



Weitere Sorten und Geometrien können für den erfolgreichen Anwendungsfall verwendet werden und sind im jeweiligen Anwendungsbereich des Systems abgebildet.

# System MaxiMill HFC

Startparameter für Beispielwerkstoffe HFC 12

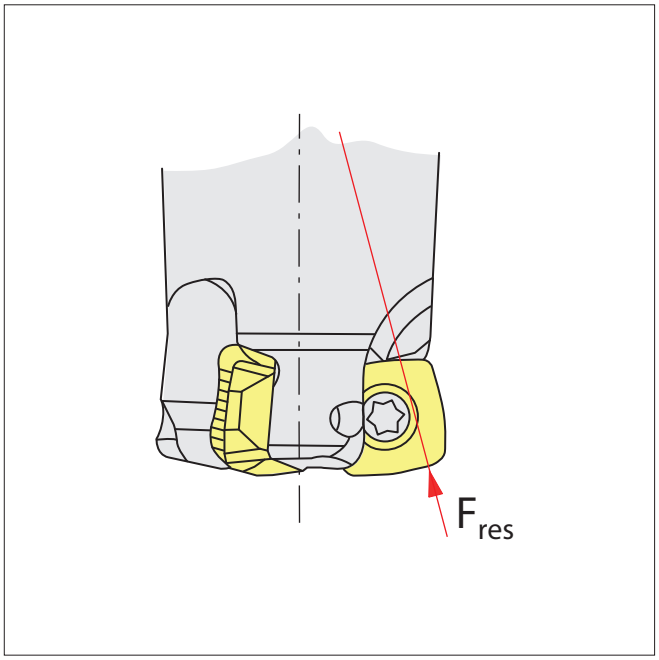
| Werkstoff | | | | Wendeplatte | | $v_c$ [m/min] | Kühlung |
|---|---|---|---|---|---|---|---|
| ▼ | 1.2312 | 40CrMnMoS8-6 | 1.000 N/mm² | XOLX 120410SR-M50 | CTPP235 | 180 | trocken |
| ▼ | 1.4571 | X6CrNiMoTi17-12-2 | 600 N/mm² | XOLX 120410ER-M50 | CTPM240 | 160 | trocken |
| ▼ | 5.1301 | EN-GJL-250 | HB 180 | XOLX 120410ER-M50 | CTCK215 | 250 | trocken |
| ▼ | 2.4856 | Inconel 625 | 1.450 N/mm² | XOLX 120410ER-F40 | CTC5235 | 35 | Emulsion |




Weitere Sorten und Geometrien können für den erfolgreichen Anwendungsfall verwendet werden und sind im jeweiligen Anwendungsbereich des Systems abgebildet.

## Maximale Laufruhe

Durch die leichtschneidende Geometrie und den sehr positiven Winkel in Einbaulage ergibt sich ein schnittiges und laufruhiges Frässystem! Die Zerspanungskräfte werden überwiegend in axiale Richtung gelenkt. Auch bei langen Werkzeugauskragungen entstehen kaum Vibrationen, die Maschinenspindel wird minimal belastet.



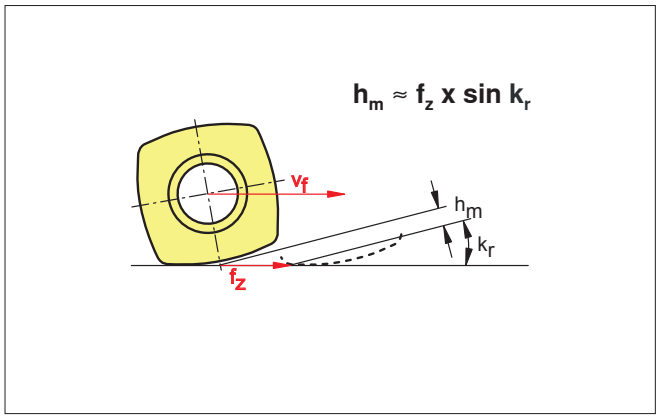

Hochvorschubfrässysteme mit Einstellwinkel $k_r$ = 15°
Erzeugte axiale Kräfte gehen in Richtung Maschinenspindel:

$F_r << F_a$

$F_a$ = axiale Kraft auf die Spindel

$F_r$ = radiale Kraft auf die Spindel

$F_{res}$ = resultierende Kraft auf die Spindel




- Kleine Einstellwinkel $k_r$

  $k_r$ zwischen 15-20°!

- Geringe mittlere Spandicke $h_m$

  Je kleiner der Einstellwinkel ist, desto geringer die mittlere Spandicke!

- Hoher Zahnvorschub $f_z$

  Um eine gleiche, mittlere Spandicke zu erreichen, Zahnvorschub erhöhen!

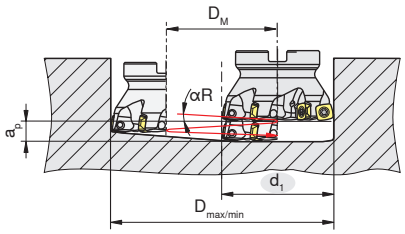
**Hohes Zeitspanvolumen auch bei geringen Schnitttiefen durch kleinen Einstellwinkel, geringe mittlere Spandicke und hohem Zahnvorschub!**

# System MaxiMill HFC

Einsatzdaten HFC 06



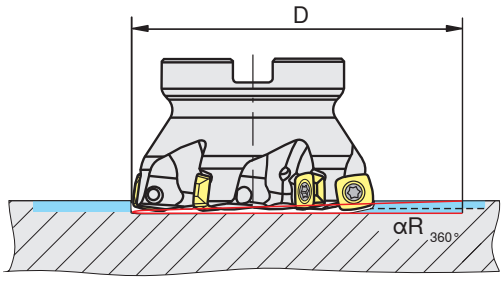
## zirkulares Eintauchen




**$D_{max}$ [mm] = größter Durchmesser für ebene Bodenfläche**
**$D_{min}$ [mm] = kleinster Bohrungsdurchmesser**
**$D_M = D_{max} - d_1$ bzw. $D_{min} - d_1$**

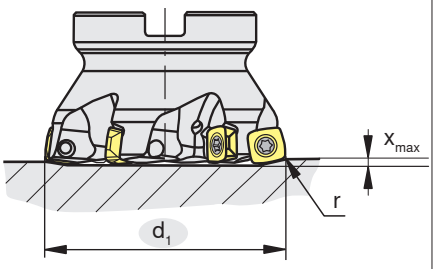
| $d_1$ [mm] | $D_{max}$ [mm] | $D_{min}$ [mm] | $\alpha_{R\ max}$ [°] |
|---|---|---|---|
| **16** | 31 | 22 | 4,5 |
| **20** | 39 | 30 | 2,3 |
| **25** | 49 | 40 | 1,3 |
| **32** | 63 | 54 | 0,9 |

$a_p$ [mm] = $D_M$ x π x tan $\alpha_R$



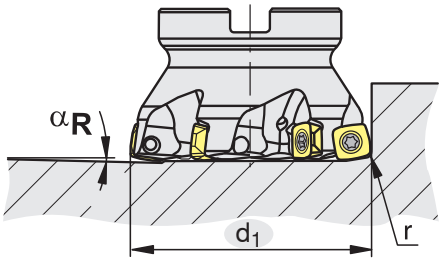

| $d_1$ [mm] | D [mm] | $\alpha_{R\ max}$ 360° [°] |
|---|---|---|
| **16** | 22 | 4,5 |
| **20** | 30 | 2,3 |
| **25** | 40 | 1,3 |
| **32** | 54 | 0,9 |

## axiales Eintauchen



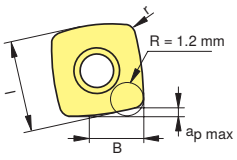

| $d_1$ [mm] | $X_{max}$ [mm] |
|---|---|
| **16 - 32** | 0,5 |

## schräges Eintauchen




| $d_1$ [mm] | $\alpha_{R\ max}$ [°] |
|---|---|
| **16** | 5,9 |
| **20** | 3,2 |
| **25** | 2,0 |
| **32** | 1,3 |

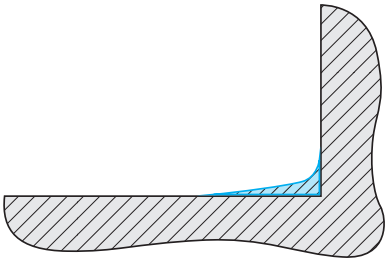
## Programmierdaten



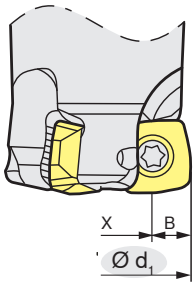

| l [mm] | B [mm] | r [mm] | $a_{p\ max}$ [mm] |
|---|---|---|---|
| 6,35 | 5,3 | 0,5 | 0,8 |

**R = Programmierradius**

## Profil beim Eck- und Nutfräsen

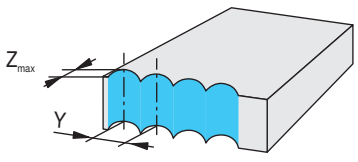


## Schnittbreite für ebene Flächen



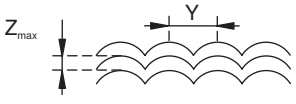

| $d_1$ [mm] | X [mm] | B [mm] |
|---|---|---|
| 16 - 32 | $d_1$-(2 x B) | 4,3 |

## Eingriff beim Tauchfräsen

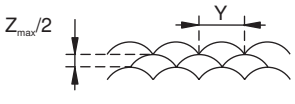



| $Z_{max}$ [mm] | $f_z$ initial [mm] | $f_z$ min [mm] | $f_z$ max [mm] | $Y_{max}$ [mm] |
|---|---|---|---|---|
| 5,3 | 0,10 | 0,08 | 0,15 | $d_1$ x < 0,7 |

**Werkzeugversatz mit optimaler Überdeckung**




**Werkzeugversatz für instabile Bedingungen**

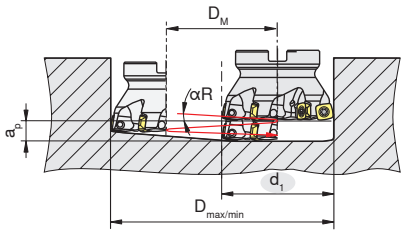


# System MaxiMill HFC

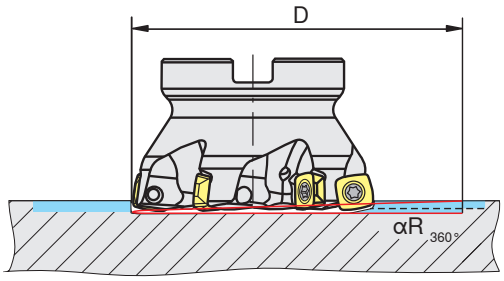
Einsatzdaten HFC 09



## zirkulares Eintauchen




**$D_{max}$ [mm] = größter Durchmesser für ebene Bodenfläche**
**$D_{min}$ [mm] = kleinster Bohrungsdurchmesser**
**$D_M = D_{max} - d_1$ bzw. $D_{min} - d_1$**

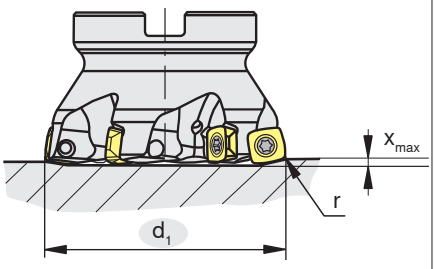



| $d_1$ [mm] | $D_{max}$ [mm] | $D_{min}$ [mm] | $\alpha_{R\ max}$ [°] |
|---|---|---|---|
| **25** | 48 | 35 | 3,1 |
| **32** | 62 | 49 | 1,7 |
| **35** | 68 | 55 | 1,4 |
| **40** | 78 | 65 | 1,0 |
| **42** | 82 | 69 | 0,9 |
| **50** | 98 | 85 | 0,8 |
| **52** | 102 | 89 | 0,7 |
| **63** | 124 | 111 | 0,7 |
| **66** | 130 | 117 | 0,6 |

$a_p$ [mm] = $D_M$ x π x tan $\alpha_R$

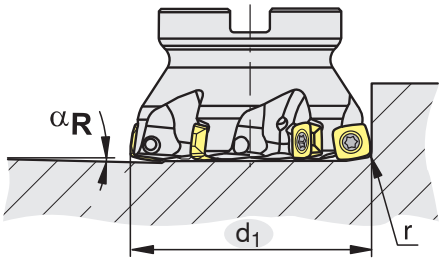
| $d_1$ [mm] | D [mm] | $\alpha_{R\ max}$ 360° [°] |
|---|---|---|
| **25** | 35 | 3,1 |
| **32** | 49 | 1,7 |
| **35** | 55 | 1,4 |
| **40** | 65 | 1,0 |
| **42** | 69 | 0,9 |
| **50** | 85 | 0,8 |
| **52** | 89 | 0,7 |
| **63** | 111 | 0,7 |
| **66** | 117 | 0,6 |

## axiales Eintauchen



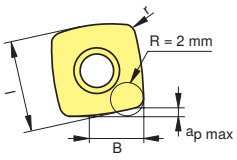

| $d_1$ [mm] | $X_{max}$ [mm] |
|---|---|
| **25 - 66** | 0,75 |

## schräges Eintauchen




| $d_1$ [mm] | $\alpha_{R\ max}$ [°] |
|---|---|
| **25** | 3,6 |
| **32** | 2,0 |
| **35** | 1,6 |
| **40** | 1,2 |
| **42** | 1,1 |
| **50** | 0,9 |
| **52** | 0,8 |
| **63** | 0,8 |
| **66** | 0,7 |

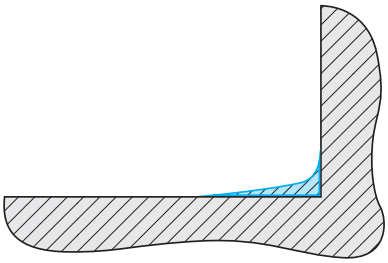
## Programmierdaten



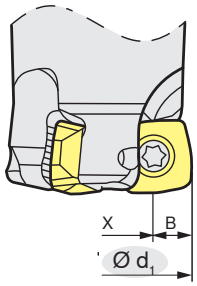

| l [mm] | B [mm] | r [mm] | $a_{p\ max}$ [mm] |
|---|---|---|---|
| 9 | 5,9 | 0,8 | 1 |

**R = Programmierradius**

## Profil beim Eck- und Nutfräsen

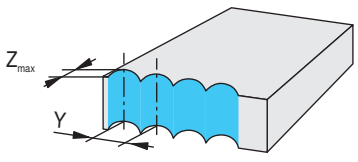


## Schnittbreite für ebene Flächen



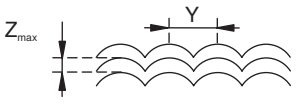

| $d_1$ [mm] | X [mm] | B [mm] |
|---|---|---|
| 25 - 66 | $d_1$-(2 x B) | 5,9 |

## Eingriff beim Tauchfräsen

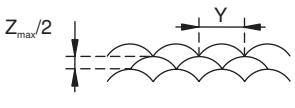



| $Z_{max}$ [mm] | $f_z$ initial [mm] | $f_z$ min [mm] | $f_z$ max [mm] | $Y_{max}$ [mm] |
|---|---|---|---|---|
| 7,5 | 0,10 | 0,08 | 0,15 | $d_1$ x < 0,7 |

**Werkzeugversatz mit optimaler Überdeckung**




**Werkzeugversatz für instabile Bedingungen**

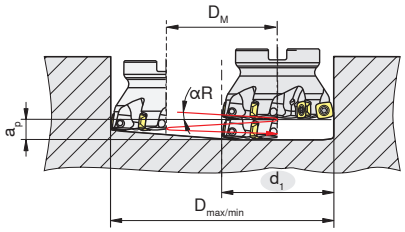


# System MaxiMill HFC

Einsatzdaten HFC 12

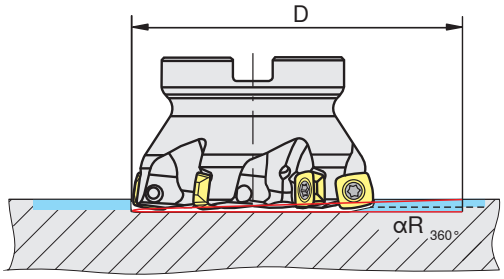


## zirkulares Eintauchen



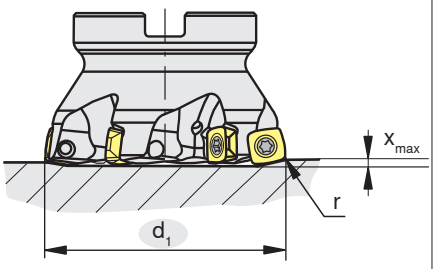

**$D_{max}$ [mm] = größter Durchmesser für ebene Bodenfläche**
**$D_{min}$ [mm] = kleinster Bohrungsdurchmesser**
**$D_M = D_{max} - d_1$ bzw. $D_{min} - d_1$**

| $d_1$ [mm] | $D_{max}$ [mm] | $D_{min}$ [mm] | $\alpha_{R\,max}$ [°] |
|---|---|---|---|
| **32** | 62 | 44 | 6,1 |
| **35** | 68 | 50 | 3,7 |
| **40** | 78 | 60 | 2,5 |
| **42** | 82 | 64 | 2,3 |
| **50** | 98 | 80 | 1,3 |
| **52** | 102 | 84 | 1,3 |
| **63** | 124 | 106 | 0,9 |
| **66** | 130 | 112 | 0,9 |
| **80** | 158 | 140 | 1,1 |
| **100** | 198 | 180 | 0,6 |
| $a_p$ [mm] = $D_M$ x π x tan $\alpha_R$ | | | |



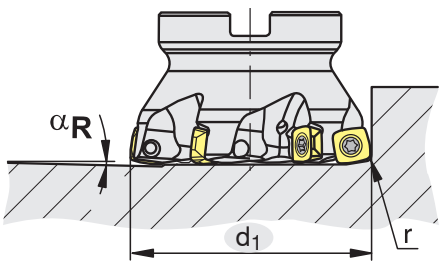

| $d_1$ [mm] | D [mm] | $\alpha_{R\,max}$ 360° [°] |
|---|---|---|
| **32** | 44 | 6,1 |
| **35** | 50 | 3,7 |
| **40** | 60 | 2,5 |
| **42** | 64 | 2,3 |
| **50** | 80 | 1,3 |
| **52** | 84 | 1,3 |
| **63** | 106 | 0,9 |
| **66** | 112 | 0,9 |
| **80** | 140 | 1,1 |
| **100** | 180 | 0,6 |

## axiales Eintauchen



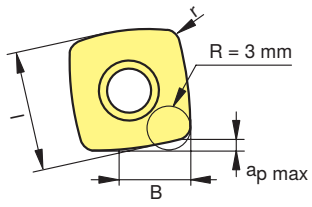

| $d_1$ [mm] | $X_{max}$ [mm] |
|---|---|
| **32 - 100** | 1,15 |

## schräges Eintauchen




| $d_1$ [mm] | $\alpha_{R\,max}$ [°] |
|---|---|
| **32** | 7,2 |
| **35** | 4,4 |
| **40** | 2,9 |
| **42** | 2,7 |
| **50** | 1,5 |
| **52** | 1,5 |
| **63** | 1,1 |
| **66** | 1,1 |
| **80** | 1,3 |
| **100** | 0,7 |

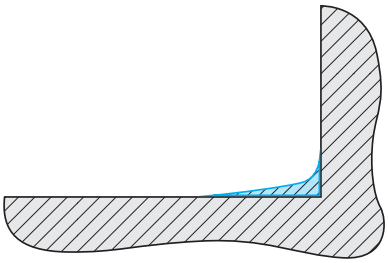
## Programmierdaten



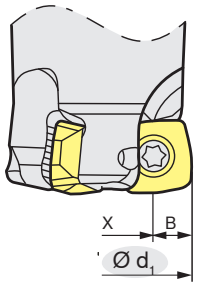

| l [mm] | B [mm] | r [mm] | $a_{p\ max}$ [mm] |
|---|---|---|---|
| 12 | 8,3 | 1,0 | 2 |

**R = Programmierradius**

## Profil beim Eck- und Nutfräsen

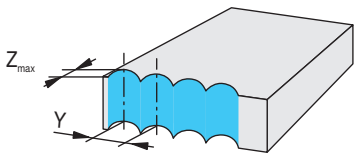


## Schnittbreite für ebene Flächen



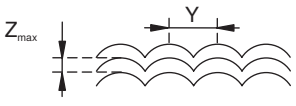

| $d_1$ [mm] | X [mm] | B [mm] |
|---|---|---|
| 32 - 100 | $d_1$-(2 x B) | 8,3 |

## Eingriff beim Tauchfräsen

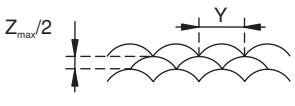


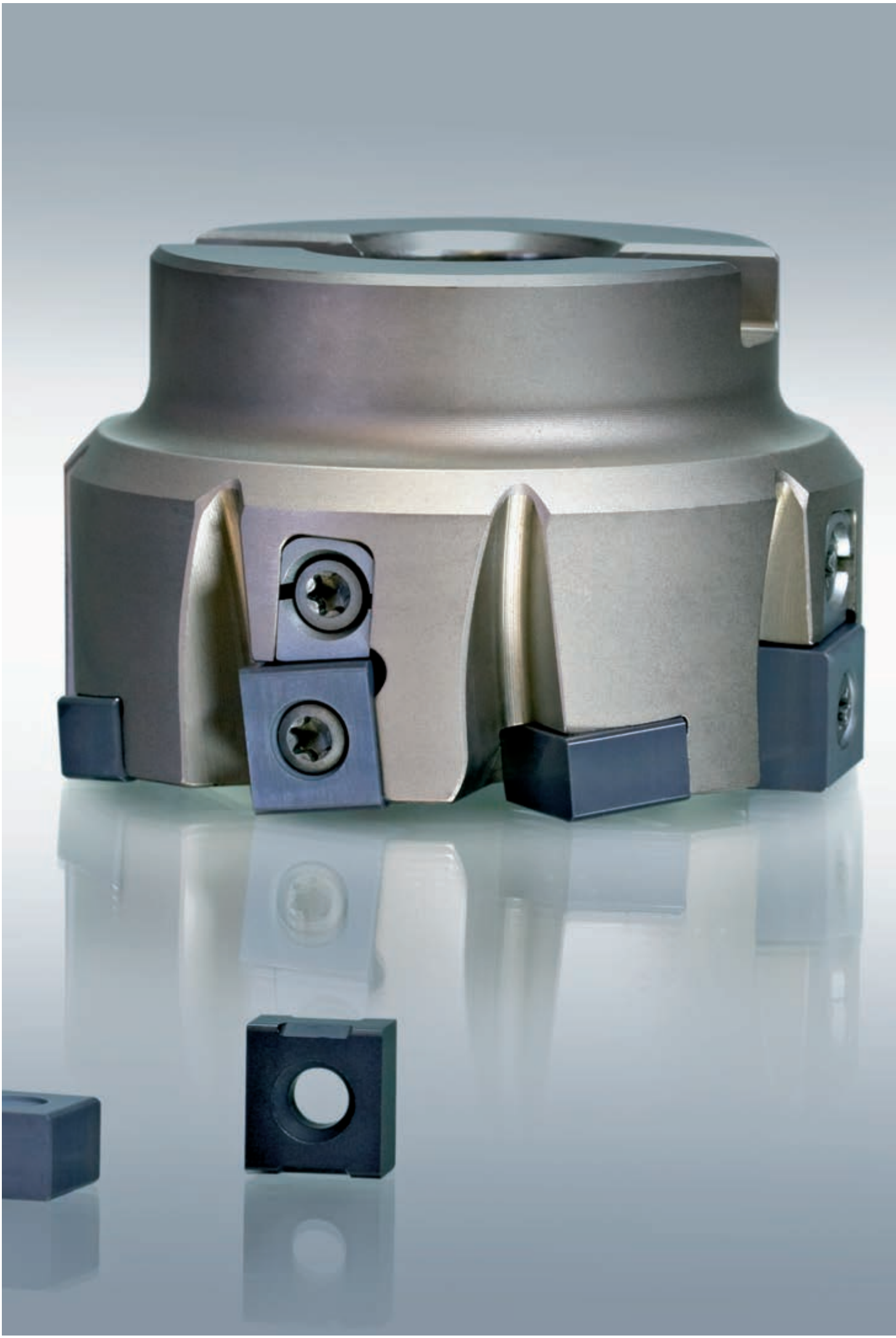

| $Z_{max}$ [mm] | $f_z$ initial [mm] | $f_z$ min [mm] | $f_z$ max [mm] | $Y_{max}$ [mm] |
|---|---|---|---|---|
| 10 | 0,15 | 0,10 | 0,20 | $d_1$ x < 0,7 |

**Werkzeugversatz mit optimaler Überdeckung**



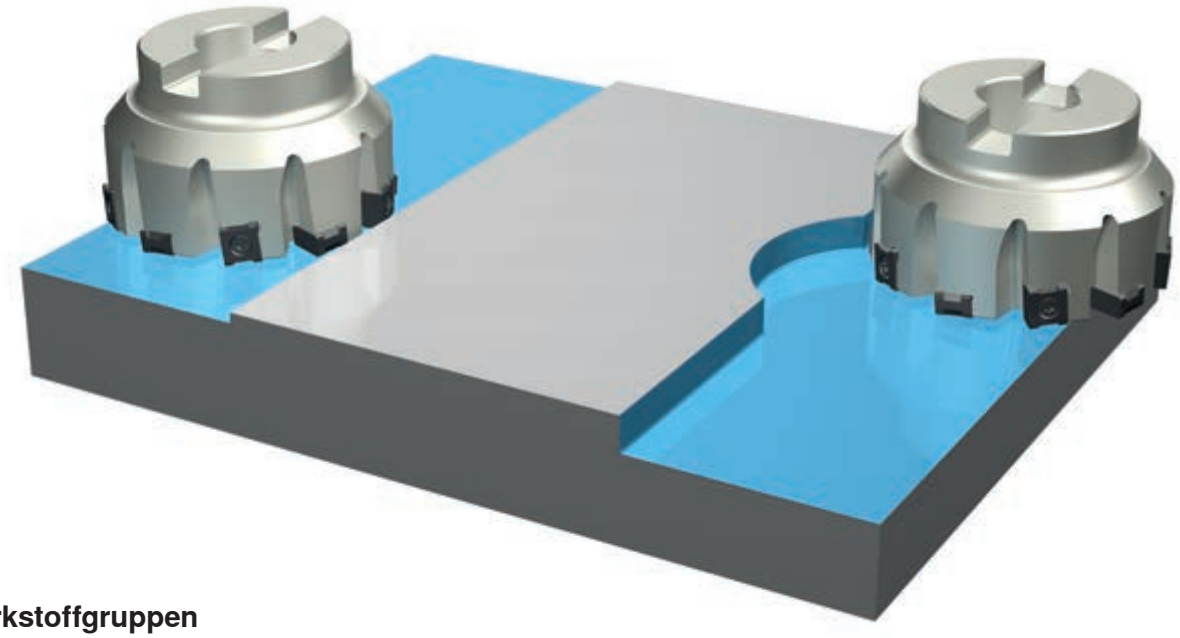

**Werkzeugversatz für instabile Bedingungen**





## Gussfräsen ohne Kompromisse

- 8 nutzbare Schneidkanten
- optimale Lösung bei Eisengusswerkstoffen



## Werkstoffgruppen

| | |
|---|---|
| P | |
| M | |
| K | ● |
| N | |
| S | |
| H | |

## Einsatzmöglichkeiten


Planfräsen


Gassenfräsen


Trochoides Nutfräsen

## Detailinformationen

| Teilung | Ø-Bereich | Schneidplatten |
|---|---|---|
|  | Ø 50 - 160 mm | LN.. 1106..<br>LN..1210.. |

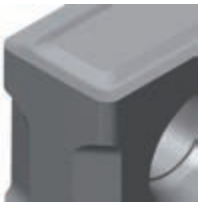
# System MaxiMill HEC

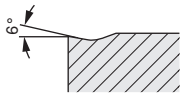
Spanleitstufenübersicht



## -R50

- Positive Geometrie
- Bei dünnwandigen Bauteilen
- Bei begrenzter Maschinenleistung
- Für Eisengusswerkstoffe






$f_z$ [mm]

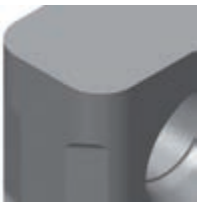
0,08 - 0,25

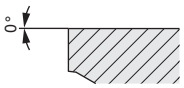
Bearbeitungsbedingungen

| | | |
|---|---|---|
| | | |
| | | |
| **CTCK215** | **CTPK220** | |
| | | |
| | | |
| | | |

## EN

- Stabile Schneidkante
- Universell einsetzbar
- Für Eisengusswerkstoffe






$f_z$ [mm]

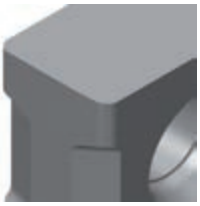
0,08 - 0,30

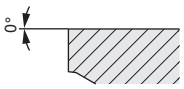
Bearbeitungsbedingungen

| | | |
|---|---|---|
| | | |
| | | |
| **CTCK215** | **CTCK215** | |
| | | |
| | | |
| | | |

## ER

- Stabile Schneidkante
- Universell einsetzbar
- Hohe Oberflächengüte durch Planfase
- Erste Wahl für Eisengusswerkstoffe






$f_z$ [mm]

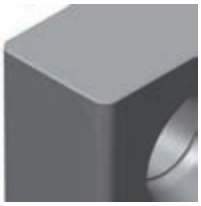
0,08 - 0,30

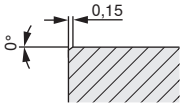
Bearbeitungsbedingungen

| | | |
|---|---|---|
| **CTEP210** | | |
| | | |
| **CTCK215** CTEP210 | **CTPK220** | |
| | | |
| | | |
| | | |

## SR

- Stabile Schneidkannte
- abgestimmt auf Keramik & CBN als Schneidstoff
- Stabile Bauteilspannung und Maschine
- Für Eisengusswerkstoffe






$f_z$ [mm]

0,10 - 0,25

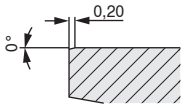
Bearbeitungsbedingungen

| | | |
|---|---|---|
| | | |
| | | |
| **CTN3105** CTL3215 | | |
| | | |
| | | |
| | | |

## SN

- Stabile Schneidkante
- Starke Schruppbearbeitung
- Stabile Bauteilspannung und Maschine
- Für Eisengusswerkstoffe





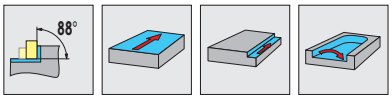

$f_z$ [mm]

0,10 - 0,45

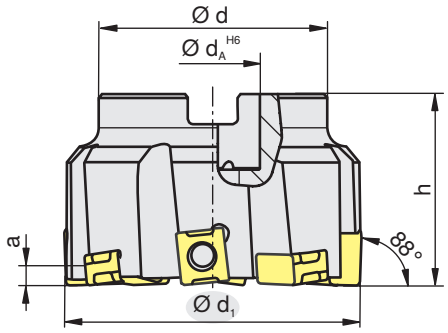
| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | CTCK215 | CTCK215 |
| | | |
| | | |
| | | |

# System MaxiMill HEC

AHEC



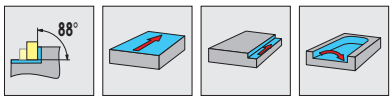


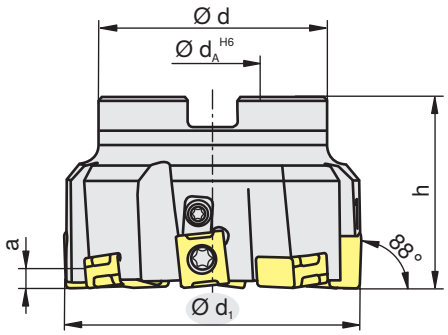

| $d_1$ [mm] | Type, Bezeichnung | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 50 | AHEC.50.R.04B-11 | 40 | 48 | 22 | 4 | 4 | 12.700 | 3,2 | LN.X 1106 | E01 |
| 50 | AHEC.50.R.06-11 | 40 | 48 | 22 | 4 | 6 | 12.700 | 3,2 | LN.X 1106 | E01 |
| 63 | AHEC.63.R.06B-11 | 40 | 48 | 22 | 4 | 6 | 10.100 | 3,2 | LN.X 1106 | E01 |
| 63 | AHEC.63.R.08-11 | 40 | 48 | 22 | 4 | 8 | 10.100 | 3,2 | LN.X 1106 | E01 |
| 80 | AHEC.80.R.08B-11 | 50 | 58 | 27 | 4 | 8 | 8.000 | 3,2 | LN.X 1106 | E02 |
| 80 | AHEC.80.R.10-11 | 50 | 58 | 27 | 4 | 10 | 8.000 | 3,2 | LN.X 1106 | E02 |
| 100 | AHEC.100.R.10B-11 | 50 | 78 | 32 | 4 | 10 | 6.400 | 3,2 | LN.X 1106 | E03 |
| 100 | AHEC.100.R.12-11 | 50 | 78 | 32 | 4 | 12 | 6.400 | 3,2 | LN.X 1106 | E03 |
| 125 | AHEC.125.R.12B-11 | 63 | 88 | 40 | 4 | 12 | 5.100 | 3,2 | LN.X 1106 | E04 |
| 125 | AHEC.125.R.12-11 | 63 | 88 | 40 | 4 | 12 | 5.100 | 3,2 | LN.X 1106 | E04 |
| 125 | AHEC.125.R.16-11 | 63 | 88 | 40 | 4 | 16 | 5.100 | 3,2 | LN.X 1106 | E04 |
| 160 | AHEC.160.R.14B-11 | 63 | 100 | 40 | 4 | 14 | 4.000 | 3,2 | LN.X 1106 | E05 |
| 160 | AHEC.160.R.20-11 | 63 | 100 | 40 | 4 | 20 | 4.000 | 3,2 | LN.X 1106 | E05 |
| 125 | AHEC.125.R.12-1210 | 63 | 88 | 40 | 8 | 12 | 5.000 | 3,2 | LN.X 1210 | E06 |
| 160 | AHEC.160.R.16-1210 | 63 | 88 | 40 | 8 | 16 | 3.900 | 3,2 | LN.X 1210 | E07 |

| | | | | |
|---|---|---|---|---|
| E01 | 24647 | 11645528 | 11149570 | 8095010500 |
| E02 | 24647 | 11645529 | 11149570 | 8095010500 |
| E03 | 24647 | 11645530 | 11149570 | 8095010500 |
| E04 | 24647 | 11645531 | 11149570 | 8095010500 |
| E05 | 24647 | | 11149570 | 8095010500 |
| E06 | 11684526 | 11645531 | 11149570 | 8095010500 |
| E07 | 11684526 | | 11149570 | 8095010500 |

B276






| $d_1$ [mm] | Type, Bezeichnung | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 50 | AHEC.50.R.06A03-11 | 40 | 48 | 22 | 4 | 6 | 12.700 | 3,2 | LN.X 1106 | E01 |
| 63 | AHEC.63.R.08A04-11 | 40 | 48 | 22 | 4 | 8 | 10.100 | 3,2 | LN.X 1106 | E01 |
| 80 | AHEC.80.R.10A05-11 | 50 | 58 | 27 | 4 | 10 | 8.000 | 3,2 | LN.X 1106 | E02 |
| 100 | AHEC.100.R.12A06-11 | 50 | 78 | 32 | 4 | 12 | 6.400 | 3,2 | LN.X 1106 | E03 |
| 125 | AHEC.125.R.16A08-11 | 63 | 88 | 40 | 4 | 16 | 5.100 | 3,2 | LN.X 1106 | E04 |
| 160 | AHEC.160.R.20A10-11 | 63 | 100 | 40 | 4 | 20 | 4.000 | 3,2 | LN.X 1106 | E05 |

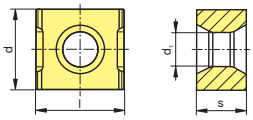
| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 24647 | 11167992 | 11645528 | 11149570 | 8095018900 | 8095010500 |
| E02 | 24647 | 11167992 | 11645529 | 11149570 | 8095018900 | 8095010500 |
| E03 | 24647 | 11167992 | 11645530 | 11149570 | 8095018900 | 8095010500 |
| E04 | 24647 | 11167992 | 11645531 | 11149570 | 8095018900 | 8095010500 |
| E05 | 24647 | 11167992 | | 11149570 | 8095018900 | 8095010500 |


B276

# System MaxiMill HEC

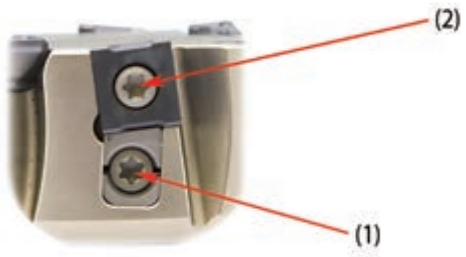
LN..

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | d [mm] | l [mm] | s [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | ○ | | | ○ | | | | | | |
| | | M | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | ● | | | | | | |
| | | K | | ○ | ● | ● | ● | | | | | ● | ● | ● | ● | | ○ | ● | ● | ○ | | ● | | | | |
| | | N | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | |
| | | S | | | | | | | | | | | | | | | | | | ● | ● | | | | | |
| | | H | | | | | | | | | | | ○ | | | | | | | | | ● | | | | |
| -R50 |  | LNHX 1106PNER-R50 | | | | | | | | | | | | ● | ● | | | | | | | | 10,00 | 11,00 | 6,35 | 4,27 |
| | | LNHX 110608EN-R50 | | | | | | | | | | | | | ● | | | | | | | | 10,00 | 11,00 | 6,35 | 4,27 |
| | | LNHX 121008EN-R50 | | | | | | | | | | | | | ● | | | | | | | | 10,00 | 12,70 | 10,00 | 4,40 |
| LNHX |  | LNEX 121020EN | | | | | | | | | | | | | ● | | | | | | | | 10,00 | 12,70 | 10,00 | 4,40 |
| | | LNHX 1106PNER | ● | | | | | | | | | | | ● | ● | | | | | | | | 10,00 | 11,00 | 6,35 | 4,27 |
| | | LNHX 1106PNSR | | | | | | | | | | ● | ● | | | | | | | | | | 10,00 | 11,00 | 6,35 | 4,27 |
| | | LNHX 1106ZZER-Q | | | | | | | | | | | ● | ● | | | | | | | | | 10,00 | 11,00 | 6,35 | 4,27 |
| | | LNHX 110608SN | | | | | | | | | | ● | | | | | | | | | | | 10,00 | 11,00 | 6,35 | 4,27 |
| | | LNHX 110616EN | | | | | | | | | | | | ● | | | | | | | | | 10,00 | 11,00 | 6,35 | 4,27 |
| | | LNHX 121020SN | | | | | | | | | | | | ● | | | | | | | | | 10,00 | 12,70 | 10,00 | 4,40 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | d [mm] | l [mm] | s [mm] | $d_1$ [mm] |




B12-B18
B99-B100
B21
B257-B266

## Feineinstellung




1. Montieren der Einstellkeile am Werkzeug (entspricht Auslieferungszustand) und Anziehen der Einstellschraube (1), ohne die Keile zu verformen.

2. Montieren der Platten und Anziehen aller Spannschrauben (2) mit 1,0 Nm.

3. Markieren der „höchsten Schneide" mit Hilfe eines Voreinstellgerätes.

4. Vorstellen dieser Wendeplatte um 0,02 mm durch Drehen der Einstellschraube (1) im Uhrzeigersinn. Verwenden Sie dazu den TORX-Winkelschlüssel (8095018900 / WS-L-T15-136mm)!

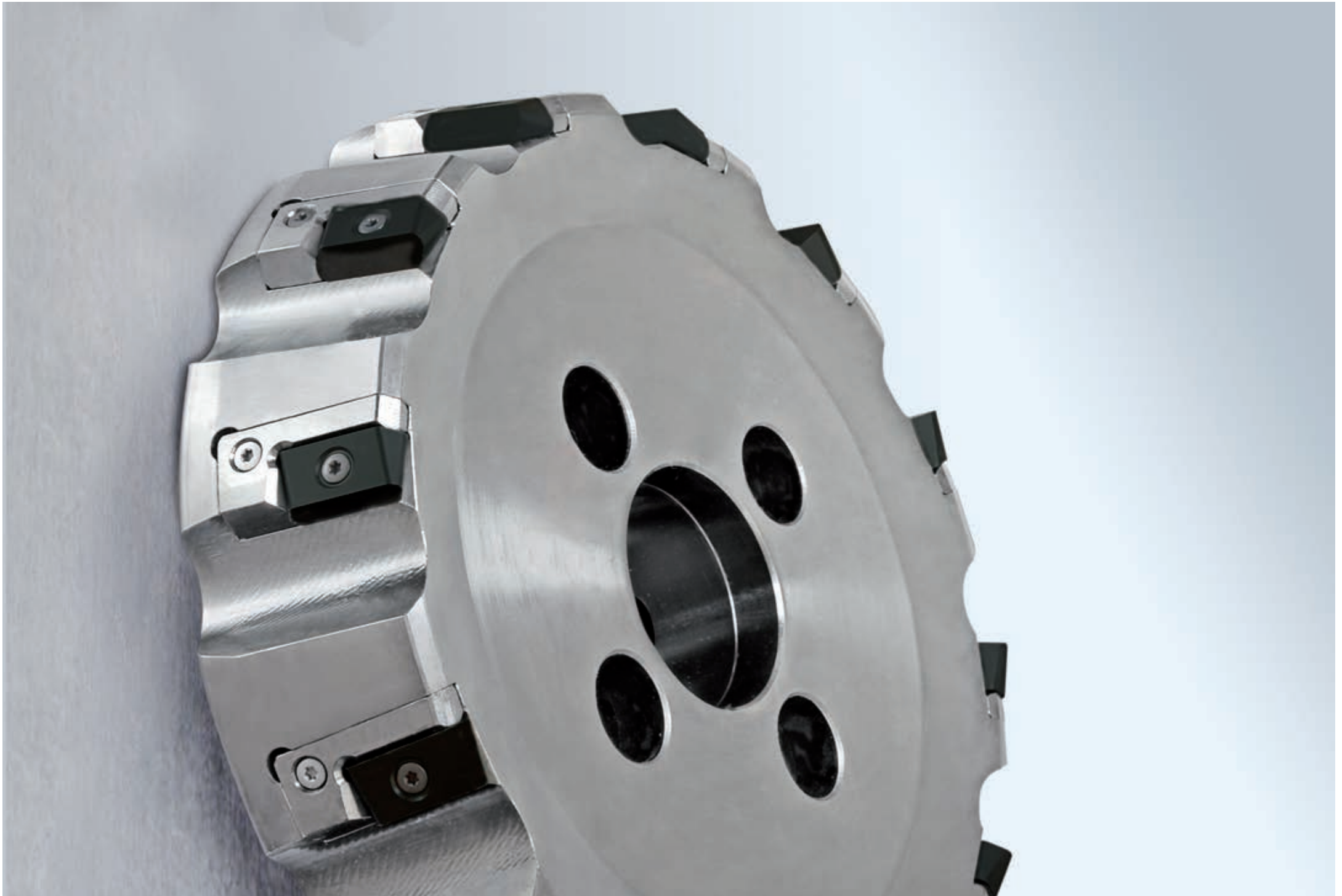
5. Einstellen aller anderen Schneidkanten auf dieses Niveau mit einer Abweichung von maximal 0,005 mm.

Maximaler Verstellweg = 0,10 mm.

6. Anziehen aller Spannschrauben (2) mit 3,2 Nm.

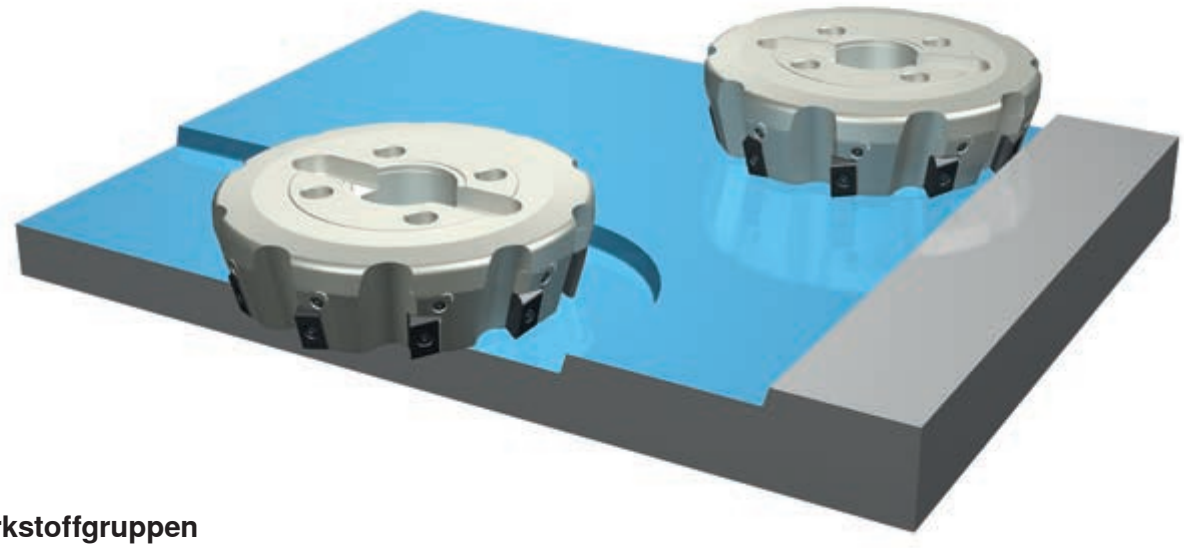
7. Kontrolle des Planlaufes aller Wendeplatten
→ Soll < 0,005 mm.

Bei Wendeplattenwechsel ist zunächst die Einstellschraube (1) gegen den Uhrzeigersinn zu lösen. Nach der Wendeplattenbestückung beginnt der Einstellvorgang wiederum bei Punkt 1.



## Höchste Stabilität bei hoher Schnitttiefe

- hohe Anwendungssicherheit
- Breites Anwendungsfeld



## Werkstoffgruppen

| | |
|---|---|
| P | ● |
| M | ○ |
| K | ● |
| N | |
| S | |
| H | |

## Einsatzmöglichkeiten


Planfräsen

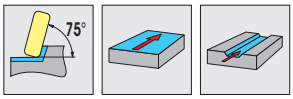

Gassenfräsen

## Detailinformationen

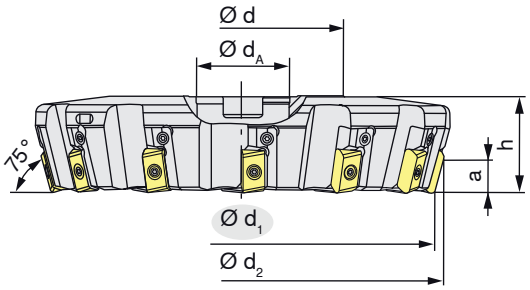
| Teilung | Ø-Bereich | Schneidplatten |
|---|---|---|
|  | Ø 160 - 315 mm | LN..22.. |

# System MaxiMill HDM

AHDM





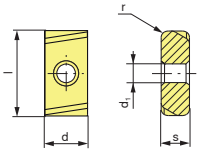




| $d_1$ [mm] | Type, Bezeichnung | $d_2$ [mm] | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 160 | AHDM.160.R.08-75-22 | 160,2 | 63 | 110 | 40 | 20 | 8 | 5 | LNUC 22.. | E01 |
| 200 | AHDM.200.R.10-75-22 | 200,2 | 63 | 131 | 60 | 20 | 10 | 5 | LNUC 22.. | E01 |
| 250 | AHDM.250.R.12-75-22 | 250,2 | 63 | 174 | 60 | 20 | 12 | 5 | LNUC 22.. | E01 |
| 315 | AHDM.315.R.14-75-22 | 315,2 | 80 | 226 | 60 | 20 | 14 | 5 | LNUC 22.. | E01 |

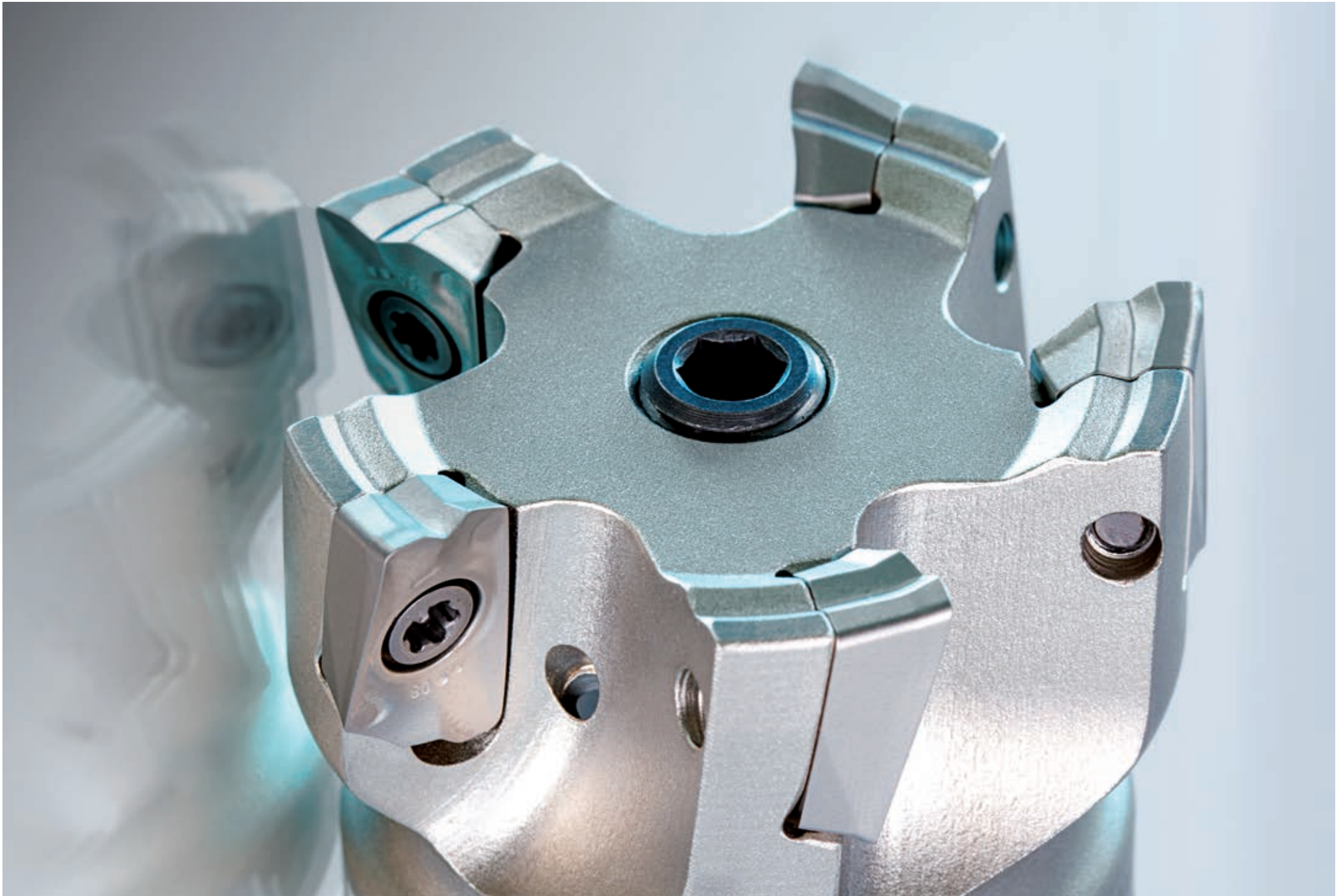
| | | | |
|---|---|---|---|
| E01 | 11423964 | 11417922 | 8095010500 |

B276

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | ○ | | | ○ | | | | | | | | |
| M | | | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | ● | | | | | | | | |
| K | | | | ○ | ● | ● | ● | | | | | ● | ● | ● | ● | | ○ | ● | ● | ○ | | ● | | | | | | |
| N | | | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | |
| S | | | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | |
| H | | | | | | | | | | | | | ○ | | | | | | | | | ● | | | | | | |
| LNUC |  | LNUC 220920ER | | | | | | | | | | | | ● | | | | | | | | | 14,28 | 28,57 | 9,52 | 2,00 | 5,90 |
| LNUJ |  | LNUJ 220920SR | | | | | | ● | | | | | | | | | | | | | | | 15,81 | 27,85 | 9,52 | 2,00 | 5,90 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | d | l | s | r | $d_1$ |

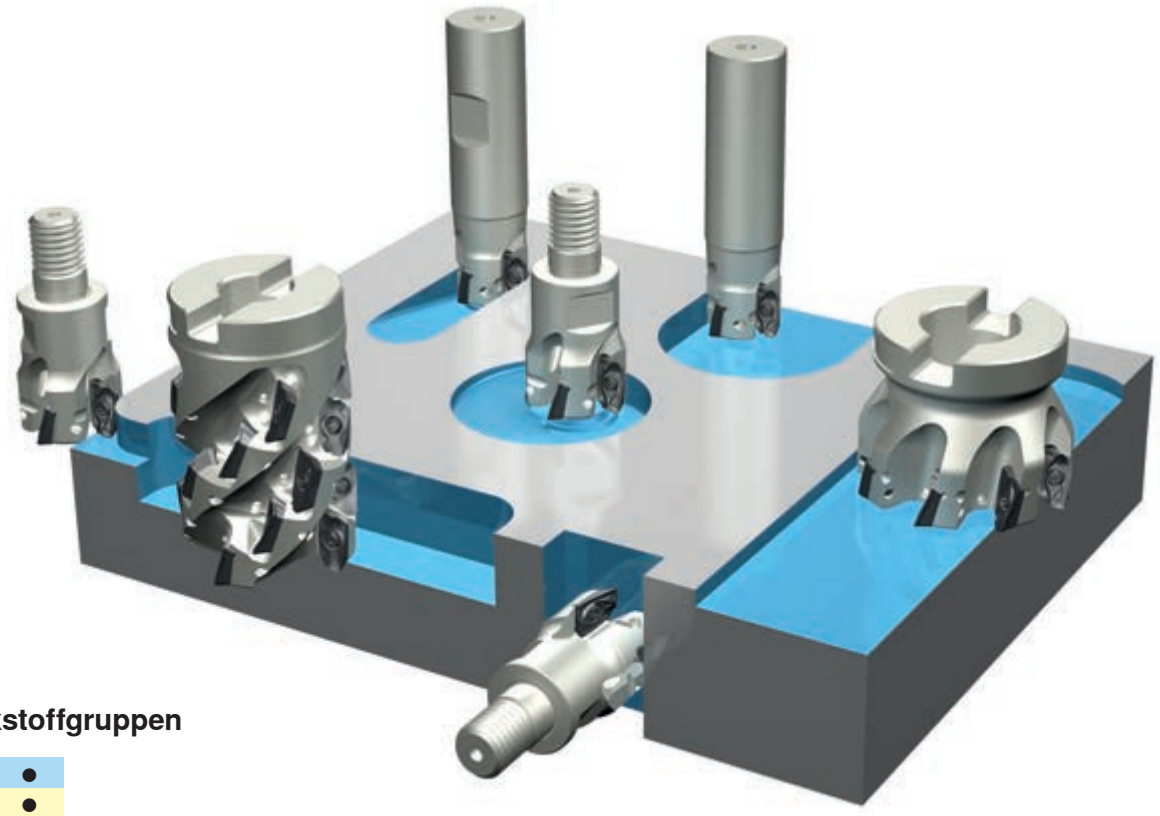



B12-B18 | B21 | B257-B266



## Eckfrässystem für die robuste und universelle Anwendung

- vielseitiges, umfangreiches Werkzeugkonzept
- Fräsen mit Radialkraftkompensation



## Werkstoffgruppen

| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ○ |
| S | ● |
| H | ○ |

## Einsatzmöglichkeiten


Gassenfräsen


Schräges Eintauchen


Trochoides Nutfräsen


Auskammern


Besäumen


Axiales Eintauchen


Zirkulares Eintauchen

## Detailinformationen

| Teilung | Ø-Bereich | Schneidplatten |
|---|---|---|
|  | Ø 32 - 125 mm | XD..07..<br>XD..11..<br>XD..15..<br>XD..20.. |

# System MaxiMill 211

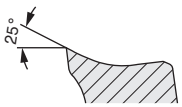
Spanleitstufenübersicht



## -F20

- Hochpositive Geometrie
- Erste Wahl für Nichteisenmetalle






$f_z$ [mm]

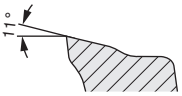
0,10 - 0,20

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| **CTW4615** | **CTW4615** | **CTW4615** |
| | | |
| | | |

## -F40

- Positive Geometrie
- Schlicht- und Schruppbearbeitung
- Für labile Aufspannungen
- Für hochwarmfeste Werkstoffe, Titan und Superlegierungen





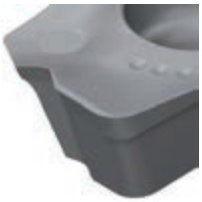

$f_z$ [mm]

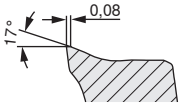
0,05 - 0,15

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| CTC5235 **CTC5240** | CTC5235 **CTC5240** | CTC5235 **CTC5240** |
| | | |

## -F50

- Positive Geometrie
- Leichte Schruppbearbeitung
- Für labile Aufspannungen
- Erste Wahl für rostfreie Stahlwerkstoffe





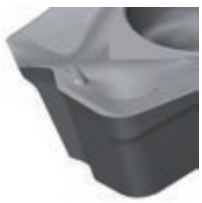

$f_z$ [mm]

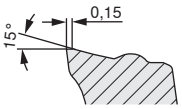
0,10 - 0,20

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP220** CTPP225 | **CTCP230** CTPP235 | CTCP230 **CTPP235** |
| **CTCM235** CTPM225 | CTPM225 **CTPM240** | |
| | | |
| | | |
| | | |
| | | |

## -M50

- Universelle Geometrie
- Leichte bis mittlere Schruppbearbeitung
- Erste Wahl für allgemeine Stahlwerkstoffe






$f_z$ [mm]

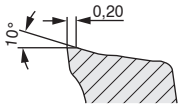
0,10 - 0,25

| Bearbeitungsbedingungen | | |
|---|---|---|
| | **CTCP230** CTPP235 | CTCP230 **CTPP235** |
| **CTCM235** CTPM225 | CTPM225 **CTPM240** | CTPM225 **CTPM240** |
| | **CTCK215** CTPK220 | CTCK215 **CTPK220** |
| | | |
| | | |
| | | |

## -R50

- Stabile Geometrie
- Starke Schruppbearbeitung
- Für stark unterbrochene Schnitte
- Erste Wahl für Eisengusswerkstoffe






$f_z$ [mm]

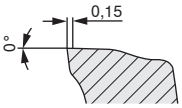
0,10 - 0,30

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | CTCP230 **CTPP235** |
| | CTPM225 **CTPM240** | CTPM225 **CTPM240** |
| | **CTCK215** | **CTCK215** |

## -R60

- Hochstabile Geometrie
- Für stabile Aufspannungen
- Erste Wahl zur Hartbearbeitung





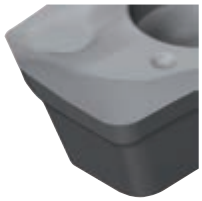

$f_z$ [mm]

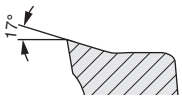
0,05 - 0,20

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| **CTP6215** | **CTP6215** | **CTP6215** |

## -27P

- Hochpositive Geometrie
- Scharfe Schneidkante
- Geringe Aufklebeneigung
- Erste Wahl für Nichteisenmetalle





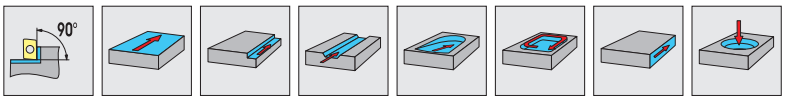

$f_z$ [mm]

0,05 - 0,30

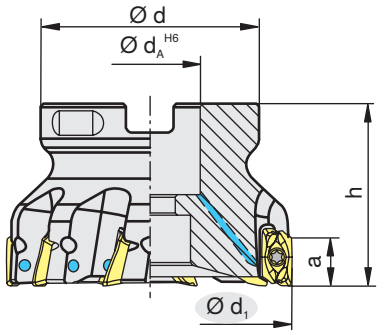
| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| H216T | | |
| **H216T** | **H216T** | **H216T** |
| | | |

# System MaxiMill 211

A211-07/-11



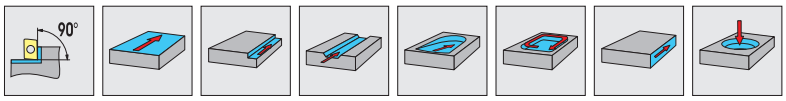


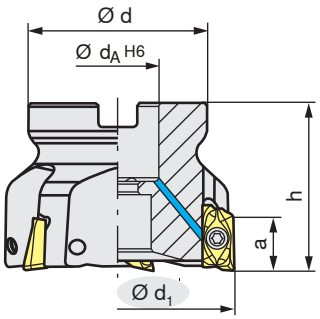

| $d_1$ [mm] | Type, Bezeichnung | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 32 | A211.32.R.06-07 | 40 | 38 | 16 | 6 | 6 | 36.240 | 1 | XD.. 07.. | E01 |
| 32 | A211.32.R.08-07 | 40 | 38 | 16 | 6 | 8 | 36.240 | 1 | XD.. 07.. | E01 |
| 40 | A211.40.R.08-07 | 40 | 38 | 16 | 6 | 8 | 33.240 | 1 | XD.. 07.. | E02 |
| 40 | A211.40.R.10-07 | 40 | 38 | 16 | 6 | 10 | 33.240 | 1 | XD.. 07.. | E02 |
| 50 | A211.50.R.10-07 | 40 | 43 | 22 | 6 | 10 | 30.480 | 1 | XD.. 07.. | E02 |
| 50 | A211.50.R.12-07 | 40 | 43 | 22 | 6 | 12 | 30.480 | 1 | XD.. 07.. | E02 |
| 40 | A211.40.R.04-11 | 40 | 38 | 16 | 10 | 4 | 27.700 | 1,6 | XD.. 11.. | E03 |
| 40 | A211.40.R.06-11 | 40 | 38 | 16 | 10 | 6 | 27.700 | 1,6 | XD.. 11.. | E03 |
| 50 | A211.50.R.05-11 | 40 | 43 | 22 | 10 | 5 | 25.400 | 1,6 | XD.. 11.. | E04 |
| 50 | A211.50.R.08-11 | 40 | 43 | 22 | 10 | 8 | 25.400 | 1,6 | XD.. 11.. | E04 |
| 63 | A211.63.R.06-11 | 40 | 48 | 22 | 10 | 6 | 23.300 | 1,6 | XD.. 11.. | E05 |
| 63 | A211.63.R.10-11 | 40 | 48 | 22 | 10 | 10 | 23.300 | 1,6 | XD.. 11.. | E05 |
| 80 | A211.80.R.07-11 | 50 | 58 | 27 | 10 | 7 | 21.300 | 1,6 | XD.. 11.. | E05 |
| 80 | A211.80.R.10-11 | 50 | 58 | 27 | 10 | 10 | 21.300 | 1,6 | XD.. 11.. | E05 |
| 80 | A211.80.R.12-11 | 50 | 58 | 27 | 10 | 12 | 21.300 | 1,6 | XD.. 11.. | E05 |
| 100 | A211.100.R.08-11 | 50 | 78 | 32 | 10 | 8 | 19.600 | 1,6 | XD.. 11.. | E05 |
| 100 | A211.100.R.14-11 | 50 | 78 | 32 | 10 | 14 | 19.600 | 1,6 | XD.. 11.. | E05 |
| 125 | A211.125.R.10-11 | 63 | 88 | 40 | 10 | 10 | 17.900 | 1,6 | XD.. 11.. | E05 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 11036880 | 11450028 | 11450898 | | 8095011700 | 4425 |
| E02 | | 11450028 | 11450898 | | 8095011700 | |
| E03 | 11036880 | 11114242 | 11254598 | | 8095003900 | 4425 |
| E04 | 11040298 | 11114242 | 11254598 | 4496 | 8095003900 | |
| E05 | | 11114242 | 11254598 | | 8095003900 | |

B276





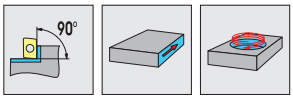

| d1 [mm] | Type, Bezeichnung | h [mm] | d [mm] | dA [mm] | a [mm] | z | nmax [min-1] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 40 | A211.40.R.03-15 | 40 | 38 | 16 | 14 | 3 | 22.160 | 3,2 | XD.. 15.. | E01 |
| 40 | A211.40.R.04-15 | 40 | 38 | 16 | 14 | 4 | 22.160 | 3,2 | XD.. 15.. | E01 |
| 50 | A211.50.R.03-15 | 40 | 43 | 22 | 14 | 3 | 20.320 | 3,2 | XD.. 15.. | E02 |
| 50 | A211.50.R.05-15 | 40 | 43 | 22 | 14 | 5 | 20.320 | 3,2 | XD.. 15.. | E02 |
| 63 | A211.63.R.04-15 | 45 | 48 | 22 | 14 | 4 | 18.640 | 3,2 | XD.. 15.. | E03 |
| 63 | A211.63.R.06-15 | 45 | 48 | 22 | 14 | 6 | 18.640 | 3,2 | XD.. 15.. | E03 |
| 80 | A211.80.R.05-15 | 50 | 58 | 27 | 14 | 5 | 17.040 | 3,2 | XD.. 15.. | E03 |
| 80 | A211.80.R.08-15 | 50 | 58 | 27 | 14 | 8 | 17.040 | 3,2 | XD.. 15.. | E03 |
| 100 | A211.100.R.06-15 | 50 | 78 | 32 | 14 | 6 | 15.680 | 3,2 | XD.. 15.. | E03 |
| 100 | A211.100.R.10-15 | 50 | 78 | 32 | 14 | 10 | 15.680 | 3,2 | XD.. 15.. | E03 |
| 125 | A211.125.R.07-15 | 63 | 88 | 40 | 14 | 7 | 14.320 | 3,2 | XD.. 15.. | E03 |
| 125 | A211.125.R.11-15 | 63 | 88 | 40 | 14 | 11 | 14.320 | 3,2 | XD.. 15.. | E03 |
| 160 | A211.160.R.08-15 | 63 | 93 | 40 | 14 | 8 | 13.200 | 3,2 | XD.. 15.. | E03 |
| 160 | A211.160.R.12-15 | 63 | 93 | 40 | 14 | 12 | 13.200 | 3,2 | XD.. 15.. | E03 |
| 63 | A211.63.R.05-20 | 45 | 48 | 22 | 19 | 5 | 14.400 | 5 | XD.. 20.. | E04 |
| 80 | A211.80.R.06-20 | 50 | 58 | 27 | 19 | 6 | 12.400 | 5 | XD.. 20.. | E04 |
| 100 | A211.100.R.07-20 | 50 | 78 | 32 | 19 | 7 | 10.900 | 1 | XD.. 20.. | E04 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 11036880 | 11450042 | 11450867 | | 8095012000 | 4425 |
| E02 | 11040298 | 11450042 | 11450867 | 4496 | 8095012000 | |
| E03 | | 11450042 | 11450867 | | 8095012000 | |
| E04 | | 106022 | 11210490 | | 8095010600 | |

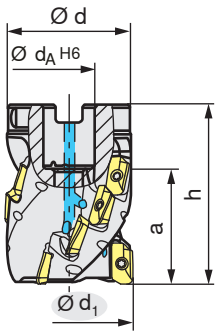
B276

# System MaxiMill 211

A211K-11/-15/-20



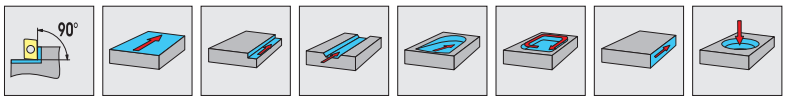


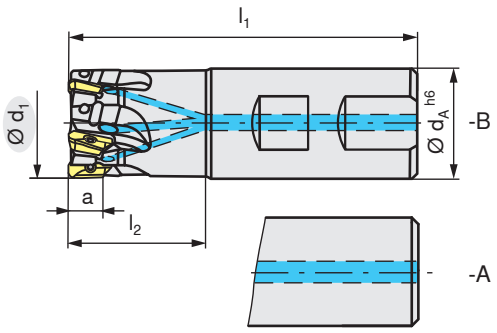

| $d_1$ [mm] | Type, Bezeichnung | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | n | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | A211.40.R.03K4-11 | 56 | 38 | 16 | 37 | 3 | 12 | 18.500 | 1,6 | XD.. 11.. | E01 |
| 40 | A211.40.R.04K4-11 | 55 | 38 | 16 | 37 | 4 | 16 | 18.500 | 1,6 | XD.. 11.. | E01 |
| 40 | A211.40.R.04K5-11 | 65 | 38 | 16 | 45,5 | 4 | 20 | 18.500 | 1,6 | XD.. 11.. | E01 |
| 50 | A211.50.R.04K5-11 | 65 | 43 | 22 | 45,5 | 4 | 20 | 17.000 | 1,6 | XD.. 11.. | E02 |
| 50 | A211.50.R.05K5-11 | 65 | 43 | 22 | 45,5 | 5 | 25 | 17.000 | 1,6 | XD.. 11.. | E02 |
| 50 | A211.50.R.05K6-11 | 74 | 43 | 22 | 54,5 | 5 | 30 | 17.000 | 1,6 | XD.. 11.. | E02 |
| 50 | A211.50.R.03K4-15 | 74 | 43 | 22 | 50,5 | 3 | 12 | 13.600 | 3,2 | XD.. 15.. | E03 |
| 50 | A211.50.R.03K5-15 | 88 | 43 | 22 | 63,0 | 3 | 15 | 13.600 | 3,2 | XD.. 15.. | E03 |
| 63 | A211.63.R.03K4-15 | 74 | 58 | 27 | 51 | 3 | 12 | 12.500 | 3,2 | XD.. 15.. | E04 |
| 63 | A211.63.R.04K6-15 | 102 | 58 | 27 | 75,5 | 4 | 24 | 12.500 | 3,2 | XD.. 15.. | E04 |
| 80 | A211.80.R.04K5-15 | 88 | 78 | 32 | 63,0 | 4 | 20 | 11.360 | 3,2 | XD.. 15.. | E05 |
| 80 | A211.80.R.05K6-15 | 102 | 78 | 32 | 75,5 | 5 | 30 | 11.360 | 3,2 | XD.. 15.. | E05 |
| 63 | A211.63.R.04K4-20 | 92 | 58 | 27 | 68 | 4 | 16 | 14.400 | 5 | XD.. 20.. | E06 |
| 80 | A211.80.R.05K4-20 | 92 | 76 | 32 | 68 | 5 | 20 | 12.400 | 5 | XD.. 20.. | E07 |

| | | | | |
|---|---|---|---|---|
| E01 | 11114242 | 11528772 | 11254598 | 8095003900 |
| E02 | 11114242 | 11528781 | 11254598 | 8095003900 |
| E03 | 11450042 | 11528781 | 11450867 | 8095012000 |
| E04 | 11450042 | 11528790 | 11450867 | 8095012000 |
| E05 | 11450042 | 11528792 | 11450867 | 8095012000 |
| E06 | 106022 | 11528790 | 11210490 | 8095010600 |
| E07 | 106022 | 11528792 | 11210490 | 8095010600 |

B276







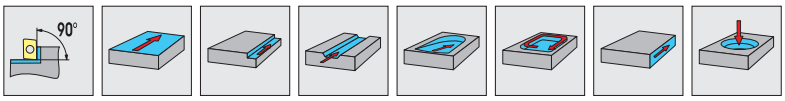

| $d_1$ [mm] | Type, Bezeichnung | $l_1$ [mm] | $l_2$ [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | C211.10.R.01-07-A-20 | 61 | 20 | 10 | 6 | 1 | 72.000 | 1 | XD.. 07.. | E01 |
| 12 | C211.12.R.02-07-A-20 | 66,5 | 20 | 12 | 6 | 2 | 66.600 | 1 | XD.. 07.. | E01 |
| 16 | C211.16.R.03-07-A-32-165 | 165 | 32 | 16 | 6 | 3 | 17.760 | 1 | XD.. 07.. | E01 |
| 16 | C211.16.R.04-07-A-25 | 74,5 | 25 | 16 | 6 | 4 | 50.400 | 1 | XD.. 07.. | E01 |
| 16 | C211.16.R.04-07-B-25 | 74,5 | 25 | 16 | 6 | 4 | 50.400 | 1 | XD.. 07.. | E01 |
| 20 | C211.20.R.04-07-A-40-200 | 200 | 40 | 20 | 6 | 4 | 12.600 | 1 | XD.. 07.. | E01 |
| 20 | C211.20.R.05-07-A-25 | 77 | 25 | 20 | 6 | 5 | 44.280 | 1 | XD.. 07.. | E01 |
| 20 | C211.20.R.05-07-B-25 | 77 | 25 | 20 | 6 | 5 | 44.280 | 1 | XD.. 07.. | E01 |
| 25 | C211.25.R.05-07-A20-50-225 | 225 | 50 | 20 | 6 | 5 | 11.280 | 1 | XD.. 07.. | E01 |
| 25 | C211.25.R.06-07-A20-32 | 84 | 32 | 20 | 6 | 6 | 39.840 | 1 | XD.. 07.. | E01 |
| 25 | C211.25.R.06-07-B20-32 | 84 | 32 | 20 | 6 | 6 | 39.840 | 1 | XD.. 07.. | E01 |
| 32 | C211.32.R.08-07-A25-40 | 98 | 40 | 25 | 6 | 8 | 36.240 | 1 | XD.. 07.. | E01 |
| 32 | C211.32.R.08-07-B25-40 | 98 | 40 | 25 | 6 | 8 | 36.240 | 1 | XD.. 07.. | E01 |

| | | | |
|---|---|---|---|
| E01 | 11450028 | 11450898 | 8095011700 |

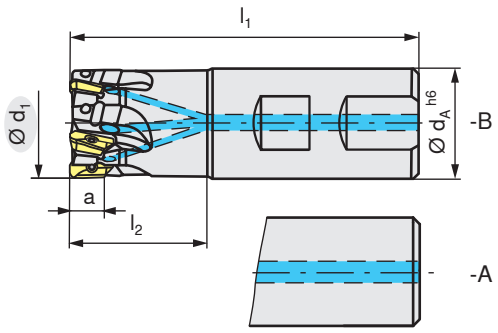
B276

# System MaxiMill 211

C211-11



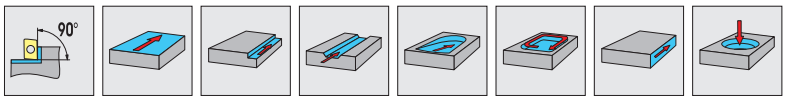


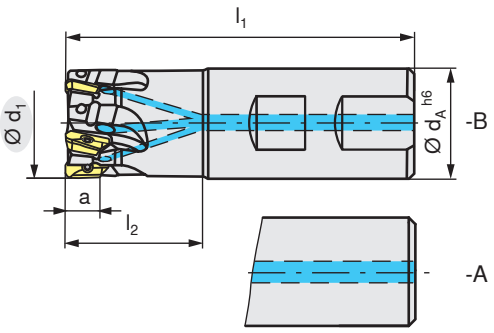

| $d_1$ [mm] | Type, Bezeichnung | $l_1$ [mm] | $l_2$ [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 12 | C211.12.R.01-11-B-20 | 75 | 20 | 16 | 10 | 1 | 55.500 | 1,6 | XD.. 11.. | E01 |
| 16 | C211.16.R.02-11-A15-32-165 | 165 | 32 | 15 | 10 | 2 | 14.800 | 1,6 | XD.. 11.. | E02 |
| 16 | C211.16.R.02-11-A-25 | 75 | 25 | 16 | 10 | 2 | 42.000 | 1,6 | XD.. 11.. | E02 |
| 16 | C211.16.R.02-11-A-32-165 | 165 | 32 | 16 | 10 | 2 | 14.800 | 1,6 | XD.. 11.. | E02 |
| 16 | C211.16.R.02-11-B-25 | 75 | 25 | 16 | 10 | 2 | 42.000 | 1,6 | XD.. 11.. | E02 |
| 20 | C211.20.R.02-11-A19-40-200 | 200 | 40 | 19 | 10 | 2 | 10.500 | 1,6 | XD.. 11.. | E02 |
| 20 | C211.20.R.02-11-A-25 | 77 | 25 | 20 | 10 | 2 | 36.900 | 1,6 | XD.. 11.. | E02 |
| 20 | C211.20.R.02-11-A-40-200 | 200 | 40 | 20 | 10 | 2 | 10.500 | 1,6 | XD.. 11.. | E02 |
| 20 | C211.20.R.02-11-B-25 | 77 | 25 | 20 | 10 | 2 | 36.900 | 1,6 | XD.. 11.. | E02 |
| 20 | C211.20.R.03-11-A-25 | 77 | 25 | 20 | 10 | 3 | 36.900 | 1,6 | XD.. 11.. | E02 |
| 20 | C211.20.R.03-11-A-32-165 | 165 | 32 | 20 | 10 | 3 | 15.800 | 1,6 | XD.. 11.. | E02 |
| 20 | C211.20.R.03-11-B-25 | 77 | 25 | 20 | 10 | 3 | 36.900 | 1,6 | XD.. 11.. | E02 |
| 25 | C211.25.R.02-11-A-50-225 | 225 | 50 | 25 | 10 | 2 | 9.400 | 1,6 | XD.. 11.. | E02 |
| 25 | C211.25.R.03-11-A24-50-225 | 225 | 50 | 24 | 10 | 3 | 9.400 | 1,6 | XD.. 11.. | E02 |
| 25 | C211.25.R.03-11-A-32 | 90 | 32 | 25 | 10 | 3 | 33.200 | 1,6 | XD.. 11.. | E02 |
| 25 | C211.25.R.03-11-A-50-225 | 225 | 50 | 25 | 10 | 3 | 9.400 | 1,6 | XD.. 11.. | E02 |
| 25 | C211.25.R.03-11-B-32 | 90 | 32 | 25 | 10 | 3 | 33.200 | 1,6 | XD.. 11.. | E02 |
| 25 | C211.25.R.04-11-A-32 | 90 | 32 | 25 | 10 | 4 | 33.200 | 1,6 | XD.. 11.. | E02 |
| 25 | C211.25.R.04-11-A-40-165 | 165 | 40 | 25 | 10 | 4 | 19.900 | 1,6 | XD.. 11.. | E02 |
| 25 | C211.25.R.04-11-B-32 | 90 | 32 | 25 | 10 | 4 | 33.200 | 1,6 | XD.. 11.. | E02 |
| 32 | C211.32.R.04-11-A25-40 | 102 | 40 | 25 | 10 | 4 | 30.200 | 1,6 | XD.. 11.. | E02 |
| 32 | C211.32.R.04-11-A-40 | 102 | 40 | 32 | 10 | 4 | 30.200 | 1,6 | XD.. 11.. | E02 |
| 32 | C211.32.R.04-11-A-64-250 | 250 | 64 | 32 | 10 | 4 | 8.500 | 1,6 | XD.. 11.. | E02 |
| 32 | C211.32.R.04-11-B-40 | 102 | 40 | 32 | 10 | 4 | 30.200 | 1,6 | XD.. 11.. | E02 |
| 32 | C211.32.R.05-11-A-40 | 102 | 40 | 32 | 10 | 5 | 30.200 | 1,6 | XD.. 11.. | E02 |
| 32 | C211.32.R.05-11-A-50-165 | 165 | 50 | 32 | 10 | 5 | 20.900 | 1,6 | XD.. 11.. | E02 |
| 32 | C211.32.R.05-11-B25-40 | 102 | 40 | 25 | 10 | 5 | 30.200 | 1,6 | XD.. 11.. | E02 |
| 32 | C211.32.R.05-11-B-40 | 102 | 40 | 32 | 10 | 5 | 30.200 | 1,6 | XD.. 11.. | E02 |
| 40 | C211.40.R.06-11-B32-50 | 110 | 50 | 32 | 10 | 6 | 27.700 | 1,6 | XD.. 11.. | E03 |
| 40 | C211.40.R.06-11-B-50 | 122 | 50 | 40 | 10 | 6 | 27.700 | 1,6 | XD.. 11.. | E03 |

| | | | |
|---|---|---|---|
| E01 | 11368132 | 11254598 | 8095003900 |
| E02 | 11114238 | 11254598 | 8095003900 |
| E03 | 11114242 | 11254598 | 8095003900 |

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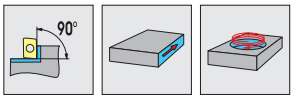

| d1 [mm] | Type, Bezeichnung | l1 [mm] | l2 [mm] | dA [mm] | a [mm] | z | nmax [min-1] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 25 | C211.25.R.02-15-A-32 | 90 | 32 | 25 | 14 | 2 | 26.560 | 3,2 | XD.. 15.. | E01 |
| 25 | C211.25.R.02-15-A-50-225 | 225 | 50 | 25 | 14 | 2 | 7.520 | 3,2 | XD.. 15.. | E01 |
| 25 | C211.25.R.02-15-B20-32 | 83 | 32 | 20 | 14 | 2 | 26.560 | 3,2 | XD.. 15.. | E01 |
| 25 | C211.25.R.02-15-B-32 | 90 | 32 | 25 | 14 | 2 | 26.560 | 3,2 | XD.. 15.. | E01 |
| 32 | C211.32.R.03-15-A-40 | 103 | 40 | 32 | 14 | 3 | 24.160 | 3,2 | XD.. 15.. | E01 |
| 32 | C211.32.R.03-15-A-63-250 | 250 | 63 | 32 | 14 | 3 | 6.800 | 3,2 | XD.. 15.. | E01 |
| 32 | C211.32.R.03-15-B25-40 | 96 | 40 | 25 | 14 | 3 | 24.160 | 3,2 | XD.. 15.. | E01 |
| 32 | C211.32.R.03-15-B-40 | 103 | 40 | 32 | 14 | 3 | 24.160 | 3,2 | XD.. 15.. | E01 |
| 40 | C211.40.R.03-15-A32-50-275 | 275 | 50 | 32 | 14 | 3 | 6.120 | 3,2 | XD.. 15.. | E01 |
| 40 | C211.40.R.04-15-A32-50 | 110 | 50 | 32 | 14 | 4 | 22.160 | 3,2 | XD.. 15.. | E01 |
| 40 | C211.40.R.04-15-B32-50 | 110 | 50 | 32 | 14 | 4 | 22.160 | 3,2 | XD.. 15.. | E01 |

| | | | |
|---|---|---|---|
| E01 | 11450042 | 11450867 | 8095012000 |

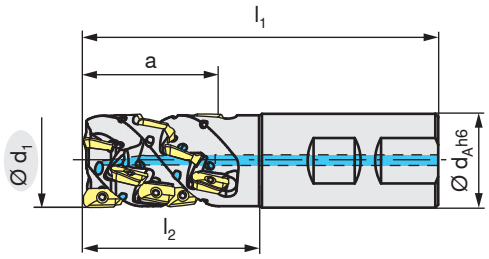
B276

# System MaxiMill 211

C211K-11/15





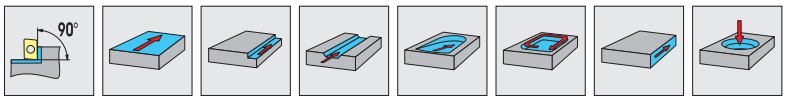




| $d_1$ [mm] | Type, Bezeichnung | $l_1$ [mm] | $l_2$ [mm] | $d_A$ [mm] | a [mm] | z | n | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | C211.25.R.02K3-11-B-40 | 97 | 40 | 25 | 27 | 2 | 6 | 22.200 | 1,6 | XD.. 11.. | E01 |
| 25 | C211.25.R.02K4-11-B-50 | 107 | 50 | 25 | 37 | 2 | 8 | 19.400 | 1,6 | XD.. 11.. | E01 |
| 25 | C211.25.R.02K5-11-B-60 | 117 | 60 | 25 | 45,5 | 2 | 10 | 19.400 | 1,6 | XD.. 11.. | E01 |
| 32 | C211.32.R.02K4-11-B-50 | 111 | 50 | 32 | 37 | 2 | 8 | 20.200 | 1,6 | XD.. 11.. | E02 |
| 32 | C211.32.R.03K5-11-B-60 | 121 | 60 | 32 | 45,5 | 3 | 15 | 20.200 | 1,6 | XD.. 11.. | E02 |
| 40 | C211.40.R.03K4-11-B32-50 | 110 | 50 | 32 | 37 | 3 | 12 | 18.500 | 1,6 | XD.. 11.. | E02 |
| 40 | C211.40.R.04K5-11-B32-60 | 120 | 60 | 32 | 45,5 | 4 | 20 | 18.500 | 1,6 | XD.. 11.. | E02 |
| 40 | C211.40.R.02K3-15-B32-60 | 120 | 60 | 32 | 38 | 2 | 6 | 14.800 | 3,2 | XD.. 15.. | E03 |
| 50 | C211.50.R.03K4-15-B40-64 | 134 | 64 | 40 | 50,5 | 3 | 12 | 13.600 | 3,2 | XD.. 15.. | E03 |

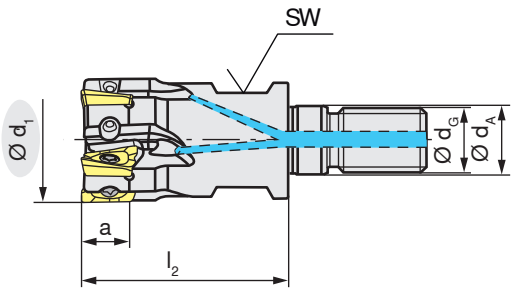
| | | | |
|---|---|---|---|
| E01 | 11114238 | 11254598 | 8095003900 |
| E02 | 11114242 | 11254598 | 8095003900 |
| E03 | 11450042 | 11450867 | 8095012000 |



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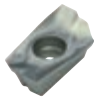

| d1 [mm] | Type, Bezeichnung | l2 [mm] | dG [mm] | dA [mm] | a [mm] | z | nmax [min-1] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 16 | G211.16.R.04-07 | 27 | 8 | 8,5 | 6 | 4 | 50.400 | 1 | XD.. 07.. | E01 |
| 20 | G211.20.R.05-07 | 33 | 10 | 10,5 | 6 | 5 | 44.280 | 1 | XD.. 07.. | E01 |
| 25 | G211.25.R.06-07 | 35 | 12 | 12,5 | 6 | 6 | 39.480 | 1 | XD.. 07.. | E01 |
| 32 | G211.32.R.08-07 | 35 | 16 | 17,0 | 6 | 8 | 36.240 | 1 | XD.. 07.. | E01 |
| 16 | G211.16.R.02-11 | 27 | 8 | 8,5 | 10 | 2 | 42.000 | 1,6 | XD.. 11.. | E02 |
| 20 | G211.20.R.02-11 | 33 | 10 | 10,5 | 10 | 2 | 36.900 | 1,6 | XD.. 11.. | E02 |
| 20 | G211.20.R.03-11 | 33 | 10 | 10,5 | 10 | 3 | 36.900 | 1,6 | XD.. 11.. | E02 |
| 25 | G211.25.R.03-11 | 35 | 12 | 12,5 | 10 | 3 | 33.200 | 1,6 | XD.. 11.. | E02 |
| 25 | G211.25.R.04-11 | 35 | 12 | 12,5 | 10 | 4 | 33.200 | 1,6 | XD.. 11.. | E02 |
| 32 | G211.32.R.04-11 | 35 | 16 | 17,0 | 10 | 4 | 30.200 | 1,6 | XD.. 11.. | E02 |
| 32 | G211.32.R.05-11 | 35 | 16 | 17,0 | 10 | 5 | 30.200 | 1,6 | XD.. 11.. | E02 |
| 40 | G211.40.R.06-11 | 35 | 16 | 17,0 | 10 | 6 | 27.700 | 1,6 | XD.. 11.. | E03 |
| 25 | G211.25.R.02-15 | 35 | 12 | 12,5 | 14 | 2 | 26.560 | 3,2 | XD.. 15.. | E04 |
| 32 | G211.32.R.03-15 | 35 | 16 | 17,0 | 14 | 3 | 30.200 | 3,2 | XD.. 15.. | E04 |
| 40 | G211.40.R.04-15 | 35 | 16 | 17,0 | 14 | 4 | 27.700 | 3,2 | XD.. 15.. | E04 |

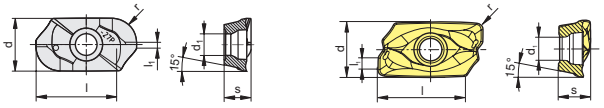
| | | | |
|---|---|---|---|
| E01 | 11450028 | 11450898 | 8095011700 |
| E02 | 11114238 | 11254598 | 8095003900 |
| E03 | 11114242 | 11254598 | 8095003900 |
| E04 | 11450042 | 11450867 | 8095012000 |

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# System MaxiMill 211

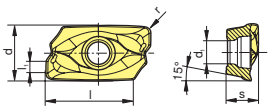
XD..

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d | l | s | $l_1$ | r | $d_1$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | | | | | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |
| -27P |  | XDHT 11T302FR-27P | | | | | | | | | | | | | | | ● | ● | | | | | | | | 6,80 | 10,60 | 3,50 | 2,0 | 0,20 | 2,80 |
| | | XDHT 11T304FR-27P | | | | | | | | | | | | | | | ● | ● | | | | | | | | 6,80 | 10,60 | 3,50 | 1,8 | 0,40 | 2,80 |
| | | XDHT 11T308FR-27P | | | | | | | | | | | | | | | ● | ● | | | | | | | | 6,80 | 10,60 | 3,50 | 1,4 | 0,80 | 2,80 |
| | | XDHT 11T312FR-27P | | | | | | | | | | | | | | | ● | ● | | | | | | | | 6,80 | 10,60 | 3,50 | 1,4 | 1,20 | 2,80 |
| | | XDHT 11T316FR-27P | | | | | | | | | | | | | | | ● | ● | | | | | | | | 6,80 | 10,60 | 3,50 | 1,4 | 1,60 | 2,80 |
| | | XDHT 11T320FR-27P | | | | | | | | | | | | | | | ● | ● | | | | | | | | 6,80 | 10,60 | 3,50 | 1,4 | 2,00 | 2,80 |
| | | XDHT 11T325FR-27P | | | | | | | | | | | | | | | ● | ● | | | | | | | | 6,80 | 10,60 | 3,50 | 1,4 | 2,50 | 2,80 |
| | | XDHT 11T332FR-27P | | | | | | | | | | | | | | | ● | ● | | | | | | | | 6,80 | 10,60 | 3,50 | 0,8 | 3,20 | 2,80 |
| | | XDHT 11T340FR-27P | | | | | | | | | | | | | | | ● | ● | | | | | | | | 6,80 | 10,60 | 3,50 | | 4,00 | 2,80 |
| | | XDHT 11T350FR-27P | | | | | | | | | | | | | | | ● | ● | | | | | | | | 6,80 | 10,60 | 3,50 | | 5,00 | 2,80 |
| -F20 |  | XDKT 070304FR-F20 | | | | | | | | | | | | | | | | | ● | | | | | | | 4,90 | 7,80 | 3,18 | 1,5 | 0,40 | 2,50 |
| | | XDKT 070308FR-F20 | | | | | | | | | | | | | | | | | ● | | | | | | | 4,90 | 7,80 | 3,18 | 1,1 | 0,80 | 2,50 |
| | | XDKT 11T302FR-F20 | | | | | | | | | | | | | | | | | ● | | | | | | | 6,80 | 10,60 | 3,80 | 2,0 | 0,20 | 2,80 |
| | | XDKT 11T304FR-F20 | | | | | | | | | | | | | | | | | ● | | | | | | | 6,80 | 10,60 | 3,80 | 1,8 | 0,40 | 2,80 |
| | | XDKT 11T308FR-F20 | | | | | | | | | | | | | | | | | ● | | | | | | | 6,80 | 10,60 | 3,80 | 1,4 | 0,80 | 2,80 |
| | | XDKT 11T320FR-F20 | | | | | | | | | | | | | | | | | ● | | | | | | | 6,80 | 10,60 | 3,80 | 1,7 | 2,00 | 2,80 |
| | | XDKT 11T325FR-F20 | | | | | | | | | | | | | | | | | ● | | | | | | | 6,80 | 10,60 | 3,80 | 1,2 | 2,50 | 2,80 |
| | | XDKT 150508FR-F20 | | | | | | | | | | | | | | | | | ● | | | | | | | 9,30 | 14,80 | 5,56 | 1,6 | 0,80 | 4,50 |
| -F40 |  | XDKT 070304ER-F40 | | | | | | | | | | | | | | | | | | ● | ● | | | | | 4,90 | 7,80 | 3,18 | 1,2 | 0,40 | 2,50 |
| | | XDKT 070308ER-F40 | | | | | | | | | | | | | | | | | | ● | ● | | | | | 4,90 | 7,80 | 3,18 | 0,8 | 0,80 | 2,50 |
| | | XDKT 11T304ER-F40 | | | | | | | | | | | | | | | | | | ● | ● | | | | | 6,80 | 10,60 | 3,80 | 1,7 | 0,40 | 2,80 |
| | | XDKT 11T308ER-F40 | | | | | | | | | | | | | | | | | | ● | ● | | | | | 6,80 | 10,60 | 3,80 | 1,4 | 0,80 | 2,80 |
| | | XDKT 11T312ER-F40 | | | | | | | | | | | | | | | | | | ● | ● | | | | | 6,80 | 10,60 | 3,80 | 1,1 | 1,20 | 2,80 |
| | | XDKT 11T316ER-F40 | | | | | | | | | | | | | | | | | | ● | ● | | | | | 6,80 | 10,60 | 3,80 | 0,8 | 1,60 | 2,80 |
| | | XDKT 11T320ER-F40 | | | | | | | | | | | | | | | | | | ● | | | | | | 6,80 | 10,60 | 3,80 | 0,3 | 2,00 | 2,80 |
| | | XDKT 11T325ER-F40 | | | | | | | | | | | | | | | | | | ● | ● | | | | | 6,80 | 10,60 | 3,80 | 1,6 | 2,50 | 2,80 |
| | | XDKT 11T332ER-F40 | | | | | | | | | | | | | | | | | | ● | ● | | | | | 6,80 | 10,60 | 3,80 | 1,5 | 3,20 | 2,80 |
| | | XDKT 11T340ER-F40 | | | | | | | | | | | | | | | | | | ● | ● | | | | | 6,80 | 10,60 | 3,80 | | 4,00 | 2,80 |
| | | XDKT 150508ER-F40 | | | | | | | | | | | | | | | | | | ● | ● | | | | | 9,30 | 14,80 | 5,56 | 1,6 | 0,80 | 4,50 |
| | | XDKT 150532ER-F40 | | | | | | | | | | | | | | | | | | ● | ● | | | | | 9,30 | 14,80 | 5,56 | 1,9 | 3,20 | 4,50 |
| | | XDKT 150540ER-F40 | | | | | | | | | | | | | | | | | | ● | ● | | | | | 9,30 | 14,80 | 5,56 | 1,2 | 4,00 | 4,50 |
| | | XDKT 200708ER-F40 | | | | | | | | | | | | | | | | | | ● | ● | | | | | 12,50 | 18,80 | 6,93 | 2,8 | 0,80 | 5,50 |
| | | XDKT 200732ER-F40 | | | | | | | | | | | | | | | | | | ● | ● | | | | | 12,50 | 18,80 | 6,82 | 0,9 | 3,20 | 5,50 |
| -F50 |  | XDKT 070304SR-F50 | | | | | ● | ● | | | ● | | | | | | | | | | | | | | | 4,90 | 7,80 | 3,18 | 1,2 | 0,40 | 2,50 |
| | | XDKT 070308SR-F50 | | | | | ● | ● | | | ● | | | | | | | | | | | | | | | 4,90 | 7,80 | 3,18 | 1,0 | 0,80 | 2,50 |
| | | XDKT 11T304SR-F50 | | | | | ● | ● | | | | | | | | | | | | | | | | | | 6,80 | 10,60 | 3,80 | 1,8 | 0,40 | 2,80 |
| | | XDKT 11T308SR-F50 | | | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | 6,80 | 10,60 | 3,80 | 1,4 | 0,80 | 2,80 |
| | | XDKT 11T312SR-F50 | | | | | | | | | ● | | | | | | | | | | | | | | | 6,80 | 10,60 | 3,80 | 1,0 | 1,20 | 2,80 |
| | | XDKT 11T320SR-F50 | | | | | ● | ● | | | ● | | | | | | | | | | | | | | | 6,80 | 10,60 | 3,80 | 2,1 | 2,00 | 2,80 |
| | | XDKT 11T325SR-F50 | | | | | ● | ● | | | | | | | | | | | | | | | | | | 6,80 | 10,60 | 3,80 | 1,6 | 2,50 | 2,80 |
| | | XDKT 11T332SR-F50 | | | | | | | | | ● | | | | | | | | | | | | | | | 6,80 | 10,60 | 3,80 | 1,5 | 3,20 | 2,80 |
| | | XDKT 150508SR-F50 | | | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | 9,30 | 14,80 | 5,56 | 1,6 | 0,80 | 4,50 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d | l | s | $l_1$ | r | $d_1$ |




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| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | d [mm] | l [mm] | s [mm] | $l_1$ [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | ○ | | | ○ | | | | | | | | | | |
| | | M | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | ● | | | | | | | | | | |
| | | K | | ○ | ● | ● | ● | | | | | ● | ● | ● | ● | | ○ | ● | ● | ○ | | ● | | | | | | | | |
| | | N | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | | | |
| | | S | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | |
| | | H | | | | | | | | | | | ○ | | | | | | | | | ● | | | | | | | | |
| -M50 |  | XDKT 070304SR-M50 | | | | | ● | ● | | | ● | | | | | | | | | | | | | | 4,90 | 7,80 | 3,18 | 1,0 | 0,40 | 2,50 |
| | | XDKT 070308SR-M50 | | | | | ● | ● | | | ● | | | | | | | | | | | | | | 4,90 | 7,80 | 3,18 | 1,0 | 0,80 | 2,50 |
| | | XDKT 11T304SR-M50 | | | | | ● | ● | | | ● | | | ● | | | | | | | | | | | 6,80 | 10,60 | 3,80 | 1,8 | 0,40 | 2,80 |
| | | XDKT 11T308SR-M50 | | | ● | ● | ● | ● | ● | ● | ● | | | ● | ● | | | | | | | | | | 6,80 | 10,60 | 3,80 | 1,4 | 0,80 | 2,80 |
| | | XDKT 11T312SR-M50 | | | | | ● | ● | | | ● | | | | | | | | | | | | | | 6,80 | 10,60 | 3,80 | 1,0 | 1,20 | 2,80 |
| | | XDKT 11T312SR-R50 | | | | | | | | | ● | | | | | | | | | | | | | | 6,80 | 10,60 | 3,80 | 1,0 | 1,20 | 2,80 |
| | | XDKT 11T320SR-M50 | | | | | ● | ● | | | ● | | | | | | | | | | | | | | 6,80 | 10,60 | 3,80 | 2,1 | 2,00 | 2,80 |
| | | XDKT 11T325SR-M50 | | | | | ● | ● | | | | | | | | | | | | | | | | | 6,80 | 10,60 | 3,80 | 1,6 | 2,50 | 2,80 |
| | | XDKT 11T332SR-M50 | | | | | | | | | ● | | | | | | | | | | | | | | 6,80 | 10,60 | 3,80 | 1,5 | 3,20 | 2,80 |
| | | XDKT 150508SR-M50 | | | ● | ● | ● | ● | ● | ● | ● | | | ● | ● | | | | | | | | | | 9,30 | 14,80 | 5,56 | 1,6 | 0,80 | 4,50 |
| | | XDKT 150512SR-M50 | | | | | ● | ● | | | ● | | | | | | | | | | | | | | 9,30 | 14,80 | 5,56 | 1,2 | 1,20 | 4,50 |
| | | XDKT 150516SR-M50 | | | | | ● | ● | | | ● | | | | | | | | | | | | | | 9,30 | 14,80 | 5,56 | 0,8 | 1,60 | 4,50 |
| | | XDKT 150520SR-M50 | | | | | | ● | | | | | | | | | | | | | | | | | 9,30 | 14,80 | 5,56 | 0,6 | 2,00 | 4,50 |
| | | XDKT 150530SR-M50 | | | | | ● | ● | | | ● | | | | | | | | | | | | | | 9,30 | 14,80 | 5,56 | | 3,00 | 4,50 |
| | | XDKT 150540SR-M50 | | | | | ● | ● | | | ● | | | | | | | | | | | | | | 9,30 | 14,80 | 5,56 | | 4,00 | 4,50 |
| -R50 |  | XDKT 11T304SR-R50 | | | | | ● | ● | | | | | | | | | | | | | | | | | 6,80 | 10,60 | 3,80 | 1,8 | 0,40 | 2,80 |
| | | XDKT 11T308SR-R50 | | | | | ● | ● | ● | ● | ● | | | ● | | | | | | | | | | | 6,80 | 10,60 | 3,80 | 1,4 | 0,80 | 2,80 |
| | | XDKT 11T320SR-R50 | | | | | ● | ● | | | ● | | | | | | | | | | | | | | 6,80 | 10,60 | 3,80 | 2,1 | 2,00 | 2,80 |
| | | XDKT 11T325SR-R50 | | | | | ● | ● | | | | | | | | | | | | | | | | | 6,80 | 10,60 | 3,80 | 1,6 | 2,50 | 2,80 |
| | | XDKT 11T332SR-R50 | | | | | | | | | ● | | | | | | | | | | | | | | 6,80 | 10,60 | 3,80 | 1,5 | 3,20 | 2,80 |
| | | XDKT 150508SR-R50 | | | | | ● | ● | | | ● | | | ● | ● | | | | | | | | | | 9,30 | 14,80 | 5,56 | 1,6 | 0,80 | 4,50 |
| | | XDKT 150520SR-R50 | | | | | ● | ● | | | | | | | | | | | | | | | | | 9,30 | 14,80 | 5,56 | 1,6 | 2,00 | 4,50 |
| -R60 |  | XDKT 11T308SR-R60 | | | | | | | | | | | | | | | | | | | | ● | | | 6,80 | 10,60 | 3,80 | 1,4 | 0,80 | 2,80 |
| | | XDKT 150508SR-R60 | | | | | | | | | | | | | | | | | | | | ● | | | 9,30 | 14,80 | 5,56 | 1,6 | 0,80 | 4,50 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | d | l | s | $l_1$ | r | $d_1$ |




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# System MaxiMill 211

Startparameter für Beispielwerkstoffe XD..07/11

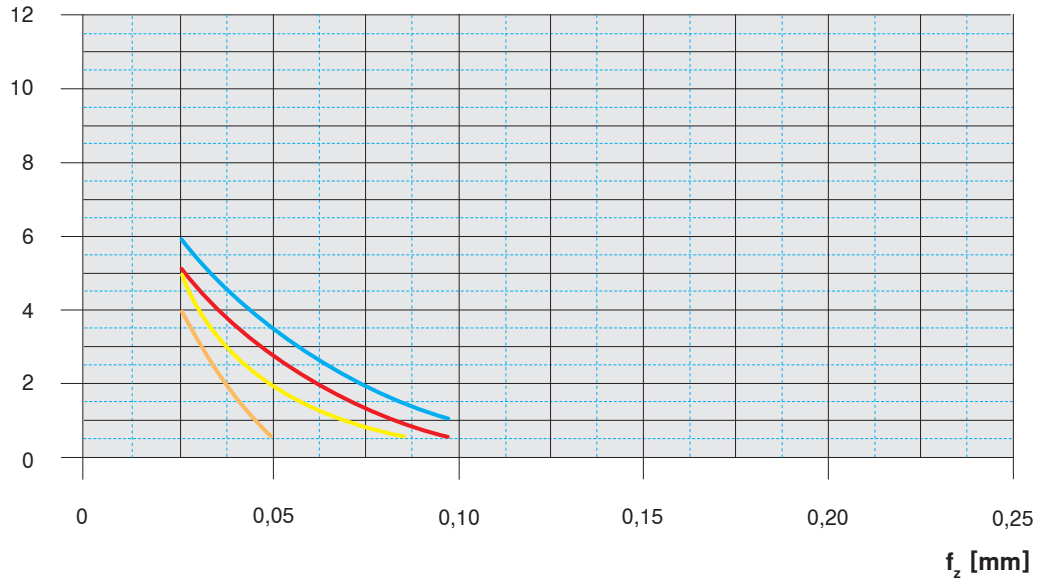
| Werkstoff | | | | Wendeplatte | | $v_c$ [m/min] | Kühlung |
|---|---|---|---|---|---|---|---|
| ▼ | 1.2312 | 40CrMnMoS8-6 | 1.000 N/mm² | XDKT 070308SR-M50<br>XDKT 11T308SR-M50 | CTPP235 | 200 | trocken |
| ▼ | 1.4571 | X6CrNiMoTi17-12-2 | 600 N/mm² | XDKT 070308SR-F50<br>XDKT 11T308SR-F50 | CTPM240 | 180 | trocken |
| ▼ | 5.1301 | EN-GJL-250 | HB 180 | XDKT 11T308SR-R50 | CTCK215 | 250 | trocken |
| ▼ | 2.4856 | Inconel 625 | 1.450 N/mm² | XDKT 070308ER-F40<br>XDKT 11T308ER-F50 | CTC5235 | 35 | Emulsion |

Wenn $a_e$ < 50% benutzen Sie die Korrekturliste

B129

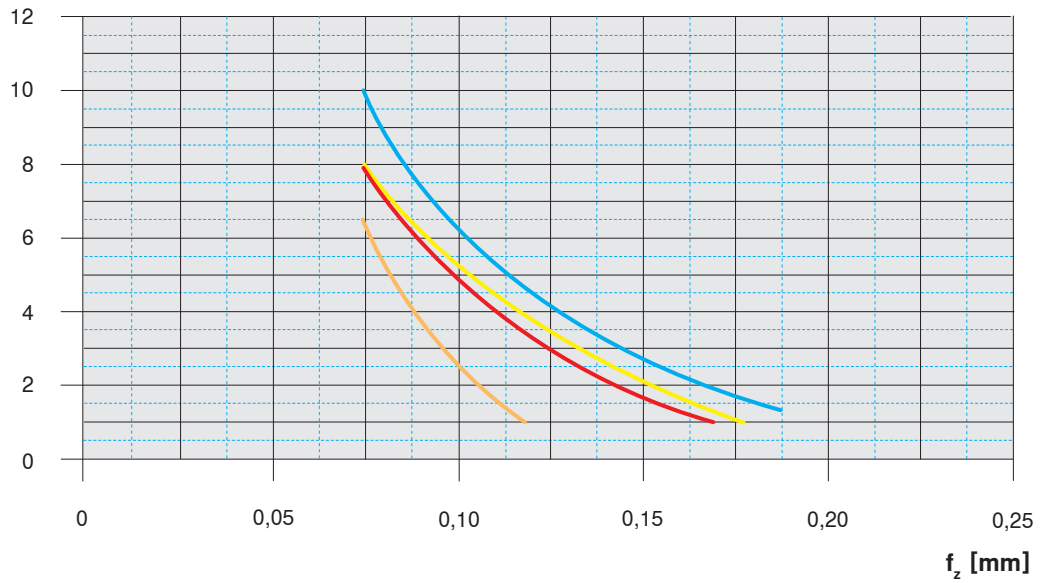
**07**






**11**






Weitere Sorten und Geometrien können für den erfolgreichen Anwendungsfall verwendet werden und sind im jeweiligen Anwendungsbereich des Systems abgebildet.

| Werkstoff | | | | Wendeplatte | | $v_c$ [m/min] | Kühlung |
|---|---|---|---|---|---|---|---|
| ▼ | 1.2312 | 40CrMnMoS8-6 | 1.000 N/mm² | XDKT 150508SR-M50 | CTPP235 | 200 | trocken |
| ▼ | 1.4571 | X6CrNiMoTi17-12-2 | 600 N/mm² | XDKT 11T308ER-F50<br>XDKT 200708ER-F40 | CTPM240<br>CTC5235 | 180 | trocken |
| ▼ | 5.1301 | EN-GJL-250 | HB 180 | XDKT 150508SR-R50 | CTCK215 | 250 | trocken |
| ▼ | 2.4856 | Inconel 625 | 1.450 N/mm² | XDKT 150508ER-F40<br>XDKT 200708ER-F40 | CTC5235 | 35 | Emulsion |

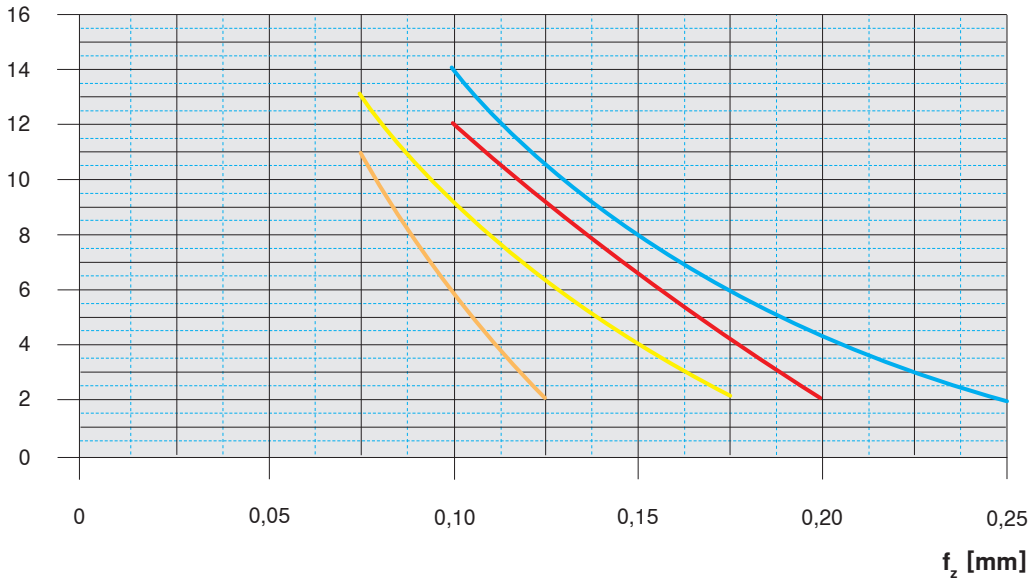
Wenn $a_e$ < 50% benutzen Sie die Korrekturliste

B129

$a_p$ [mm]

15

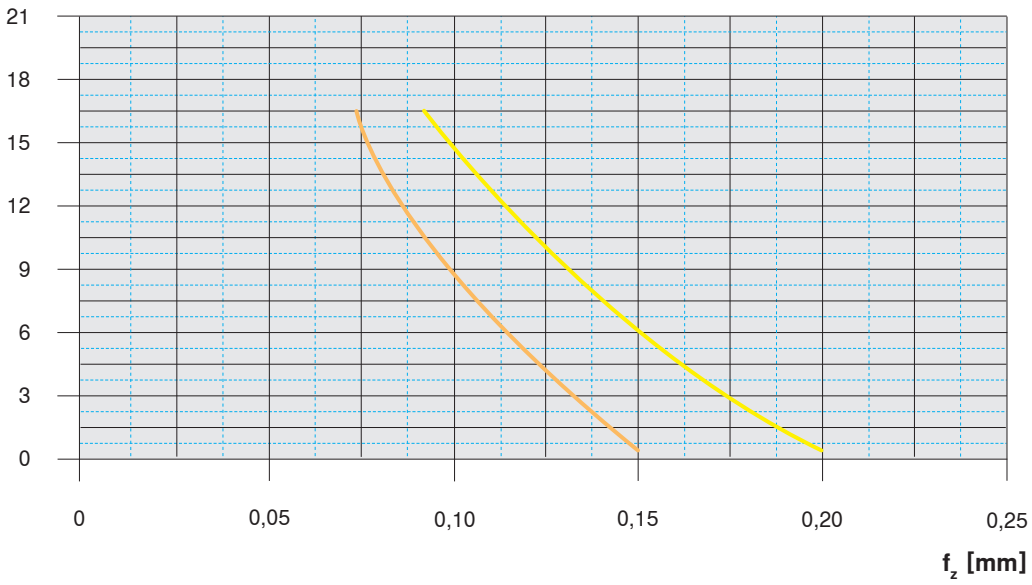





$a_p$ [mm]

20



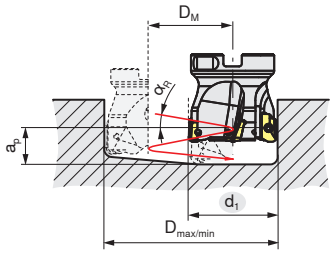



Weitere Sorten und Geometrien können für den erfolgreichen Anwendungsfall verwendet werden und sind im jeweiligen Anwendungsbereich des Systems abgebildet.

# System MaxiMill 211

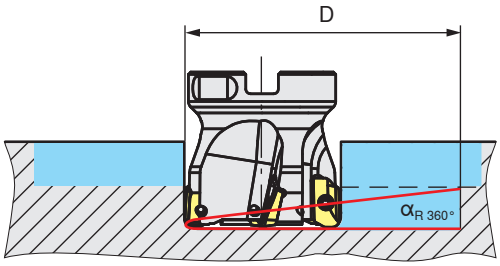
Einsatzdaten 211..07..

## zirkulares Eintauchen



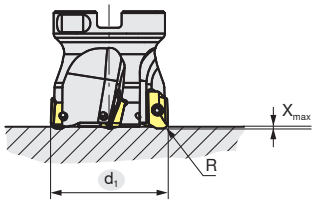

**$D_{max}$ [mm] = größter Durchmesser für ebene Bodenfläche**
**$D_{min}$ [mm] = kleinster Bohrungsdurchmesser**
**$D_M = D_{max} - d_1$ bzw. $D_{min} - d_1$**

| $d_1$ [mm] | $D_{max}$ / r.4 [mm] | $D_{min}$ [mm] | $\alpha_{R\,max}$ 360° [°] |
|---|---|---|---|
| **10** | 19 | 13 | 5,5 |
| **12** | 23 | 17 | 6,0 |
| **16** | 31 | 25 | 3,0 |
| **20** | 39 | 33 | 2,0 |
| **25** | 49 | 43 | 1,5 |
| **32** | 63 | 57 | 1,2 |
| **40** | 79 | 73 | 0,8 |
| **50** | 99 | 93 | 0,7 |
| $a_p$ [mm] = $D_M$ x π x tan $\alpha_R$ | | | |



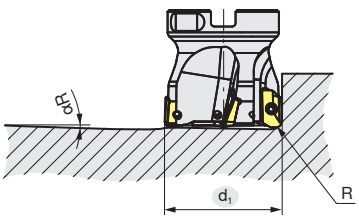

| $d_1$ [mm] | D [mm] | $\alpha_{R\,max}$ 360° [°] |
|---|---|---|
| **10** | 13 | 5,5 |
| **12** | 17 | 6,0 |
| **16** | 25 | 3,0 |
| **20** | 33 | 2,0 |
| **25** | 43 | 1,5 |
| **32** | 57 | 1,2 |
| **40** | 73 | 0,8 |
| **50** | 93 | 0,7 |

## axiales Eintauchen



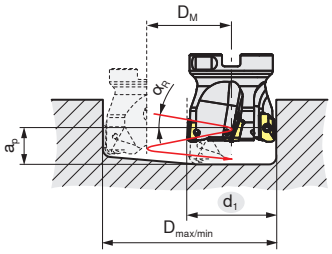

| $d_1$ [mm] | $X_{max}$ [mm] |
|---|---|
| **10** | 0,8 |
| **12** | 0,8 |
| **16** | 0,8 |
| **20** | 0,8 |
| **25** | 0,8 |
| **32** | 0,8 |
| **40** | 0,8 |
| **50** | 0,8 |

## schräges Eintauchen

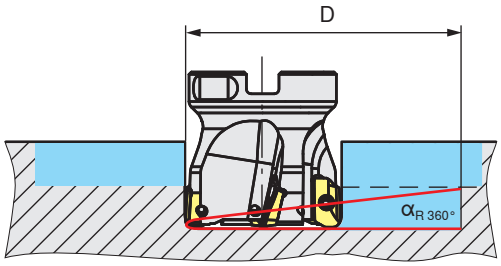



| $d_1$ [mm] | αR [°] |
|---|---|
| **10** | 11,0 |
| **12** | 7,9 |
| **16** | 4,3 |
| **20** | 3,0 |
| **25** | 2,5 |
| **32** | 1,6 |
| **40** | 1,2 |
| **50** | 1,0 |

## zirkulares Eintauchen




**$D_{max}$ [mm] = größter Durchmesser für ebene Bodenfläche**
**$D_{min}$ [mm] = kleinster Bohrungsdurchmesser**
**$D_M = D_{max} - d_1$ bzw. $D_{min} - d_1$**

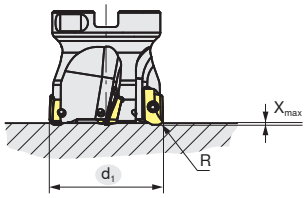



| $d_1$ [mm] | $D_{max}$ / r 0,8 [mm] | $D_{min}$ [mm] | $\alpha_{R\ max}$ [°] |
|---|---|---|---|
| 12 | 21 | 14 | 16,0 |
| 16 | 29 | 18 | 9,5 |
| 20 | 37 | 30 | 7,0 |
| 25 | 47 | 40 | 4,5 |
| 32 | 61 | 53 | 3,2 |
| 40 | 77 | 72 | 2,2 |
| 50 | 98 | 93 | 1,7 |
| 63 | 123 | 118 | 1,5 |
| 80 | 157 | 152 | 1,0 |
| 100 | 197 | 191 | 0,8 |
| 125 | 247 | 242 | 0,6 |
| 160 | 317 | 312 | 0,4 |

$a_p$ [mm] = $D_M$ x π x tan $\alpha_R$

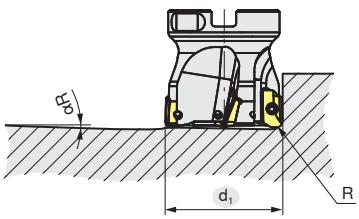
| $d_1$ [mm] | D [mm] | $\alpha_{R\ max\ 360°}$ [°] |
|---|---|---|
| 12 | 14 | 16,0 |
| 16 | 18 | 9,5 |
| 20 | 30 | 7,0 |
| 25 | 40 | 4,5 |
| 32 | 53 | 3,2 |
| 40 | 72 | 2,2 |
| 50 | 93 | 1,7 |
| 63 | 118 | 1,5 |
| 80 | 152 | 1,0 |
| 100 | 191 | 0,8 |
| 125 | 242 | 0,6 |
| 160 | 312 | 0,4 |

## axiales Eintauchen




| $d_1$ [mm] | $X_{max}$ [mm] |
|---|---|
| 12 | 1,3 |
| 16 | 1,5 |
| 20 | 2,0 |
| 25 | 2,0 |
| 32 | 1,8 |
| 40 | 1,6 |
| 50 | 1,6 |
| 63 | 1,6 |
| 80 | 1,6 |
| 100 | 1,6 |
| 125 | 1,6 |
| 160 | 1,6 |

## schräges Eintauchen

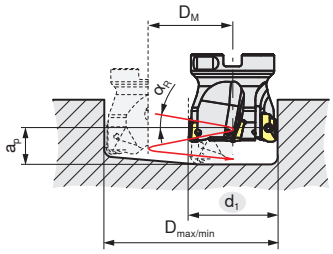



| $d_1$ [mm] | $\alpha_R$ [°] |
|---|---|
| 12 | 18,0 |
| 16 | 10,8 |
| 20 | 9,8 |
| 25 | 7,5 |
| 32 | 4,8 |
| 40 | 2,9 |
| 50 | 2,2 |
| 63 | 1,8 |
| 80 | 1,4 |
| 100 | 1,1 |
| 125 | 0,8 |
| 160 | 0,65 |

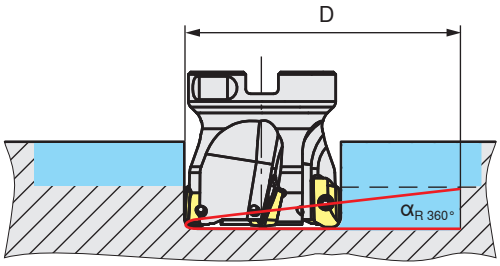
# System MaxiMill 211

Einsatzdaten 211..15..

## zirkulares Eintauchen



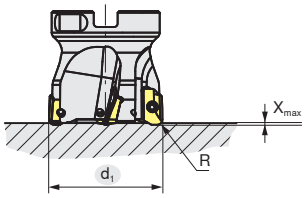

**$D_{max}$ [mm] = größter Durchmesser für ebene Bodenfläche**
**$D_{min}$ [mm] = kleinster Bohrungsdurchmesser**
**$D_M = D_{max} - d_1$ bzw. $D_{min} - d_1$**




| $d_1$ [mm] | $D_{max}$ / r 0,8 [mm] | $D_{min}$ [mm] | $\alpha_{R\ max}$ [°] |
|---|---|---|---|
| 12 | 21 | 14 | 16,0 |
| 16 | 29 | 18 | 9,5 |
| 20 | 37 | 30 | 7,0 |
| 25 | 47 | 40 | 4,5 |
| 32 | 61 | 53 | 3,2 |
| 40 | 77 | 72 | 2,2 |
| 50 | 98 | 93 | 1,7 |
| 63 | 123 | 118 | 1,5 |
| 80 | 157 | 152 | 1,0 |
| 100 | 197 | 191 | 0,8 |
| 125 | 247 | 242 | 0,6 |
| 160 | 317 | 312 | 0,4 |
| $a_p$ [mm] = $D_M$ x π x tan $\alpha_R$ | | | |

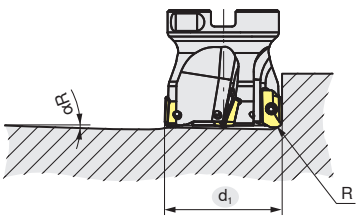
| $d_1$ [mm] | D [mm] | $\alpha_{R\ max\ 360°}$ [°] |
|---|---|---|
| 12 | 14 | 16,0 |
| 16 | 18 | 9,5 |
| 20 | 30 | 7,0 |
| 25 | 40 | 4,5 |
| 32 | 53 | 3,2 |
| 40 | 72 | 2,2 |
| 50 | 93 | 1,7 |
| 63 | 118 | 1,5 |
| 80 | 152 | 1,0 |
| 100 | 191 | 0,8 |
| 125 | 242 | 0,6 |
| 160 | 312 | 0,4 |

## axiales Eintauchen



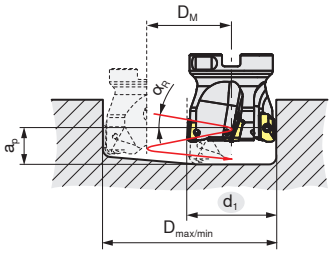

| $d_1$ [mm] | $X_{max}$ [mm] |
|---|---|
| 12 | 1,3 |
| 16 | 1,5 |
| 20 | 2,0 |
| 25 | 2,0 |
| 32 | 1,8 |
| 40 | 1,6 |
| 50 | 1,6 |
| 63 | 1,6 |
| 80 | 1,6 |
| 100 | 1,6 |
| 125 | 1,6 |
| 160 | 1,6 |

## schräges Eintauchen




| $d_1$ [mm] | $\alpha_R$ [°] |
|---|---|
| 12 | 18,0 |
| 16 | 10,8 |
| 20 | 9,8 |
| 25 | 7,5 |
| 32 | 4,8 |
| 40 | 2,9 |
| 50 | 2,2 |
| 63 | 1,8 |
| 80 | 1,4 |
| 100 | 1,1 |
| 125 | 0,8 |
| 160 | 0,65 |

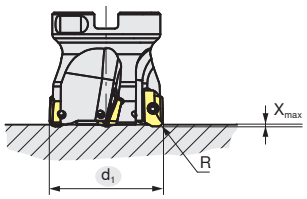
## zirkulares Eintauchen




**$D_{max}$ [mm] = größter Durchmesser für ebene Bodenfläche**
**$D_{min}$ [mm] = kleinster Bohrungsdurchmesser**
**$D_M = D_{max} - d_1$ bzw. $D_{min} - d_1$**

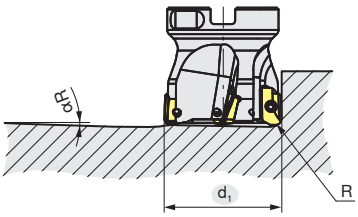
| $d_1$ [mm] | $D_{max\ /\ r\ 0,8}$ [mm] | $D_{min}$ [mm] | $\alpha_{R\ max}$ [°] |
|---|---|---|---|
| **63** | 124 | 107 | 2,2 |
| **80** | 158 | 143 | 1,7 |
| **100** | 198 | 183 | 1,3 |
| $a_p$ [mm] = $D_M$ x π x tan $\alpha_R$ | | | |

## axiales Eintauchen




| $d_1$ [mm] | $X_{max}$ [mm] |
|---|---|
| **63** | 2,0 |
| **80** | 2,0 |
| **100** | 2,0 |

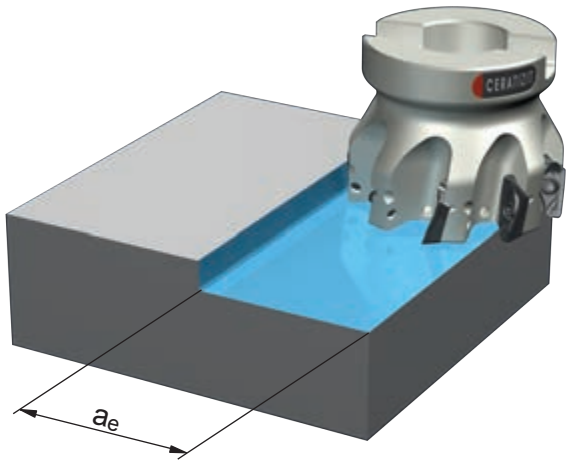
## schräges Eintauchen



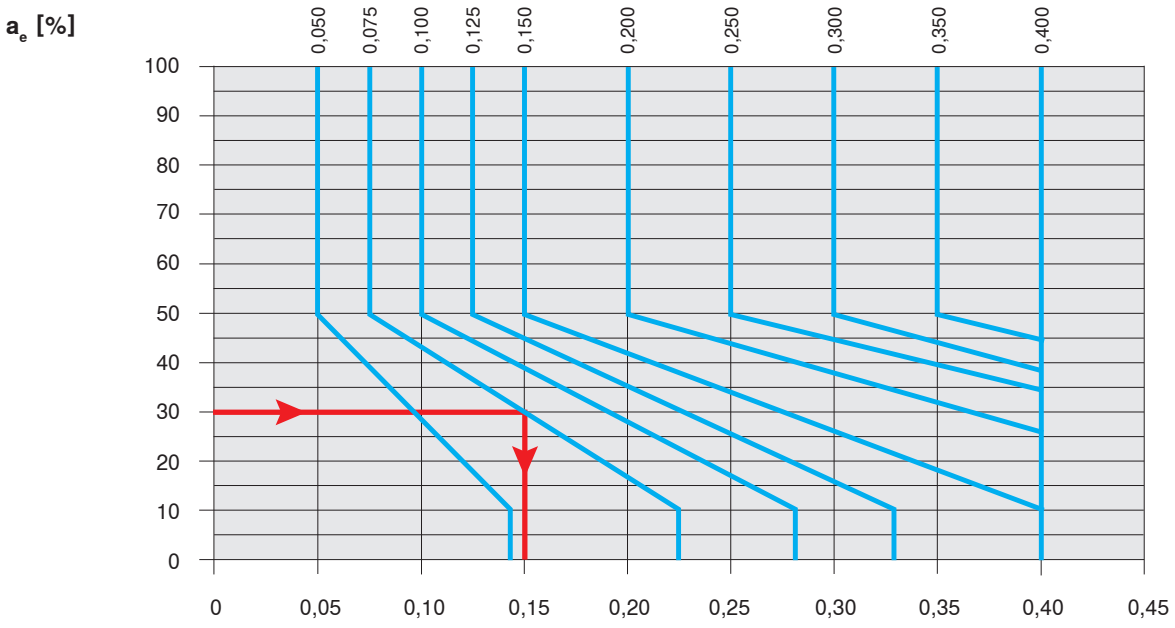

| $d_1$ [mm] | $\alpha_R$ [°] |
|---|---|
| **63** | 2,2 |
| **80** | 1,7 |
| **100** | 1,3 |

# System MaxiMill 211

Korrektur des Zahnvorschubes $f_z$

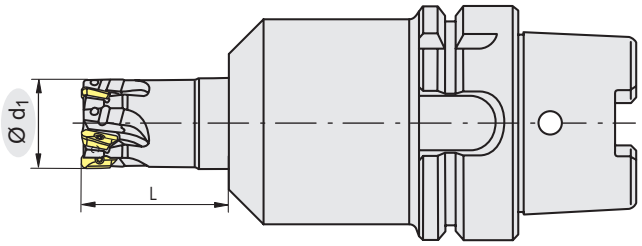



**Startwerte $f_z$ [mm] aus Startparameterdiagramm**




Diese Werte gelten für eine Eingriffsbreite ($a_e$) unter 50%

**Beispiel:**
Startwert [$f_z$] = 0,075 mm
$a_e$ = 30%
korrigierter Wert [$f_z$] = 0,15 mm




Zulässige Drehzahl bezogen auf die Auskraglänge L.

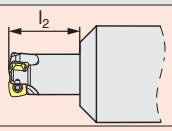
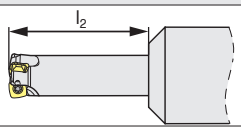
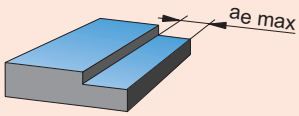
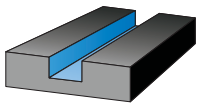
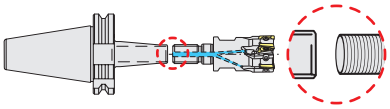
Die Drehzahl muss der Bearbeitungssituation und der Werkzeugaufnahme angepasst werden.

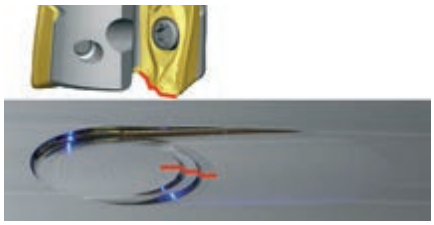
| | 211-07 | | | 211-11 | | | 211-15 | | |
|---|---|---|---|---|---|---|---|---|---|
| Ø | $n_{max}$ [min$^{-1}$] | | | $n_{max}$ [min$^{-1}$] | | | $n_{max}$ [min$^{-1}$] | | |
| $d_1$ [mm] | L = 2xØ | L = 3xØ | L = 5xØ | L = 2xØ | L = 3xØ | L = 5xØ | L = 2xØ | L = 3xØ | L = 5xØ |
| 10 | 72.000 | 58.000 | 46.000 | – | – | – | | – | – |
| 12 | 67.000 | 54.000 | 38.000 | 56.000 | 45.000 | 32.000 | – | – | – |
| 16 | 50.000 | 41.000 | 29.000 | 42.000 | 34.000 | 24.000 | – | – | – |
| 20 | 44.000 | 34.000 | 23.000 | 37.000 | 29.000 | 20.000 | – | – | – |
| 25 | 40.000 | 29.000 | 18.000 | 33.000 | 24.000 | 15.000 | 27.000 | 20.000 | 12.000 |
| 32 | 36.000 | 25.000 | 14.000 | 30.000 | 21.000 | 12.000 | 24.000 | 17.000 | 10.000 |
| 40 | 33.000 | 22.000 | 11.000 | 28.000 | 18.000 | 9.000 | 22.000 | 14.000 | 7.000 |
| 50 | 30.000 | 18.000 | 7.000 | 25.000 | 15.000 | 6.000 | 20.000 | 12.000 | 5.000 |
| 63 | – | – | – | 23.000 | 13.000 | 4.000 | 19.000 | 10.000 | 3.000 |
| 80 | – | – | – | 21.000 | 11.000 | – | 17.000 | 8.000 | – |
| 100 | – | – | – | 20.000 | 8.000 | – | 16.000 | 7.000 | – |
| 125 | – | – | – | 18.000 | – | – | 14.000 | – | – |
| 160 | – | – | – | 17.000 | – | – | 13.000 | – | – |

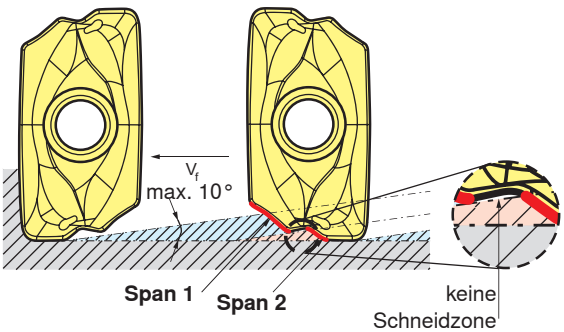
# System MaxiMill 211

## Fräsen harter Werkstoffe (≥ 45 HRC)

**Bearbeitungsempfehlungen**

| | | |
|---|---|---|
| **$l_2$** |   |   |
| **z** |  |  |
| **$a_{e\ max}$ = 75%** |   |  |
| **Aufnahme** |  |  |
| **Kühlung** |  |  |
| **Eintauchen** |  $\alpha_R$: –50% | |
| **Startwerte** | $f_z$ = 0,05 mm<br>$v_c$ = 30 - 60 m/min<br>$a_p$ = 0,5 - 2,5 mm | |






## MaxiMill 211-11

**Wirkprinzip durch "die Kerbe" beim zirkularen und schrägen Eintauchen: (r < 2,0 mm)**

**Radialkraftkompensation**
- Die Kerbe sorgt für zusätzliche Stabilität beim Eintauchen.
- Ruhiger Lauf und vibrationsfreies Arbeiten sind damit in hohem Maße gewährleistet.

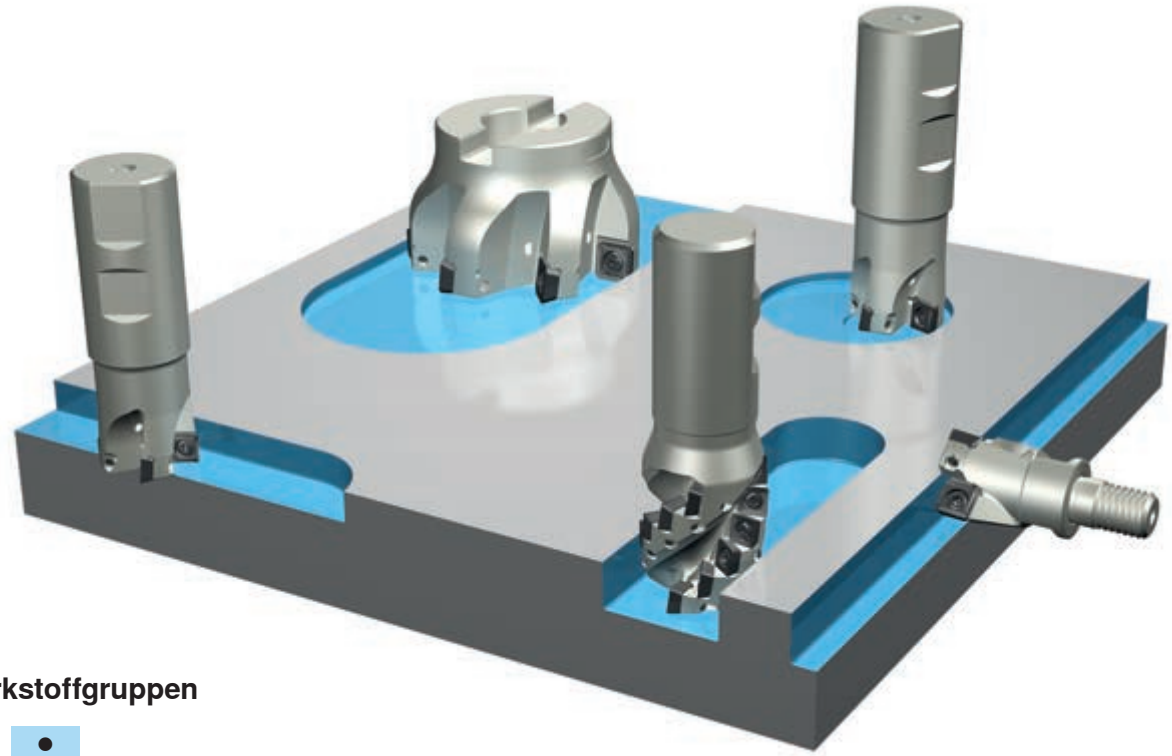
**Das PLUS für professionelle Zerspaner**
- Höhere Zerspanungsleistung
- Bessere Oberflächen beim Fräsen geschlossener Nuten und Taschen

**Spanteilung**
- Niedriger Schnittdruck
- Geringe Leistungsaufnahme
- Optimaler Spänetransport
- Minimale Vibrationen
- Sehr gute Spanbildung



## Vielseitig anwendbares Eckfrässystem

- 4 Schneidkanten für den universellen Einsatz
- optimales Preis-Leistungsverhältnis



## Werkstoffgruppen

| | |
|---|---|
| P | ● |
| M | ○ |
| K | ● |
| N | ○ |
| S | ○ |
| H | |

## Einsatzmöglichkeiten


Planfräsen


Eckfräsen

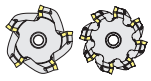

Schräges Eintauchen


Zirkulares Eintauchen


Nutfräsen


Tauchfräsen

## Detailinformationen

| Teilung | Ø-Bereich | Schneidplatten |
|---|---|---|
|  | Ø 25 - 125 mm | SD..09T3..<br>SD..1205.. |

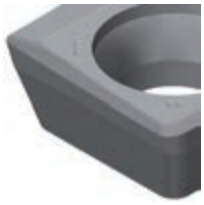
# System MaxiMill 490

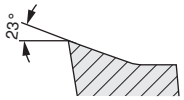
Spanleitstufenübersicht



## -27

- Hochpositive Geometrie
- Scharfe Schneidkante
- Für Schlichtbearbeitung von Titanlegierungen





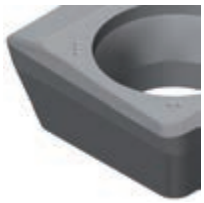

$f_z$ [mm]

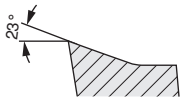
0,10 - 0,20

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | **CTC5240** | **CTC5240** |
| | | |

## -27P

- Hochpositive Geometrie
- Scharfe Schneidkante
- Geringe Aufklebeneigung
- Erste Wahl für Nichteisenmetalle





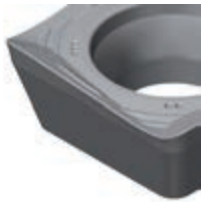

$f_z$ [mm]

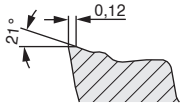
0,08 - 0,35

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| **AMZ** H216T | | |
| AMZ **H216T** | AMZ **H216T** | AMZ **H216T** |
| | | |
| | | |

## -29

- Universelle Geometrie
- Leichte bis mittlere Schruppbearbeitung
- Erste Wahl für allgemeine Stahlwerkstoffe





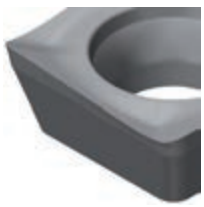

$f_z$ [mm]

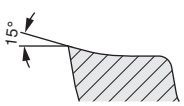
0,10 - 0,25

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | **CTCP230** CTPP235 | CTCP230 **CTPP235** |
| | **CTPM240** | |
| | | |
| | | |
| | | |

## -M31

- Positive Geometrie
- Universell einsetzbar
- Hohe Laufruhe
- Für hochwarmfeste Werkstoffe, Titan und Superlegierungen






$f_z$ [mm]

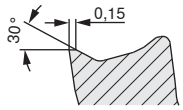
0,10 - 0,20

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | **CTC5235 CTC5240** | **CTC5235 CTC5240** |
| | | |

## -33

- Positive Geometrie
- Leichte Schruppbearbeitung
- Erste Wahl für rostfreie Stahlwerkstoffe






$f_z$ [mm]

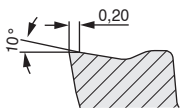
0,10 - 0,20

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | CTPM240 | **CTPM240** |
| | | |
| | | |
| | | |

## -31

- Stabile Geometrie
- Starke Schruppbearbeitung
- Für stark unterbrochene Schnitte
- Erste Wahl für Eisengusswerkstoffe






$f_z$ [mm]

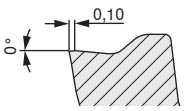
0,10 - 0,30

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | **CTCK215** | **CTCK215** |
| | | |
| | | |

## -ER

- Stabile Schneidkanten
- Universell einsetzbar
- Für allgemeine Stahlwerkstoffe






$f_z$ [mm]

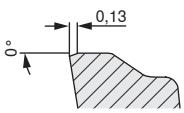
0,10 - 0,30

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTPP235** | **CTPP235** | |
| | | |
| | | |
| | | |
| | | |

## -SR

- Stabile Geometrie
- Leichte bis mittlere Schlichtbearbeitung
- Abgestimmt auf Cermet als Schneidstoff
- Für Stahlwerkstoffe





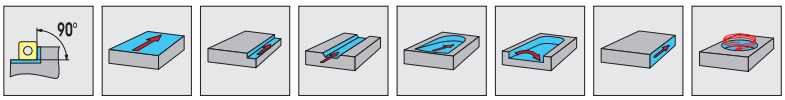

$f_z$ [mm]

0,05 - 0,25

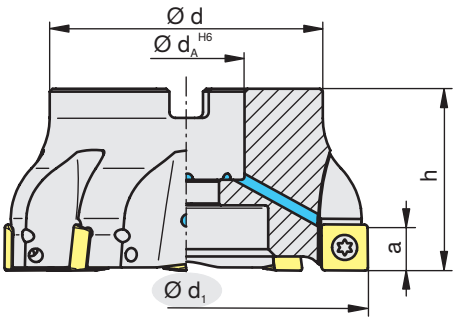
| Bearbeitungsbedingungen | | |
|---|---|---|
| **TCM10** | **TCM10** | |
| TCM10 | | |
| TCM10 | | |
| | | |
| | | |

# System MaxiMill 490

A490-09/-12



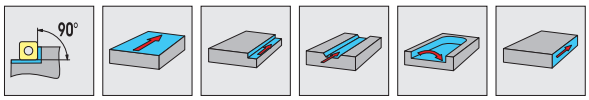


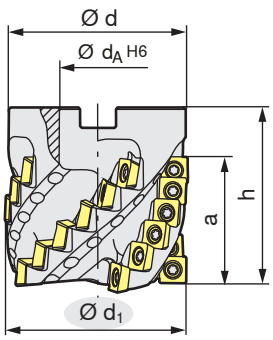

| $d_1$ [mm] | Type, Bezeichnung | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 40 | A490.40.R.05-09 | 40 | 38 | 16 | 7,3 | 5 | 17.000 | 3,2 | SD.. 09T3.. | E01 |
| 42 | A490.42.R.06-09 | 40 | 38 | 16 | 7,3 | 6 | 16.500 | 3,2 | SD.. 09T3.. | E01 |
| 50 | A490.50.R.06-09 | 40 | 43 | 22 | 7,3 | 6 | 14.800 | 3,2 | SD.. 09T3.. | E02 |
| 52 | A490.52.R.07-09 | 40 | 43 | 22 | 7,3 | 7 | 14.450 | 3,2 | SD.. 09T3.. | E02 |
| 63 | A490.63.R.07-09 | 40 | 48 | 22 | 7,3 | 7 | 12.850 | 3,2 | SD.. 09T3.. | E02 |
| 66 | A490.66.R.08-09 | 40 | 48 | 22 | 7,3 | 8 | 12.550 | 3,2 | SD.. 09T3.. | E02 |
| 80 | A490.80.R.09-09 | 50 | 58 | 27 | 7,3 | 9 | 11.250 | 3,2 | SD.. 09T3.. | E02 |
| 100 | A490.100.R.10-09 | 50 | 78 | 32 | 7,3 | 10 | 9.900 | 3,2 | SD.. 09T3.. | E02 |
| 40 | A490.40.R.04-12 | 40 | 38 | 16 | 10,7 | 4 | 17.000 | 5 | SD.. 1205.. | E03 |
| 50 | A490.50.R.05-12 | 40 | 43 | 22 | 10,7 | 5 | 14.800 | 5 | SD.. 1205.. | E04 |
| 63 | A490.63.R.06-12 | 40 | 48 | 22 | 10,7 | 6 | 12.850 | 5 | SD.. 1205.. | E05 |
| 80 | A490.80.R.07-12 | 50 | 58 | 27 | 10,7 | 7 | 11.250 | 5 | SD.. 1205.. | E05 |
| 100 | A490.100.R.08-12 | 50 | 78 | 32 | 10,7 | 8 | 9.900 | 5 | SD.. 1205.. | E05 |
| 125 | A490.125.R.10-12 | 63 | 88 | 40 | 10,7 | 10 | 5.500 | 5 | SD.. 1205.. | E05 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | 11036880 | 54976 | 11149570 | 8095010500 | 4425 |
| E02 | | 54976 | 11149570 | 8095010500 | |
| E03 | 11036880 | 106022 | 11210490 | 8095010600 | |
| E04 | 11040298 | 106022 | 11210490 | 8095010600 | |
| E05 | | 106022 | 11210490 | 8095010600 | |

B276





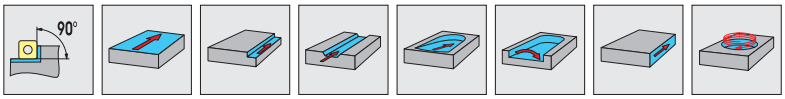

| $d_1$ [mm] | Type, Bezeichnung | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | n | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | A490.40.R.03K6-09 | 55 | 38,2 | 16 | 41 | 3 | 18 | 8.000 | 3,2 | SD.. 09T3.. | E01 |
| 50 | A490.50.R.04K6-09 | 55 | 48 | 22 | 41 | 4 | 24 | 7.500 | 3,2 | SD.. 09T3.. | E01 |
| 63 | A490.63.R.05K6-09 | 60 | 61 | 27 | 41 | 5 | 30 | 6.500 | 3,2 | SD.. 09T3.. | E01 |

| | | | |
|---|---|---|---|
| E01 | 54976 | 11149570 | 8095010500 |

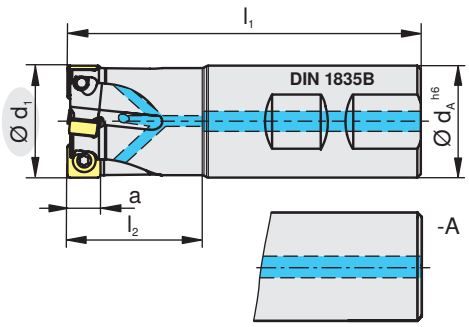
B276

# System MaxiMill 490

C490-09/-12



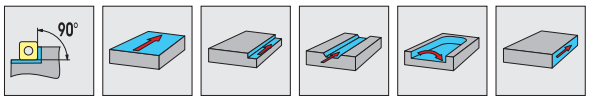


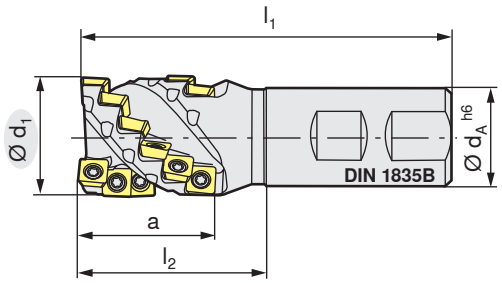

| $d_1$ [mm] | Type, Bezeichnung | $l_1$ [mm] | $l_2$ [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 25 | C490.25.R.02-09-A20-40-165 | 165 | 40 | 20 | 7,3 | 2 | 17.700 | 3,2 | SD.. 09T3.. | E01 |
| 25 | C490.25.R.02-09-A-40-165 | 165 | 40 | 25 | 7,3 | 2 | 17.700 | 3,2 | SD.. 09T3.. | E01 |
| 25 | C490.25.R.03-09-B-32 | 88 | 32 | 25 | 7,3 | 3 | 23.700 | 3,2 | SD.. 09T3.. | E01 |
| 32 | C490.32.R.04-09-B25-40 | 96 | 40 | 25 | 7,3 | 4 | 19.700 | 3,2 | SD.. 09T3.. | E01 |
| 32 | C490.32.R.04-09-B-40 | 100 | 40 | 32 | 7,3 | 4 | 19.700 | 3,2 | SD.. 09T3.. | E01 |
| 32 | C490.32.R.03-12-B-40 | 101 | 40 | 32 | 10,7 | 3 | 16.300 | 5 | SD.. 1205.. | E02 |
| 40 | C490.40.R.04-12-B32-50 | 112 | 50 | 32 | 10,7 | 4 | 13.600 | 5 | SD.. 1205.. | E02 |

| | | | |
|---|---|---|---|
| E01 | 54976 | 11149570 | 8095010500 |
| E02 | 106022 | 11210490 | 8095010600 |

B276





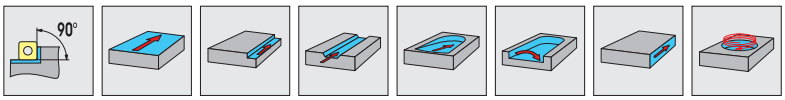

| d1 [mm] | Type, Bezeichnung | l1 [mm] | l2 [mm] | dA [mm] | a [mm] | z | n | nmax [min-1] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | C490.40.R.03K6-09-B32-60 | 120 | 60 | 32 | 41 | 3 | 18 | 8.000 | 3,2 | SD.. 09T3.. | E01 |

| | | | |
|---|---|---|---|
| E01 | 54976 | 11149570 | 8095010500 |

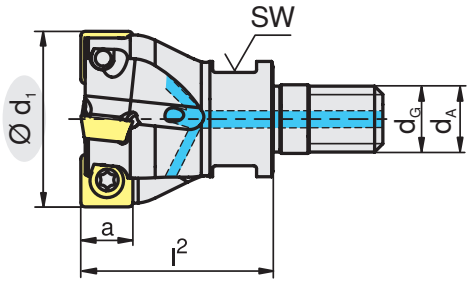
B276

# System MaxiMill 490

G490-09/-12





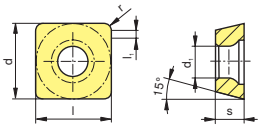




| $d_1$ [mm] | Type, Bezeichnung | $l_2$ [mm] | $d_G$ [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 25 | G490.25.R.03-09 | 35 | 12 | 12,5 | 7,3 | 3 | 23.700 | 3,2 | SD.. 09T3.. | E01 |
| 32 | G490.32.R.04-09 | 35 | 16 | 17,0 | 7,3 | 4 | 19.700 | 3,2 | SD.. 09T3.. | E01 |
| 32 | G490.32.R.03-12 | 35 | 16 | 17,0 | 10,7 | 3 | 16.300 | 5 | SD.. 1205.. | E02 |
| 40 | G490.40.R.04-12 | 40 | 16 | 17,0 | 10,7 | 4 | 13.600 | 5 | SD.. 1205.. | E02 |

| | | | |
|---|---|---|---|
| E01 | 54976 | 11149570 | 8095010500 |
| E02 | 106022 | 11210490 | 8095010600 |

B276

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | | d [mm] | l [mm] | s [mm] | $l_1$ [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | ○ | | | ○ | | | | | | | | | | | | |
| M | | | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | ● | | | | | | | | | | | | |
| K | | | ○ | ● | ● | ● | ● | | | | | | ● | ● | ● | ● | | ○ | ● | ● | ○ | | ● | | | | | | | | | |
| N | | | | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | | | | |
| S | | | | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| H | | | | | | | | | | | | | ○ | | | | | | | | | ● | | | | | | | | | | |
| -27 | | SDHT 09T308ER-27 | | | | | | | | | | | | | | | | | | | ● | | | | | | 9,52 | 9,52 | 3,97 | 2,5 | 0,80 | 4,40 |
| -27P | | SDHT 09T308FR-27P | | | | | | | | | | | | | | | ● | ● | | | | | | | | | 9,52 | 9,52 | 3,97 | 2,5 | 0,80 | 4,40 |
| | | SDHT 120508FR-27P | | | | | | | | | | | | | | | ● | ● | | | | | | | | | 12,70 | 12,70 | 5,00 | 2,2 | 0,80 | 5,50 |
| | | SDHT 120525FR-27P | | | | | | | | | | | | | | | ● | ● | | | | | | | | | 12,70 | 12,70 | 5,00 | 1,5 | 2,50 | 5,50 |
| -29 | | SDMT 1205ZZSN-29 | | | | | ● | ● | | | ● | | | | | | | | | | | | | | | | 12,70 | 12,70 | 5,00 | 0,9 | 0,80 | 5,50 |
| | | SDNT 09T308SR-29 | | | | | ● | ● | | | | | | | | | | | | | | | | | | | 9,52 | 9,52 | 3,97 | 2,5 | 0,80 | 4,40 |
| -31 | | SDMT 1205ZZSN-31 | | | | | | | | | | | | ● | | | | | | | | | | | | | 12,70 | 12,70 | 5,00 | 0,9 | 0,80 | 5,50 |
| | | SDNT 09T308SR-31 | | | | | | | | | | | | ● | | | | | | | | | | | | | 9,52 | 9,52 | 3,97 | 2,5 | 0,80 | 4,40 |
| -33 | | SDHT 120512SR-33 | | | | | | | | | ● | | | | | | | | | | | | | | | | 12,70 | 12,70 | 5,00 | 1,8 | 1,20 | 5,50 |
| | | SDHT 120520SR-33 | | | | | | | | | ● | | | | | | | | | | | | | | | | 12,70 | 12,70 | 5,00 | 1,0 | 2,00 | 5,50 |
| | | SDNT 09T308SR-33 | | | | | | | | | ● | | | | | | | | | | | | | | | | 9,52 | 9,52 | 3,97 | 2,5 | 0,80 | 4,40 |
| -M31 | | SDMT 120508ER-M31 | | | | | | | | | | | | | | | | | | ● | ● | | | | | | 12,70 | 12,70 | 5,00 | | 0,80 | 5,50 |
| | | SDNT 09T308ER-M31 | | | | | | | | | | | | | | | | | | ● | ● | | | | | | 9,52 | 9,52 | 3,97 | 2,5 | 0,80 | 4,40 |
| SD..T | | SDHT 09T308SR | | ● | | | | | | | | | | | | | | | | | | | | | | | 9,52 | 9,52 | 3,97 | 2,5 | 0,80 | 4,40 |
| | | SDNT 09T308ER | | | | | | ● | | | | | | | | | | | | | | | | | | | 9,52 | 9,52 | 3,97 | 2,5 | 0,80 | 4,40 |
| SD..W | | SDHW 120508SR | | ● | | | | | | | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 5,00 | 2,2 | 0,80 | 5,50 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | | d | l | s | $l_1$ | r | $d_1$ |




B12-B18
B135-B136
B21
B257-B266

# System MaxiMill 490

Startparameter für Beispielwerkstoffe

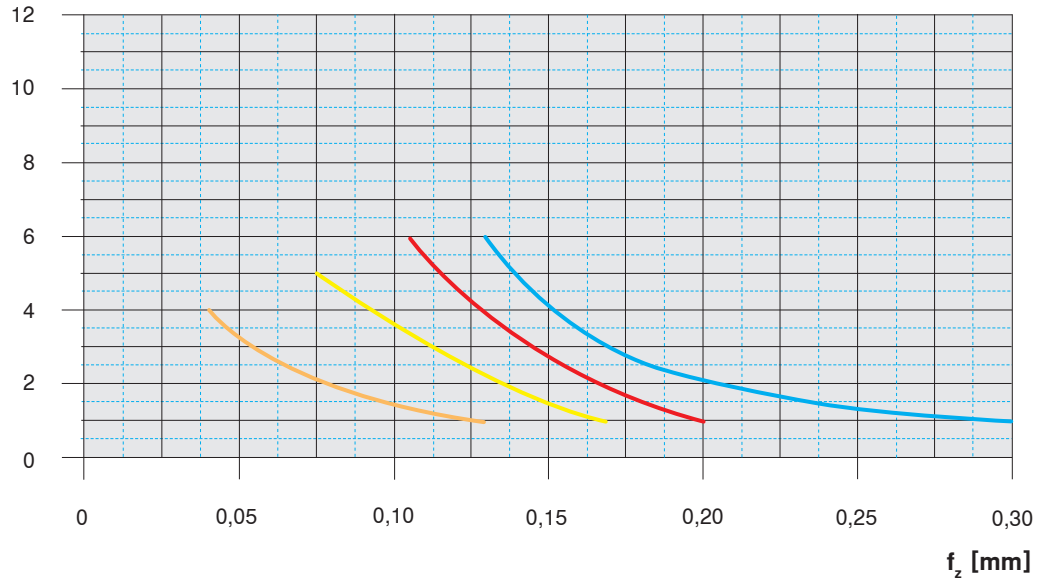
| Werkstoff | | | | Wendeplatte | | $v_c$ [m/min] | Kühlung |
|---|---|---|---|---|---|---|---|
| ▼ | 1.2312 | 40CrMnMoS8-6 | 1.000 N/mm² | SDNT 09T308SR-29<br>SDMT 1205ZZSN-29 | CTPP235 | 200 | trocken |
| ▼ | 1.4571 | X6CrNiMoTi17-12-2 | 600 N/mm² | SDNT 09T308SR-33<br>SDHT 120512SR-33 | CTPM240 | 160 | trocken |
| ▼ | 5.1301 | EN-GJL-250 | HB 180 | SDNT 09T308SR-31<br>SDMT 1205ZZSN-31 | CTCK215 | 250 | trocken |
| ▼ | 2.4856 | Inconel 625 | 1.450 N/mm² | SDNT 09T308ER-M31<br>SDMT 120508ER-M31 | CTC5235 | 35 | Emulsion |

Wenn $a_e$ < 50% benutzen Sie die Korrekturliste

B145

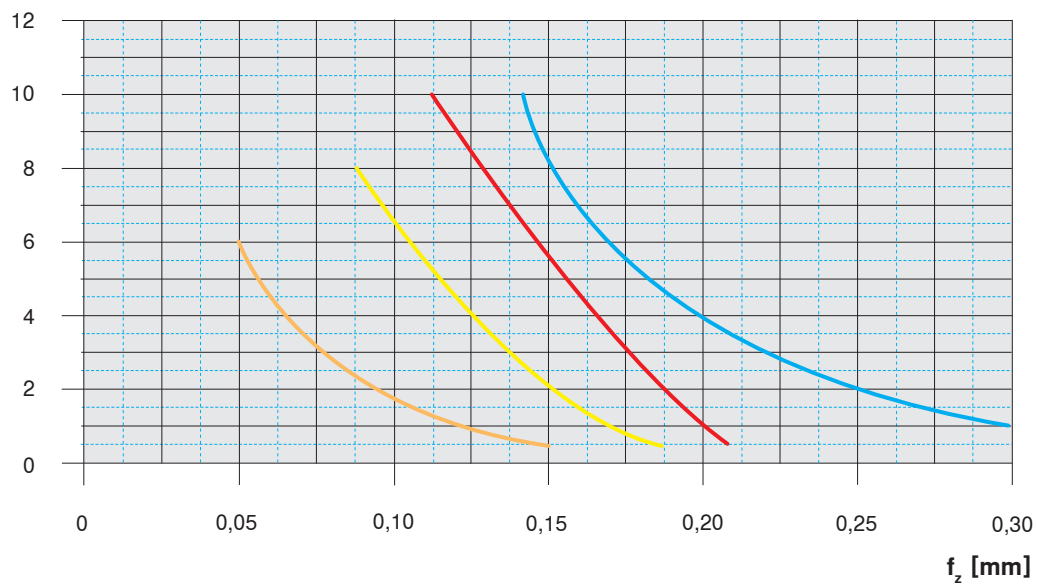
**09**





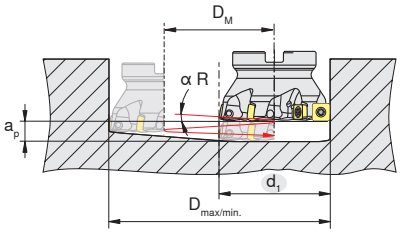

**12**






Weitere Sorten und Geometrien können für den erfolgreichen Anwendungsfall verwendet werden und sind im jeweiligen Anwendungsbereich des Systems abgebildet.

## zirkulares Eintauchen




**$D_{max}$ [mm] = größter Durchmesser für ebene Bodenfläche**
**$D_{min}$ [mm] = kleinster Bohrungsdurchmesser**
**$D_M = D_{max} - d_1$ bzw. $D_{min} - d_1$**

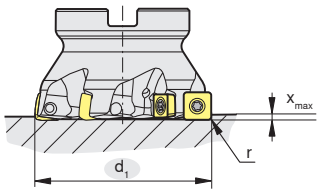
### MaxiMill 490-09

| $d_1$ [mm] | $D_{max}$ [mm] | $D_{min}$ [mm] | $\alpha_{R\ max}$ [°] |
|---|---|---|---|
| **25** | 48 | 37 | 4,4 |
| **32** | 62 | 47 | 2,2 |
| **40** | 78 | 63 | 0,75 |
| **50** | 98 | 83 | 0,5 |
| **63** | 124 | 109 | 0,35 |
| **80** | 158 | 143 | 0,25 |
| **100** | 198 | 183 | 0,2 |

### MaxiMill 490-12

| $d_1$ [mm] | $D_{max}$ [mm] | $D_{min}$ [mm] | $\alpha_{R\ max\ 360°}$ [°] |
|---|---|---|---|
| **32** | 62 | 41 | 2,0 |
| **40** | 78 | 57 | 2,0 |
| **50** | 98 | 77 | 1,2 |
| **63** | 124 | 103 | 0,7 |
| **80** | 158 | 137 | 0,6 |
| **100** | 198 | 177 | 0,4 |
| **125** | 248 | 227 | 0,3 |

## axiales Eintauchen



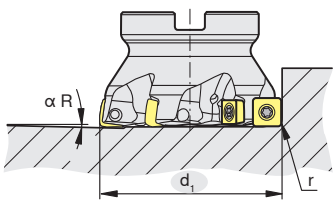

### MaxiMill 490-09

| $d_1$ [mm] | $X_{max}$ [mm] |
|---|---|
| **25** | 0,5 |
| **32** | 0,5 |
| **40** | 0,3 |
| **50** | 0,3 |
| **63** | 0,3 |
| **80** | 0,3 |
| **100** | 0,3 |

### MaxiMill 490-12

| $d_1$ [mm] | $X_{max}$ [mm] |
|---|---|
| **32** | 0,3 |
| **40** | 0,5 |
| **50** | 0,5 |
| **63** | 0,5 |
| **80** | 0,5 |
| **100** | 0,5 |
| **125** | 0,5 |

## schräges Eintauchen




### MaxiMill 490-09

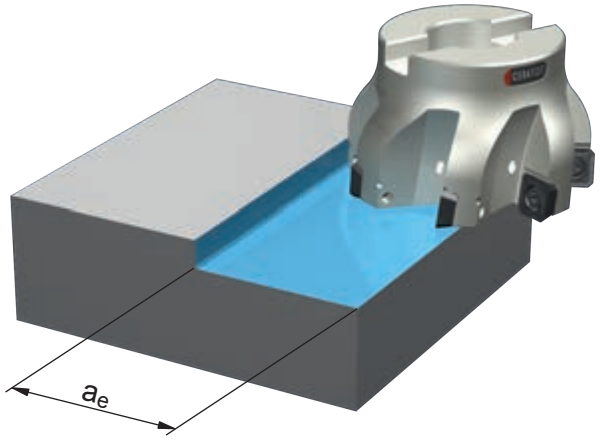
| $d_1$ [mm] | $\alpha_R$ [°] |
|---|---|
| **25** | 4,4 |
| **32** | 2,2 |
| **40** | 0,75 |
| **50** | 0,5 |
| **63** | 0,35 |
| **80** | 0,25 |
| **100** | 0,2 |

### MaxiMill 490-12

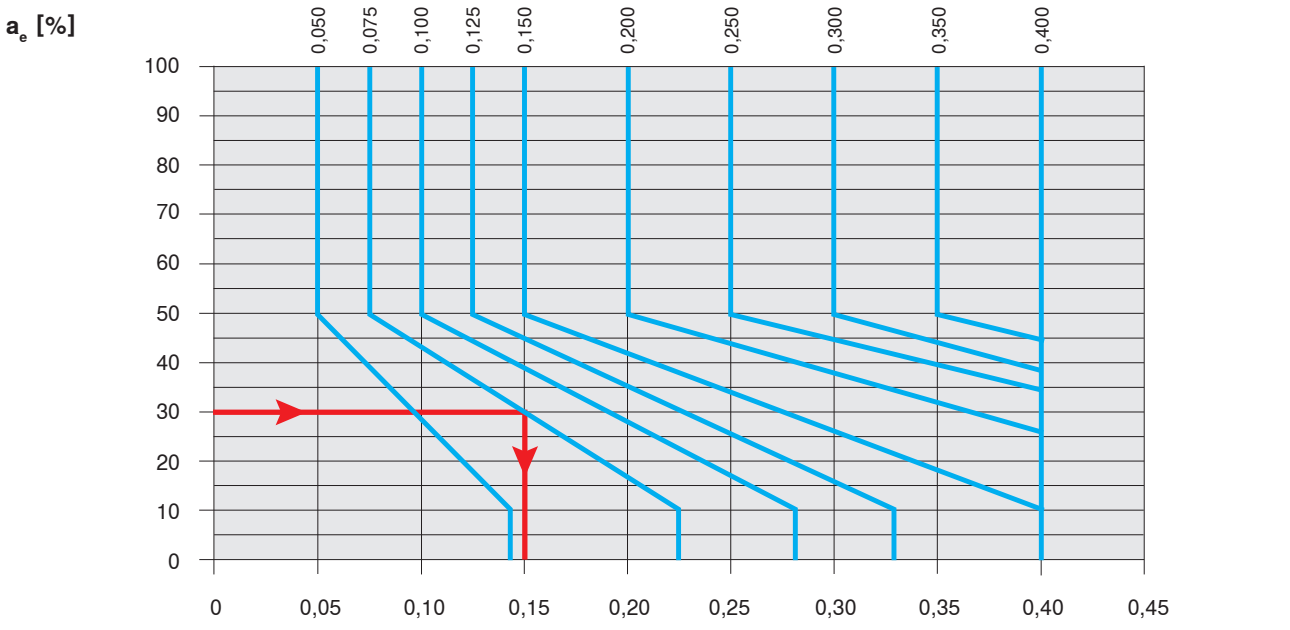
| $d_1$ [mm] | $\alpha_R$ [°] |
|---|---|
| **32** | 2,0 |
| **40** | 2,0 |
| **50** | 1,2 |
| **63** | 0,7 |
| **80** | 0,6 |
| **100** | 0,4 |
| **125** | 0,3 |

# System MaxiMill 490

Korrektur des Zahnvorschubes $f_z$




**Startwerte $f_z$ [mm] aus Startparameterdiagramm**



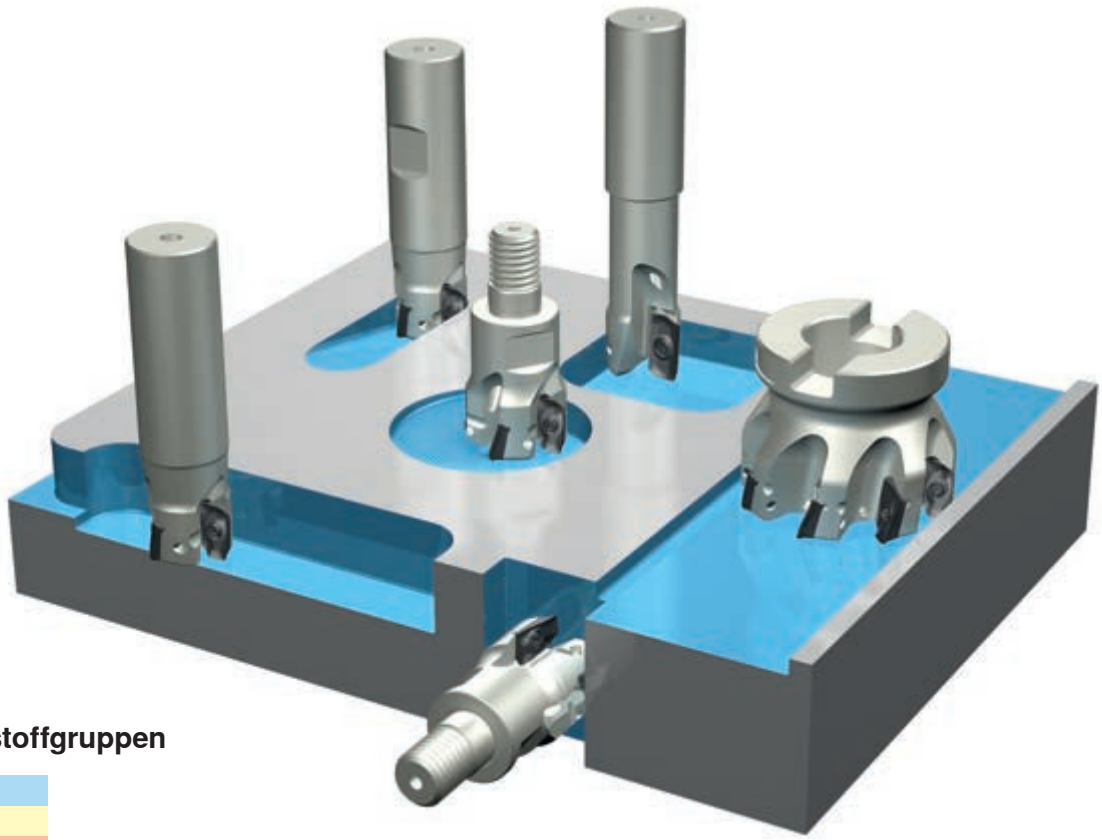

Diese Werte gelten für eine Eingriffsbreite ($a_e$) unter 50%

**Beispiel:**
Startwert [$f_z$] = 0,075 mm
$a_e$ = 30%
korrigierter Wert [$f_z$] = 0,15 mm


XDHX
R<=
1904..
4 mm
CHSC.25.R.03-11
4500533697/60
nmax =45000 rpm

## High Speed Cutting von Leichtmetallen

- maximales Zeitspanvolumen
- höchste Produktions- und Prozesssicherheit



## Werkstoffgruppen

| | |
|---|---|
| P | |
| M | |
| K | ○ |
| N | ● |
| S | |
| H | |

## Einsatzmöglichkeiten


Planfräsen


Eckfräsen


Gassenfräsen

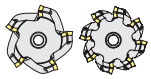

Schräges Eintauchen


Auskammern


Besäumen


Axiales Eintauchen

## Detailinformationen

| Teilung | Ø-Bereich | Schneidplatten |
|---|---|---|
|  | Ø 16 - 125 mm | XDHT 11..<br>XDHT 19..<br>XDHX 19.. |

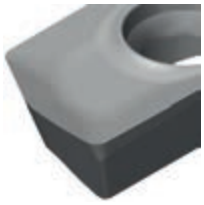
# System MaxiMill HSC/HPC

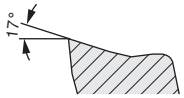
Spanleitstufenübersicht



## -27P

- Hochpositive Geometrie
- Scharfe Schneidkante
- Geringe Aufklebeneigung
- Erste Wahl für Nichteisenmetalle

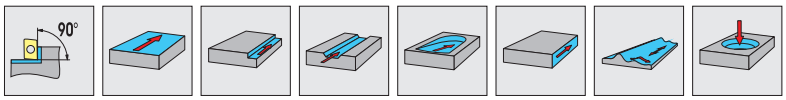




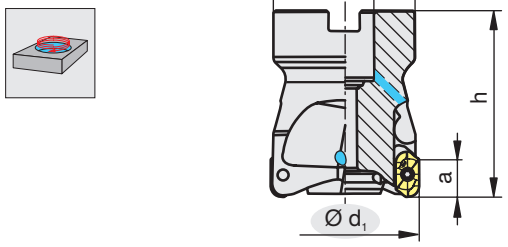

$f_z$ [mm]

0,05 - 0,35

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| H216T | | |
| H216T | H216T | H216T |
| | | |
| | | |







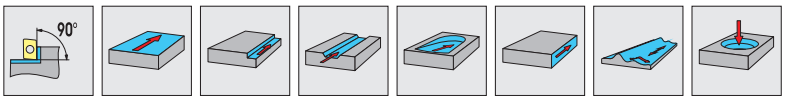

| $d_1$ [mm] | Type, Bezeichnung | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 40 | AHSC.40.R.04-11 | 50 | 38 | 16 | 10 | 4 | 35.500 | 1,8 | XD.. 11.. | E01 |
| 50 | AHSC.50.R.04-11 | 50 | 43 | 22 | 10 | 4 | 31.800 | 1,8 | XD.. 11.. | E02 |
| 63 | AHSC.63.R.05-11 | 50 | 48 | 22 | 10 | 5 | 28.300 | 1,8 | XD.. 11.. | E02 |
| 80 | AHSC.80.R.05-11 | 50 | 58 | 27 | 10 | 5 | 25.100 | 1,8 | XD.. 11.. | E03 |
| 100 | AHSC.100.R.05-11 | 50 | 78 | 32 | 10 | 5 | 22.500 | 1,8 | XD.. 11.. | E03 |
| 40 | AHSC.40.R.03-19 | 50 | 38 | 16 | 18 | 3 | 24.900 | 6 | XDHT 19.. | E04 |
| 50 | AHSC.50.R.04-19 | 50 | 43 | 22 | 18 | 4 | 21.600 | 6 | XDHT 19.. | E05 |
| 63 | AHSC.63.R.04-19 | 50 | 48 | 22 | 18 | 4 | 18.800 | 6 | XDHT 19.. | E05 |
| 63 | AHSC.63.R.05-19 | 50 | 48 | 22 | 18 | 5 | 18.800 | 6 | XDHT 19.. | E05 |
| 80 | AHSC.80.R.04-19 | 50 | 58 | 27 | 18 | 4 | 16.400 | 6 | XDHT 19.. | E06 |
| 80 | AHSC.80.R.05-19 | 50 | 58 | 27 | 18 | 5 | 16.400 | 6 | XDHT 19.. | E06 |
| 100 | AHSC.100.R.04-19 | 50 | 78 | 32 | 18 | 4 | 14.500 | 6 | XDHT 19.. | E06 |
| 100 | AHSC.100.R.05-19 | 50 | 78 | 32 | 18 | 5 | 14.500 | 6 | XDHT 19.. | E06 |
| 125 | AHSC.125.R.05-19 | 63 | 88 | 40 | 18 | 5 | 12.800 | 6 | XDHT 19.. | E06 |
| 125 | AHSC.125.R.06-19 | 63 | 88 | 40 | 18 | 6 | 12.800 | 6 | XDHT 19.. | E06 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 11036880 | 11114242 | 11149547 | | 8095003900 | 4425 |
| E02 | 11040298 | 11114242 | 11149547 | 4496 | 8095003900 | |
| E03 | | 11114242 | 11149547 | | 8095003900 | |
| E04 | 11036880 | 11037484 | 11149572 | | 8095010500 | 4425 |
| E05 | 11040298 | 11042274 | 11149572 | 4496 | 8095010500 | |
| E06 | | 11042274 | 11149572 | | 8095010500 | |

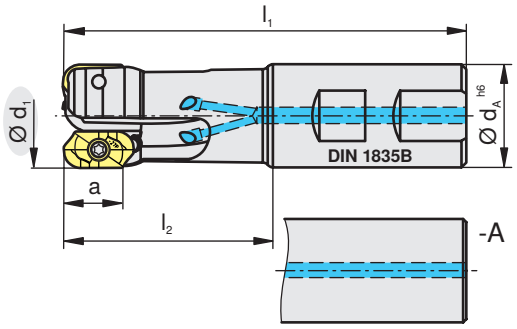
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# System MaxiMill HSC/HPC

CHSC-11/-19



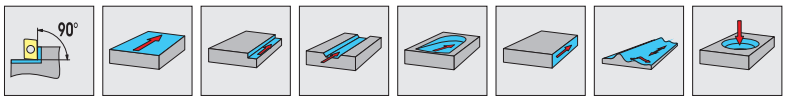



| $d_1$ [mm] | Type, Bezeichnung | $l_1$ [mm] | $l_2$ [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 16 | CHSC.16.R.02-11-A-25 | 75 | 25 | 16 | 10 | 2 | 56.200 | 1,8 | XD.. 11.. | E01 |
| 16 | CHSC.16.R.02-11-A-32 | 165 | 32 | 16 | 10 | 2 | 18.800 | 1,8 | XD.. 11.. | E01 |
| 16 | CHSC.16.R.02-11-B-25 | 75 | 25 | 16 | 10 | 2 | 56.200 | 1,8 | XD.. 11.. | E01 |
| 18 | CHSC.18.R.02-11-A-25 | 77,7 | 25 | 20 | 10 | 2 | 53.000 | 1,8 | XD.. 11.. | E01 |
| 18 | CHSC.18.R.02-11-A-32 | 165 | 32 | 20 | 10 | 2 | 23.900 | 1,8 | XD.. 11.. | E01 |
| 19 | CHSC.19.R.02-11-A-25 | 77,7 | 25 | 20 | 10 | 2 | 51.600 | 1,8 | XD.. 11.. | E01 |
| 19 | CHSC.19.R.02-11-A-32 | 165 | 32 | 20 | 10 | 2 | 25.400 | 1,8 | XD.. 11.. | E01 |
| 20 | CHSC.20.R.02-11-A-32 | 84 | 32 | 20 | 10 | 2 | 50.300 | 1,8 | XD.. 11.. | E01 |
| 20 | CHSC.20.R.02-11-A-40 | 165 | 40 | 20 | 10 | 2 | 26.700 | 1,8 | XD.. 11.. | E01 |
| 20 | CHSC.20.R.03-11-B-32 | 84 | 32 | 20 | 10 | 3 | 50.300 | 1,8 | XD.. 11.. | E01 |
| 22 | CHSC.22.R.02-11-A-32 | 91 | 32 | 25 | 10 | 2 | 47.900 | 1,8 | XD.. 11.. | E01 |
| 22 | CHSC.22.R.02-11-A-40 | 165 | 40 | 25 | 10 | 2 | 30.200 | 1,8 | XD.. 11.. | E01 |
| 25 | CHSC.25.R.02-11-A-40 | 98 | 40 | 25 | 10 | 2 | 45.000 | 1,8 | XD.. 11.. | E01 |
| 25 | CHSC.25.R.02-11-A-50 | 165 | 50 | 25 | 10 | 2 | 31.700 | 1,8 | XD.. 11.. | E01 |
| 25 | CHSC.25.R.03-11-A-40 | 98 | 40 | 25 | 10 | 3 | 45.000 | 1,8 | XD.. 11.. | E01 |
| 25 | CHSC.25.R.03-11-A-50 | 165 | 50 | 25 | 10 | 3 | 31.700 | 1,8 | XD.. 11.. | E01 |
| 25 | CHSC.25.R.04-11-B-40 | 98 | 40 | 25 | 10 | 4 | 45.000 | 1,8 | XD.. 11.. | E01 |
| 32 | CHSC.32.R.03-11-A-50 | 112 | 50 | 32 | 10 | 3 | 39.700 | 1,8 | XD.. 11.. | E02 |
| 32 | CHSC.32.R.03-11-A-63 | 165 | 63 | 32 | 10 | 3 | 33.400 | 1,8 | XD.. 11.. | E02 |
| 32 | CHSC.32.R.05-11-B-50 | 112 | 50 | 32 | 10 | 5 | 39.300 | 1,8 | XD.. 11.. | E02 |
| 25 | CHSC.25.R.02-19 | 121 | 65 | 25 | 18 | 2 | 32.400 | 6 | XDHT 19.. | E03 |
| 25 | CHSC.25.R.02-19-A-50 | 121 | 50 | 25 | 18 | 2 | 32.400 | 6 | XDHT 19.. | E03 |
| 25 | CHSC.25.R.02-19-A-63 | 165 | 63 | 25 | 18 | 2 | 24.700 | 6 | XDHT 19.. | E03 |
| 32 | CHSC.32.R.02-19 | 125 | 65 | 32 | 18 | 2 | 28.900 | 6 | XDHT 19.. | E04 |
| 32 | CHSC.32.R.02-19-A-63 | 125 | 63 | 32 | 18 | 2 | 28.900 | 6 | XDHT 19.. | E04 |
| 32 | CHSC.32.R.02-19-A-80 | 165 | 80 | 32 | 18 | 2 | 24.400 | 6 | XDHT 19.. | E04 |
| 32 | CHSC.32.R.03-19 | 125 | 65 | 32 | 18 | 3 | 28.900 | 6 | XDHT 19.. | E04 |
| 32 | CHSC.32.R.03-19-A-63 | 125 | 63 | 32 | 18 | 3 | 28.900 | 6 | XDHT 19.. | E04 |
| 32 | CHSC.32.R.03-19-A-80 | 165 | 80 | 32 | 18 | 3 | 24.400 | 6 | XDHT 19.. | E04 |

| | | | |
|---|---|---|---|
| E01 | 11114238 | 11149547 | 8095003900 |
| E02 | 11114242 | 11149547 | 8095003900 |
| E03 | 11042275 | 11149572 | 8095010500 |
| E04 | 11037484 | 11149572 | 8095010500 |

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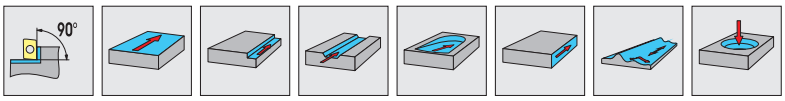

| $d_1$ [mm] | Type, Bezeichnung | $l_2$ [mm] | $d_G$ [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 16 | GHSC.16.R.02-11 | 27 | 8 | 8,5 | 10 | 2 | 56.200 | 1,8 | XD.. 11.. | E01 |
| 18 | GHSC.18.R.02-11 | 27 | 8 | 8,5 | 10 | 2 | 53.000 | 1,8 | XD.. 11.. | E01 |
| 20 | GHSC.20.R.02-11 | 33 | 10 | 10,5 | 10 | 2 | 50.300 | 1,8 | XD.. 11.. | E01 |
| 25 | GHSC.25.R.03-11 | 35 | 12 | 12,5 | 10 | 3 | 45.000 | 1,8 | XD.. 11.. | E01 |
| 32 | GHSC.32.R.03-11 | 35 | 16 | 17 | 10 | 3 | 39.800 | 1,8 | XD.. 11.. | E02 |
| 40 | GHSC.40.R.03-11 | 35 | 16 | 17 | 10 | 3 | 35.500 | 1,8 | XD.. 11.. | E02 |
| 25 | GHSC.25.R.02-19 | 45 | 12 | 12,5 | 18 | 2 | 34.400 | 6 | XDHT 19.. | E03 |
| 32 | GHSC.32.R.03-19 | 52 | 16 | 17 | 18 | 3 | 29.100 | 6 | XDHT 19.. | E04 |
| 40 | GHSC.40.R.03-19 | 52 | 16 | 17 | 18 | 3 | 24.900 | 6 | XDHT 19.. | E04 |

| | | | |
|---|---|---|---|
| E01 | 11114238 | 11149547 | 8095003900 |
| E02 | 11114242 | 11149547 | 8095003900 |
| E03 | 11042275 | 11149572 | 8095010500 |
| E04 | 11037484 | 11149572 | 8095010500 |

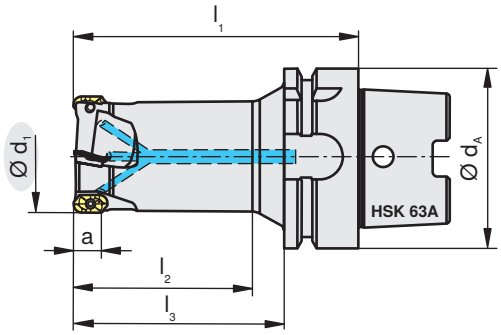
B276

# System MaxiMill HSC/HPC

MHSC-11/-19





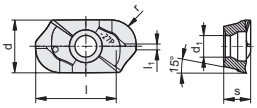

| $d_1$ [mm] | Type, Bezeichnung | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | MHSC.25.R.03-11-H63A-50 | 90 | 50 | 64 | 63 | 10 | 3 | 45.000 | 1,8 | XD.. 11.. | E01 |
| 25 | MHSC.25.R.03-11-H63A-63 | 100 | 63 | 74 | 63 | 10 | 3 | 42.000 | 1,8 | XD.. 11.. | E01 |
| 32 | MHSC.32.R.03-11-H63A-63 | 100 | 63 | 74 | 63 | 10 | 3 | 39.700 | 1,8 | XD.. 11.. | E02 |
| 32 | MHSC.32.R.03-11-H63A-80 | 120 | 80 | 94 | 63 | 10 | 3 | 37.200 | 1,8 | XD.. 11.. | E02 |
| 40 | MHSC.40.R.04-11-H63A-63 | 100 | 63 | 74 | 63 | 10 | 4 | 35.500 | 1,8 | XD.. 11.. | E02 |
| 40 | MHSC.40.R.04-11-H63A-80 | 120 | 80 | 94 | 63 | 10 | 4 | 35.500 | 1,8 | XD.. 11.. | E02 |
| 50 | MHSC.50.R.04-11-H63A-100 | 140 | 100 | 114 | 63 | 10 | 4 | 31.800 | 1,8 | XD.. 11.. | E02 |
| 50 | MHSC.50.R.04-11-H63A-63 | 100 | 63 | 74 | 63 | 10 | 4 | 31.800 | 1,8 | XD.. 11.. | E02 |
| 25 | MHSC.25.R.02-19-H63A-50 | 90 | 50 | 64 | 63 | 18 | 2 | 35.000 | 6 | XDHT 19.. | E03 |
| 25 | MHSC.25.R.02-19-H63A-63 | 100 | 63 | 74 | 63 | 18 | 2 | 32.700 | 6 | XDHT 19.. | E03 |
| 32 | MHSC.32.R.02-19-H63A-63 | 100 | 63 | 74 | 63 | 18 | 2 | 29.100 | 6 | XDHT 19.. | E04 |
| 32 | MHSC.32.R.02-19-H63A-80 | 120 | 80 | 94 | 63 | 18 | 2 | 27.200 | 6 | XDHT 19.. | E04 |
| 32 | MHSC.32.R.03-19-H63A-63 | 100 | 63 | 74 | 63 | 18 | 3 | 29.100 | 6 | XDHT 19.. | E04 |
| 32 | MHSC.32.R.03-19-H63A-80 | 120 | 80 | 94 | 63 | 18 | 3 | 27.200 | 6 | XDHT 19.. | E04 |
| 40 | MHSC.40.R.03-19-H63A-63 | 100 | 63 | 74 | 63 | 18 | 3 | 24.900 | 6 | XDHT 19.. | E04 |
| 40 | MHSC.40.R.03-19-H63A-80 | 120 | 80 | 94 | 63 | 18 | 3 | 24.900 | 6 | XDHT 19.. | E04 |
| 50 | MHSC.50.R.03-19-H63A-100 | 140 | 100 | 114 | 63 | 18 | 3 | 21.600 | 6 | XDHT 19.. | E05 |

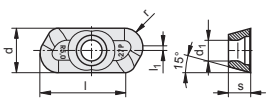
Werkzeuge sind auf G6.3 vorgewuchtet!

| | | | |
|---|---|---|---|
| E01 | 11114238 | 11149547 | 8095003900 |
| E02 | 11114242 | 11149547 | 8095003900 |
| E03 | 11042275 | 11149572 | 8095010500 |
| E04 | 11037484 | 11149572 | 8095010500 |
| E05 | 11042274 | 11149572 | 8095010500 |

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| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d [mm] | l [mm] | s [mm] | $l_1$ [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | ○ | | | ○ | | | | | | | | | | | |
| | | M | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | ● | | | | | | | | | | | |
| | | K | | ○ | ● | ● | ● | | | | | ● | ● | ● | ● | | ○ | ● | ● | ○ | | ● | | | | | | | | | |
| | | N | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | | | | |
| | | S | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| | | H | | | | | | | | | | | ○ | | | | | | | | | ● | | | | | | | | | |
| -27P |  | XDHT 11T302FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 6,80 | 10,60 | 3,50 | 2,0 | 0,20 | 2,80 |
| | | XDHT 11T304FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 6,80 | 10,60 | 3,50 | 1,8 | 0,40 | 2,80 |
| | | XDHT 11T308FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 6,80 | 10,60 | 3,50 | 1,4 | 0,80 | 2,80 |
| | | XDHT 11T312FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 6,80 | 10,60 | 3,50 | 1,4 | 1,20 | 2,80 |
| | | XDHT 11T316FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 6,80 | 10,60 | 3,50 | 1,4 | 1,60 | 2,80 |
| | | XDHT 11T320FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 6,80 | 10,60 | 3,50 | 1,4 | 2,00 | 2,80 |
| | | XDHT 11T325FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 6,80 | 10,60 | 3,50 | 1,4 | 2,50 | 2,80 |
| | | XDHT 11T332FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 6,80 | 10,60 | 3,50 | 0,8 | 3,20 | 2,80 |
| | | XDHT 11T340FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 6,80 | 10,60 | 3,50 | | 4,00 | 2,80 |
| | | XDHT 11T350FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 6,80 | 10,60 | 3,50 | | 5,00 | 2,80 |
| | | XDHT 190402FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 19,00 | 4,76 | 2,0 | 0,20 | 4,65 |
| | | XDHT 190404FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 19,00 | 4,76 | 2,0 | 0,40 | 4,65 |
| | | XDHT 190408FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 19,00 | 4,76 | 2,0 | 0,80 | 4,65 |
| | | XDHT 190412FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 19,00 | 4,76 | 2,0 | 1,20 | 4,65 |
| | | XDHT 190416FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 19,00 | 4,76 | 2,0 | 1,60 | 4,65 |
| | | XDHT 190420FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 19,00 | 4,76 | 2,0 | 2,00 | 4,65 |
| | | XDHT 190425FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 19,00 | 4,76 | 1,4 | 2,50 | 4,65 |
| | | XDHT 190432FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 19,00 | 4,76 | 1,0 | 3,20 | 4,65 |
| | | XDHT 190440FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 19,00 | 4,76 | 1,0 | 4,00 | 4,65 |
| | | XDHT 190450FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 19,00 | 4,76 | | 5,00 | 4,65 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d | l | s | $l_1$ | r | $d_1$ |

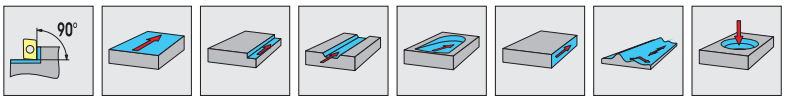


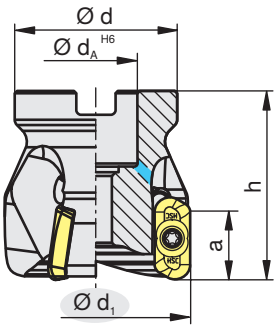

B12-B18
B149
B21
B257-B266

# System MaxiMill HSC/HPC

AHPC-19



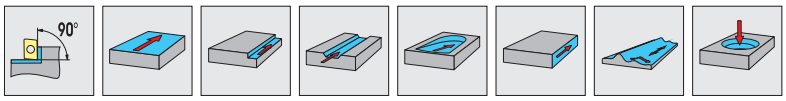


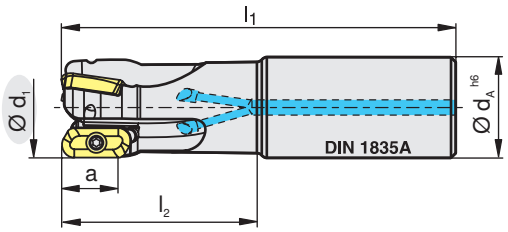

| $d_1$ [mm] | Type, Bezeichnung | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 40 | AHPC.40.R.03-19 | 50 | 38 | 16 | 18 | 3 | 35.700 | 5 | XDHX 19.. | E01 |
| 50 | AHPC.50.R.03-19 | 50 | 43 | 22 | 18 | 3 | 31.900 | 5 | XDHX 19.. | E02 |
| 63 | AHPC.63.R.03-19 | 50 | 48 | 22 | 18 | 3 | 28.500 | 5 | XDHX 19.. | E02 |
| 63 | AHPC.63.R.04-19 | 50 | 48 | 22 | 18 | 4 | 28.500 | 5 | XDHX 19.. | E02 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E01 | 11036880 | 11037484 | 11186812 | | 8095010500 | 4425 |
| E02 | 11040298 | 11042274 | 11186812 | 4496 | 8095010500 | |

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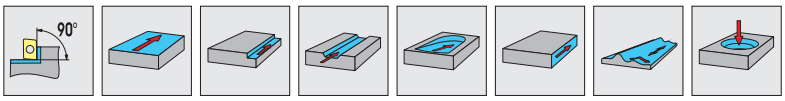

| d1 [mm] | Type, Bezeichnung | l1 [mm] | l2 [mm] | dA [mm] | a [mm] | z | nmax [min-1] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 22 | CHPC.22.R.02-19-A-40 | 165 | 40 | 22 | 18 | 2 | 31.900 | 5 | XDHX 19.. | E01 |
| 25 | CHPC.25.R.02-19-A-50 | 121 | 65 | 25 | 18 | 2 | 41.800 | 5 | XDHX 19.. | E01 |
| 25 | CHPC.25.R.02-19-A-63 | 165 | 63 | 25 | 18 | 2 | 31.900 | 5 | XDHX 19.. | E01 |
| 32 | CHPC.32.R.02-19-A-63 | 125 | 63 | 32 | 18 | 2 | 39.800 | 5 | XDHX 19.. | E02 |
| 32 | CHPC.32.R.02-19-A-80 | 165 | 80 | 32 | 18 | 2 | 33.500 | 5 | XDHX 19.. | E02 |
| 32 | CHPC.32.R.03-19-A-63 | 125 | 63 | 32 | 18 | 3 | 39.800 | 5 | XDHX 19.. | E02 |
| 32 | CHPC.32.R.03-19-A-80 | 165 | 80 | 32 | 18 | 3 | 33.500 | 5 | XDHX 19.. | E02 |

| | | | |
|---|---|---|---|
| E01 | 11042275 | 11186812 | 8095010500 |
| E02 | 11037484 | 11186812 | 8095010500 |

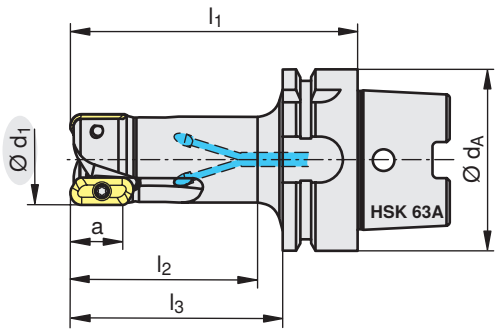
B276

# System MaxiMill HSC/HPC

MHPC-19





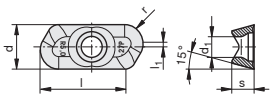

| d1 [mm] | Type, Bezeichnung | l1 [mm] | l2 [mm] | l3 [mm] | dA [mm] | a [mm] | z | nmax [min-1] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | MHPC.25.R.02-19-H63A-100 | 140 | 100 | 114 | 63 | 18 | 2 | 33.900 | 5 | XDHX 19.. | E01 |
| 25 | MHPC.25.R.02-19-H63A-50 | 90 | 50 | 64 | 63 | 18 | 2 | 45.200 | 5 | XDHX 19.. | E01 |
| 25 | MHPC.25.R.02-19-H63A-63 | 100 | 63 | 74 | 63 | 18 | 2 | 42.300 | 5 | XDHX 19.. | E01 |
| 25 | MHPC.25.R.02-19-H63A-80 | 120 | 80 | 94 | 63 | 18 | 2 | 38.400 | 5 | XDHX 19.. | E01 |
| 32 | MHPC.32.R.02-19-H63A-100 | 140 | 100 | 114 | 63 | 18 | 2 | 34.300 | 5 | XDHX 19.. | E02 |
| 32 | MHPC.32.R.02-19-H63A-63 | 100 | 63 | 74 | 63 | 18 | 2 | 40.000 | 5 | XDHX 19.. | E02 |
| 32 | MHPC.32.R.02-19-H63A-80 | 120 | 80 | 94 | 63 | 18 | 2 | 37.500 | 5 | XDHX 19.. | E02 |
| 32 | MHPC.32.R.03-19-H63A-63 | 100 | 63 | 74 | 63 | 18 | 3 | 40.000 | 5 | XDHX 19.. | E02 |
| 32 | MHPC.32.R.03-19-H63A-80 | 120 | 80 | 94 | 63 | 18 | 3 | 37.500 | 5 | XDHX 19.. | E02 |
| 40 | MHPC.40.R.03-19-H63A-100 | 140 | 100 | 114 | 63 | 18 | 3 | 33.500 | 5 | XDHX 19.. | E02 |
| 40 | MHPC.40.R.03-19-H63A-63 | 100 | 63 | 74 | 63 | 18 | 3 | 35.700 | 5 | XDHX 19.. | E02 |
| 40 | MHPC.40.R.03-19-H63A-80 | 120 | 80 | 94 | 63 | 18 | 3 | 35.700 | 5 | XDHX 19.. | E02 |
| 50 | MHPC.50.R.03-19-H63A-100 | 140 | 100 | 114 | 63 | 18 | 3 | 31.900 | 5 | XDHX 19.. | E03 |
| 50 | MHPC.50.R.03-19-H63A-63 | 100 | 63 | 74 | 63 | 18 | 3 | 31.900 | 5 | XDHX 19.. | E03 |
| 50 | MHPC.50.R.03-19-H63A-80 | 120 | 80 | 94 | 63 | 18 | 3 | 31.900 | 5 | XDHX 19.. | E03 |

Werkzeuge sind auf G6.3 vorgewuchtet!

| | | | |
|---|---|---|---|
| E01 | 11042275 | 11186812 | 8095010500 |
| E02 | 11037484 | 11186812 | 8095010500 |
| E03 | 11042274 | 11186812 | 8095010500 |

B276

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d [mm] | l [mm] | s [mm] | $l_1$ [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | ○ | | | ○ | | | | | | | | | | | |
| M | | | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | ● | | | | | | | | | | | |
| K | | | | ○ | ● | ● | ● | | | | | | ● | ● | ● | ● | | ○ | ● | ● | ○ | | ● | | | | | | | | |
| N | | | | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | | | |
| S | | | | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | |
| H | | | | | | | | | | | | | ○ | | | | | | | | | ● | | | | | | | | | |
| -27P | | XDHX 190402FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 19,00 | 4,76 | 2,0 | 0,20 | 4,65 |
| | | XDHX 190404FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 19,00 | 4,76 | 2,0 | 0,40 | 4,65 |
| | | XDHX 190408FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 19,00 | 4,76 | 2,0 | 0,80 | 4,65 |
| | | XDHX 190412FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 19,00 | 4,76 | 2,0 | 1,20 | 4,65 |
| | | XDHX 190416FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 19,00 | 4,76 | 2,0 | 1,60 | 4,65 |
| | | XDHX 190420FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 19,00 | 4,76 | 2,0 | 2,00 | 4,65 |
| | | XDHX 190425FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 19,00 | 4,76 | 1,4 | 2,50 | 4,65 |
| | | XDHX 190432FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 19,00 | 4,76 | 1,0 | 3,20 | 4,65 |
| | | XDHX 190440FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 19,00 | 4,76 | 1,0 | 4,00 | 4,65 |
| | | XDHX 190450FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 19,00 | 4,76 | | 5,00 | 4,65 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d | l | s | $l_1$ | r | $d_1$ |

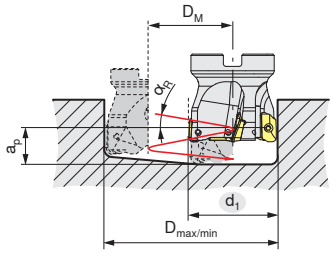



B12-B18
B149
B21
B257-B266

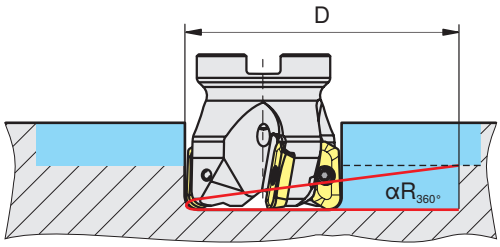
# System MaxiMill HSC/HPC

Einsatzdaten HSC..11..

## zirkulares Eintauchen



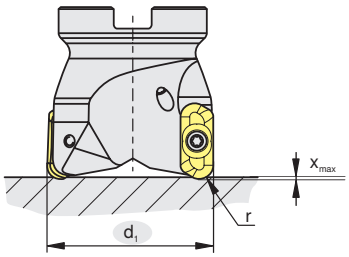

**$D_{max}$ [mm] = größter Durchmesser für ebene Bodenfläche**
**$D_{min}$ [mm] = kleinster Bohrungsdurchmesser**
**$D_M = D_{max} - d_1$ bzw. $D_{min} - d_1$**




| $d_1$ [mm] | $D_{max}$ [mm] | $D_{min}$ [mm] | $\alpha_{Rmax}$ [°] |
|---|---|---|---|
| 16 | 30 | 20 | 10,0 |
| 18 | 34 | 24 | 9,1 |
| 19 | 36 | 26 | 8,6 |
| 20 | 38 | 28 | 8,2 |
| 22 | 42 | 32 | 7,4 |
| 25 | 48 | 38 | 6,5 |
| 32 | 62 | 53 | 4,7 |
| 40 | 78 | 69 | 3,3 |
| 50 | 98 | 89 | 2,4 |
| 63 | 124 | 115 | 1,7 |
| 80 | 158 | 150 | 1,1 |
| 100 | 198 | 189 | 0,9 |
| $a_p$ [mm] = $D_M$ x π x tan $\alpha_R$ | | | |

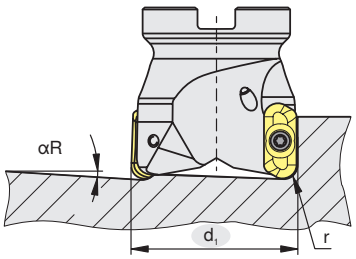
| $d_1$ [mm] | D [mm] | $\alpha_{R\,max}$ 360° [°] |
|---|---|---|
| 16 | 20 | 10,0 |
| 18 | 24 | 9,1 |
| 19 | 26 | 8,6 |
| 20 | 28 | 8,2 |
| 22 | 32 | 7,4 |
| 25 | 38 | 6,5 |
| 32 | 53 | 4,7 |
| 40 | 69 | 3,3 |
| 50 | 89 | 2,4 |
| 63 | 115 | 1,7 |
| 80 | 150 | 1,1 |
| 100 | 189 | 0,9 |

## axiales Eintauchen



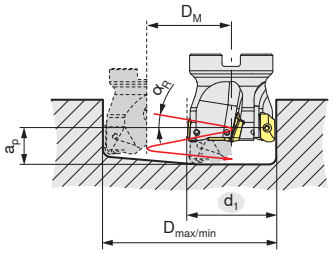

| $d_1$ [mm] | r 0,2 - 4,0 $X_{max}$ [mm] |
|---|---|
| 16 | 1,7 |
| 18 | 2,11 |
| 19 | 2,24 |
| 20 | 2,39 |
| 22 | 2,70 |
| 25 | 2,55 |
| 32 | 2,40 |
| 40 | 2,28 |
| 50 | 2,26 |
| 63 | 2,10 |
| 80 | 1,75 |
| 100 | 1,79 |

## schräges Eintauchen



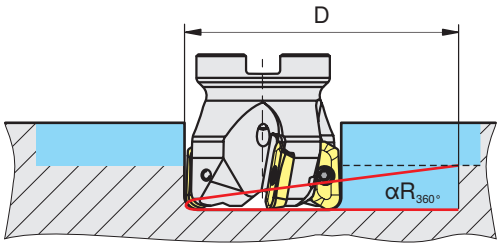

| $d_1$ [mm] | r 0,2 - 4,0 $\alpha_R$ [°] |
|---|---|
| 16 | 18,8° |
| 18 | 16,3° |
| 19 | 15,3° |
| 20 | 14,8° |
| 22 | 13,8° |
| 25 | 10,3° |
| 32 | 6,8° |
| 40 | 4,8° |
| 50 | 3,5° |
| 63 | 2,5° |
| 80 | 1,8° |
| 100 | 1,3° |

## zirkulares Eintauchen



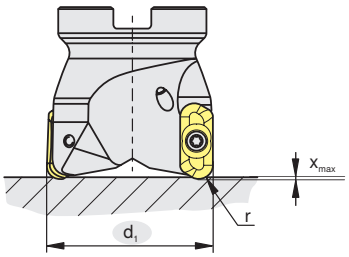

**$D_{max}$ [mm] = größter Durchmesser für ebene Bodenfläche**
**$D_{min}$ [mm] = kleinster Bohrungsdurchmesser**
**$D_M = D_{max} - d_1$ bzw. $D_{min} - d_1$**

| $d_1$ [mm] | $D_{max}$ [mm] | $D_{min}$ [mm] | $\alpha_{R\ max}$ 360° [°] |
|---|---|---|---|
| **22** | 33 | 32 | 1,4 |
| **25** | 39 | 32 | 6,8 |
| **32** | 53 | 46 | 3,9 |
| **40** | 69 | 62 | 3,3 |
| **50** | 89 | 81 | 2,2 |
| **63** | 115 | 107 | 1,8 |
| $a_p$ [mm] = $D_M$ x π x tan $\alpha_R$ | | | |



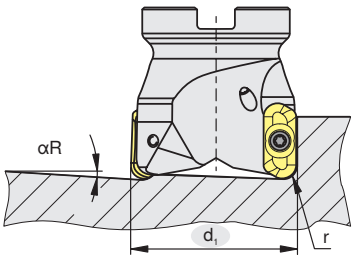

| $d_1$ [mm] | D [mm] | $\alpha_{R\ max}$ 360° [°] |
|---|---|---|
| **22** | 32 | 1,4 |
| **25** | 32 | 6,8 |
| **32** | 46 | 3,9 |
| **40** | 62 | 3,3 |
| **50** | 81 | 2,2 |
| **63** | 107 | 1,8 |

## axiales Eintauchen




| $d_1$ [mm] | r 0,2 - 4,0 $X_{max}$ [mm] | r 5,0 $X_{max}$ [mm] |
|---|---|---|
| **22** | 0,70 | 0,28 |
| **25** | 2,230,70 | 1,45 |
| **32** | 2,120,70 | 1,39 |
| **40** | 2,380,70 | 1,53 |
| **50** | 2,540,70 | 1,57 |
| **63** | 2,610,70 | 1,86 |

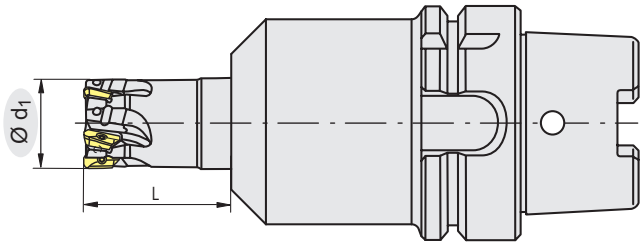
## schräges Eintauchen




| $d_1$ [mm] | r 0,2 - 4,0 $\alpha_R$ [°] | r 5,0 $\alpha_R$ [°] |
|---|---|---|
| **22** | 3,5 | 1,8 |
| **25** | 11,0 | 7,5 |
| **32** | 6,8 | 4,5 |
| **40** | 5,3 | 3,5 |
| **50** | 4,0 | 2,8 |
| **63** | 3,0 | 2,3 |

# System MaxiMill 211

Drehzahltabelle

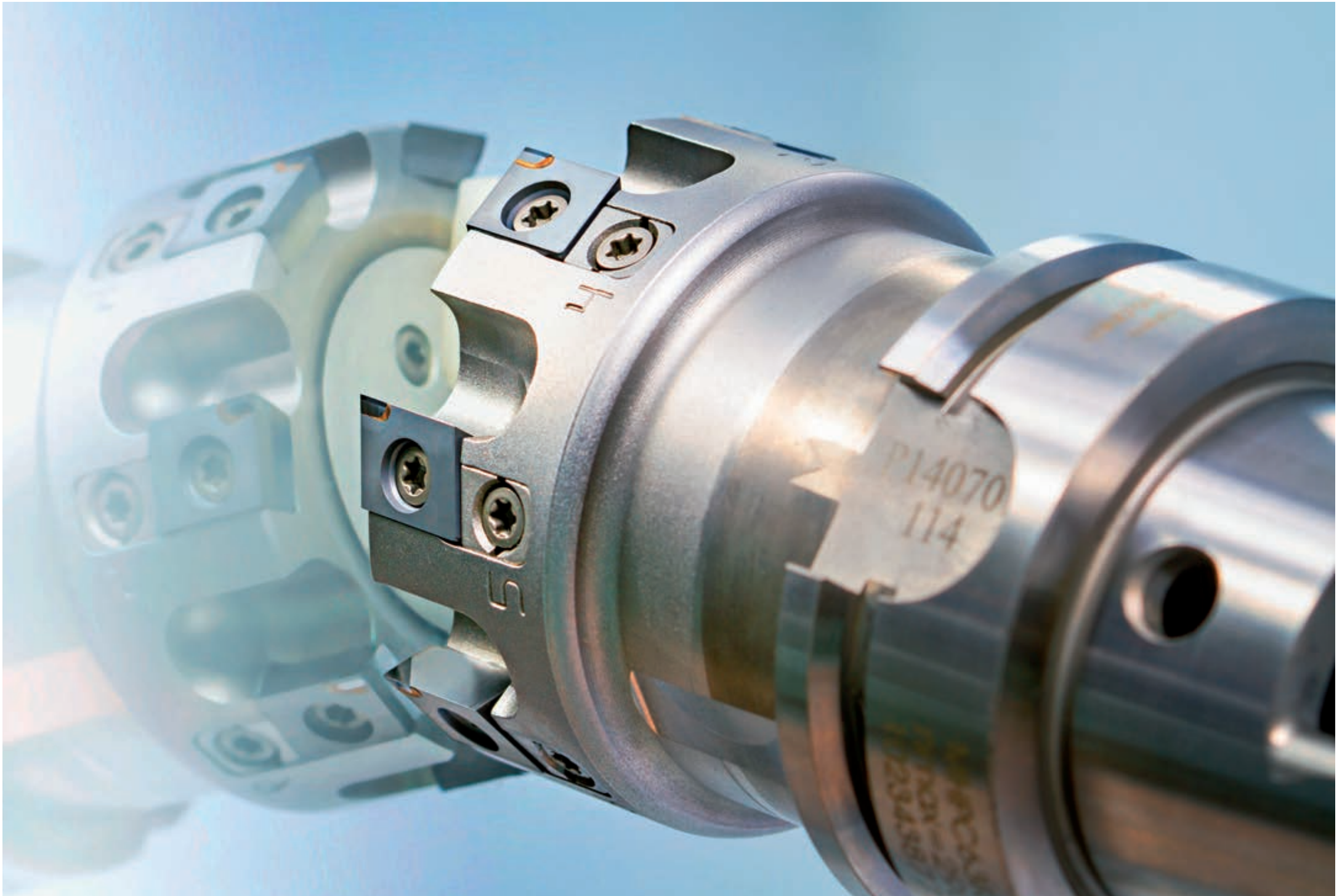



Zulässige Drehzahl bezogen auf die Auskraglänge L.

Die Drehzahl muss der Bearbeitungssituation und der Werkzeugaufnahme angepasst werden.

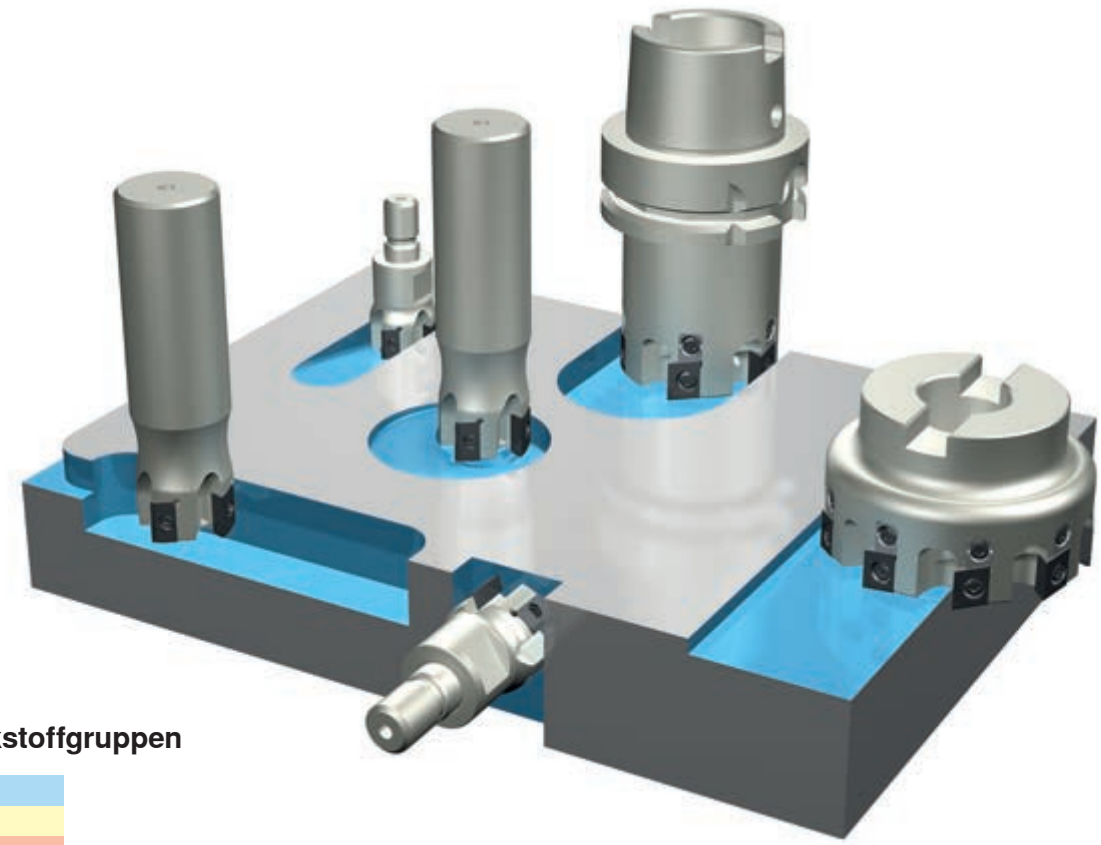
| | HSC-11 | | | HSC-19 | | | HPC-19 | | |
|---|---|---|---|---|---|---|---|---|---|
| Ø | $n_{max}$ [$min^{-1}$] | | | $n_{max}$ [$min^{-1}$] | | | $n_{max}$ [$min^{-1}$] | | |
| $d_1$ [mm] | L = 2xØ | L = 3xØ | L = 5xØ | L = 2xØ | L = 3xØ | L = 5xØ | L = 2xØ | L = 3xØ | L = 5xØ |
| 16 | 56.000 | 49.000 | 35.000 | – | – | – | | – | – |
| 18 | 53.000 | 47.000 | 33.000 | – | – | – | – | – | – |
| 19 | 52.000 | 45.000 | 32.000 | – | – | – | – | – | – |
| 20 | 50.000 | 44.000 | 31.000 | – | – | – | – | – | – |
| 22 | 48.000 | 42.000 | 30.000 | – | – | – | 45.000 | 42.000 | 32.000 |
| 25 | 45.000 | 39.000 | 28.000 | 35.000 | 31.000 | 22.000 | 45.000 | 40.000 | 28.000 |
| 32 | 40.000 | 35.000 | 25.000 | 29.000 | 25.000 | 18.000 | 40.000 | 35.000 | 25.000 |
| 40 | 36.000 | 31.000 | 22.000 | 25.000 | 22.000 | 16.000 | 36.000 | 31.000 | 22.000 |
| 50 | 32.000 | 28.000 | 20.000 | 22.000 | 19.000 | 14.000 | 32.000 | 28.000 | 20.000 |
| 63 | 28.000 | 25.000 | 18.000 | 19.000 | 17.000 | – | 29.000 | 25.000 | – |
| 80 | 25.000 | 22.000 | – | 16.000 | 14.000 | – | 25.000 | 22.000 | – |
| 100 | 22.000 | 20.000 | – | 15.000 | – | – | 23.000 | – | – |
| 125 | – | – | – | 13.000 | – | – | 20.000 | – | – |

# Notizen


P1407O
114

## High Performance Cutting - Fräsen mit PKD und CBN

- prozesssichere, hohe Standmengen bei reduzierten Taktzeiten
- geringe Schnittkräfte



### Werkstoffgruppen

| | |
|---|---|
| P | |
| M | |
| K | |
| N | ● |
| S | |
| H | ○ |

### Einsatzmöglichkeiten

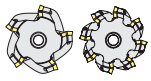

Planfräsen


Eckfräsen


Gassenfräsen


Besäumen

## Detailinformationen

| Teilung | Ø-Bereich | Schneidplatten |
|---|---|---|
|  | Ø 20 - 315 mm | ZNHW..04..<br>ZNHW..12.. |

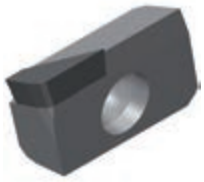
# System MaxiMill HPC

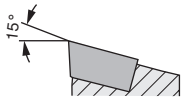
Spanleitstufenübersicht



## ER (HPC04)

- Universell einsetzbar
- Minimale Gratbildung
- Bei dünnwandigen Bauteilen
- Bei hohen Auskraglängen





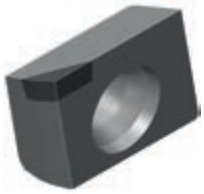

$f_z$ [mm]

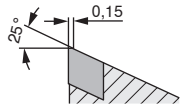
0,05 - 0,20

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| CTL3215 | CTL3215 | |
| CTD4205 | CTD4205 | |
| | | |
| | | |

## SR

- Hochpositive Geometrie
- Universell einsetzbar
- Geringe Schnittkräfte
- Minimale Gratbildung
- Hohe Oberflächengüte





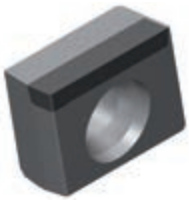

$f_z$ [mm]

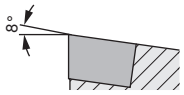
0,10 - 0,30

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| CTD4205 | CTD4205 | |
| | | |
| | | |

## ER (HPC12)

- Positive Geometrie
- Mittlere bis starke Schruppbearbeitung
- Reduzierte Gratbildung
- Schlichten von Eisenguss und gehärtetem Stahl





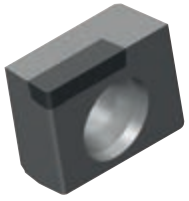

$f_z$ [mm]

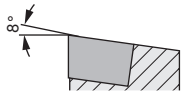
0,10 - 0,35

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| CTL3215 | CTL3215 | |
| CTD4205 | CTD4205 | |
| | | |
| CTL3215 | | |

## FR

- Positive Geometrie
- Für mittlere bis starke Schruppbearbeitung
- Reduzierte Gratbildung





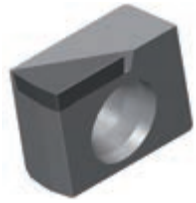

$f_z$ [mm]

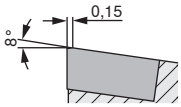
0,10 - 0,35

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| CTD4205 | CTD4205 | |
| | | |
| | | |

## SR (1506)

- Stabile Schneidkante
- Für starke Schruppbearbeitung
- Für stark unterbrochene Schnitte
- Stabile Bauteilspannung und Maschine





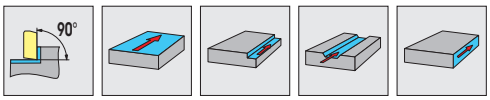

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| | CTD4205 | CTD4205 |
| | | |
| | | |

$f_z$ [mm]

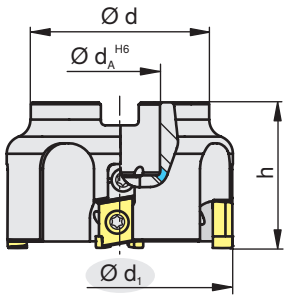
0,15 - 0,40

# System MaxiMill HPC

AHPC-12



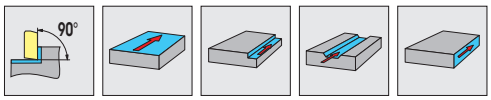


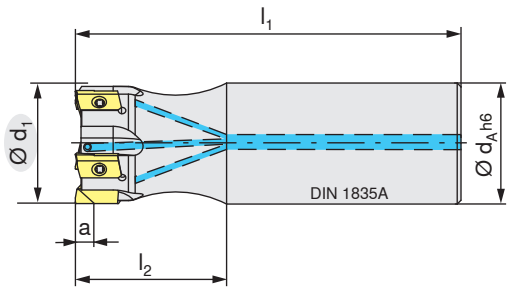

| $d_1$ [mm] | Type, Bezeichnung | h [mm] | d [mm] | $d_A$ [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 40 | AHPC.40.R.04-12 | 40 | 34 | 16 | 4 | 32.000 | 5 | ZNHW 1205.. | E01 |
| 50 | AHPC.50.R.04-12 | 40 | 49 | 22 | 4 | 32.000 | 5 | ZNHW 1205.. | E01 |
| 50 | AHPC.50.R.05-12 | 40 | 49 | 22 | 5 | 32.000 | 5 | ZNHW 1205.. | E01 |
| 63 | AHPC.63.R.04-12 | 40 | 49 | 22 | 4 | 29.000 | 5 | ZNHW 1205.. | E01 |
| 63 | AHPC.63.R.07-12 | 40 | 49 | 22 | 7 | 29.000 | 5 | ZNHW 1205.. | E01 |
| 80 | AHPC.80.R.05-12 | 50 | 60 | 27 | 5 | 26.000 | 5 | ZNHW 1205.. | E01 |
| 80 | AHPC.80.R.09-12 | 50 | 60 | 27 | 9 | 26.000 | 5 | ZNHW 1205.. | E01 |
| 100 | AHPC.100.R.06-12 | 50 | 70 | 32 | 6 | 24.000 | 5 | ZNHW 1205.. | E01 |
| 100 | AHPC.100.R.12-12 | 50 | 70 | 32 | 12 | 24.000 | 5 | ZNHW 1205.. | E01 |
| 125 | AHPC.125.R.08-12 | 63 | 72 | 40 | 8 | 22.000 | 5 | ZNHW 1205.. | E02 |
| 125 | AHPC.125.R.14-12 | 63 | 72 | 40 | 14 | 22.000 | 5 | ZNHW 1205.. | E02 |
| 160 | AHPC.160.R.10-12 | 63 | 72 | 40 | 10 | 18.000 | 5 | ZNHW 1205.. | E02 |
| 160 | AHPC.160.R.16-12 | 63 | 118 | 40 | 16 | 18.000 | 5 | ZNHW 1205.. | E01 |
| 200 | AHPC.200.R.12-12 | 63 | 153 | 60 | 12 | 16.000 | 5 | ZNHW 1205.. | E01 |
| 250 | AHPC.250.R.14-12 | 63 | 200 | 60 | 14 | 14.000 | 5 | ZNHW 1205.. | E01 |
| 315 | AHPC.315.R.18-12 | 80 | 265 | 60 | 18 | 12.000 | 5 | ZNHW 1205.. | E01 |

| | | | | | |
|---|---|---|---|---|---|
| E01 | | 11042274 | 11167992 | 11186812 | 8095018900 |
| E02 | 11210129 | 11042274 | 11167992 | 11186812 | 8095018900 |

B276





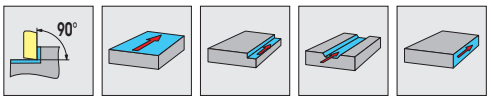

| d1 [mm] | Type, Bezeichnung | l1 [mm] | l2 [mm] | dA [mm] | a [mm] | z | nmax [min-1] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 20 | CHPC.20.R.03-04-A-25 | 77 | 25 | 20 | 4 | 3 | 52.000 | 1,6 | ZNHW 04T3.. | E01 |
| 25 | CHPC.25.R.04-04-A-32 | 90 | 32 | 25 | 4 | 4 | 45.000 | 1,6 | ZNHW 04T3.. | E01 |
| 32 | CHPC.32.R.05-04-A-40 | 102 | 40 | 32 | 4 | 5 | 39.000 | 1,6 | ZNHW 04T3.. | E01 |
| 40 | CHPC.40.R.06-04-A32-50 | 122 | 50 | 32 | 4 | 6 | 34.000 | 1,6 | ZNHW 04T3.. | E01 |

| | | |
|---|---|---|
| E01 | 11114242 | 11254598 |

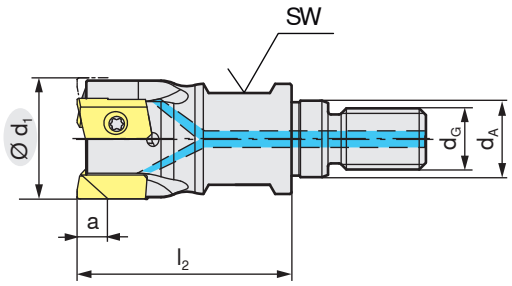
B276

# System MaxiMill HPC

GHPC-04



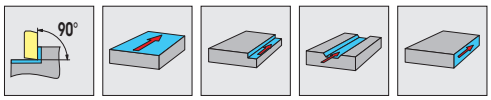


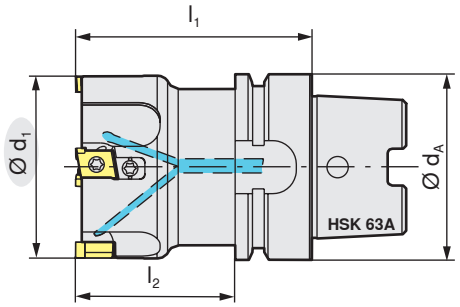

| d1 [mm] | Type, Bezeichnung | l2 [mm] | dG [mm] | dA [mm] | a [mm] | z | nmax [min-1] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 20 | GHPC.20.R.03-04 | 35 | 10 | 10,5 | 4 | 3 | 52.000 | 1,6 | ZNHW 04T3.. | E01 |
| 25 | GHPC.25.R.04-04 | 35 | 12 | 12,5 | 4 | 4 | 45.000 | 1,6 | ZNHW 04T3.. | E01 |
| 32 | GHPC.32.R.05-04 | 35 | 16 | 17 | 4 | 5 | 38.000 | 1,6 | ZNHW 04T3.. | E01 |
| 40 | GHPC.40.R.06-04 | 35 | 16 | 17 | 4 | 6 | 34.000 | 1,6 | ZNHW 04T3.. | E01 |

| | | |
|---|---|---|
| E01 | 11114242 | 11254598 |

B276






| $d_1$ [mm] | Type, Bezeichnung | $l_1$ [mm] | $l_2$ [mm] | $d_A$ [mm] | $n_{max}$ [$min^{-1}$] | z | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 40 | MHPC.40.R.04-12-H63A-70 | 70 | 44 | 63 | 32.000 | 4 | 5 | ZNHW 1205.. | E01 |
| 50 | MHPC.50.R.04-12-H63A-80 | 80 | 54 | 63 | 32.000 | 4 | 5 | ZNHW 1205.. | E01 |
| 50 | MHPC.50.R.05-12-H63A-80 | 80 | 54 | 63 | 32.000 | 5 | 5 | ZNHW 1205.. | E01 |
| 63 | MHPC.63.R.04-12-H63A-80 | 80 | 54 | 63 | 29.000 | 4 | 5 | ZNHW 1205.. | E01 |
| 63 | MHPC.63.R.07-12-H63A-80 | 80 | 54 | 63 | 29.000 | 7 | 5 | ZNHW 1205.. | E01 |
| 80 | MHPC.80.R.05-12-H63A-90 | 90 | | 63 | 26.000 | 5 | 5 | ZNHW 1205.. | E01 |
| 80 | MHPC.80.R.09-12-H63A-90 | 90 | | 63 | 26.000 | 9 | 5 | ZNHW 1205.. | E01 |
| 100 | MHPC.100.R.06-12-H63A-90 | 90 | | 63 | 24.000 | 6 | 5 | ZNHW 1205.. | E01 |
| 100 | MHPC.100.R.12-12-H63A-90 | 90 | | 63 | 24.000 | 12 | 5 | ZNHW 1205.. | E01 |
| 125 | MHPC.125.R.08-12-H63A-123 | 123 | | 63 | 22.000 | 8 | 5 | ZNHW 1205.. | E02 |
| 160 | MHPC.160.R.10-12-H63A-123 | 123 | | 63 | 18.000 | 10 | 5 | ZNHW 1205.. | E02 |

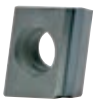
Werkzeuge sind auf G6.3 vorgewuchtet!

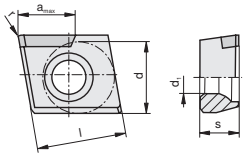
| | | | | | |
|---|---|---|---|---|---|
| E01 | | 11042274 | 11167992 | 11186812 | 8095018900 |
| E02 | 11210129 | 11042274 | 11167992 | 11186812 | 8095018900 |

B276

# System MaxiMill HPC

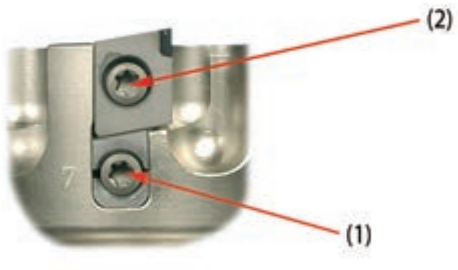
ZN..

| | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | | d | l | s | r | $d_1$ | $a_{max}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | ○ | | | | ○ | | | | | | | | | | | |
| | | M | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | | ● | | | | | | | | | | | |
| | | K | | ○ | ● | ● | ● | | | | | ● | ● | ● | ● | | ○ | ● | ● | ● | ○ | | ● | | | | | | | | | |
| | | N | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | | | | | |
| | | S | | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| | | H | | | | | | | | | | | ○ | | | | | | | | | | ● | | | | | | | | | |
| 1204 |  | ZNHW 04T3POER-1204 | | | | | | | | | | | | | | ● | | | | | | | | | | | 7,00 | 11,00 | 3,97 | | 2,80 | 4,0 |
| | | ZNHW 04T305ER-1204 | | | | | | | | | | | ● | | | | | | | | | | | | | | 7,00 | 11,00 | 3,97 | 0,50 | 2,80 | 4,0 |
| 0003 |  | ZNHW 120508SR-0003 | | | | | | | | | | | | | | ● | | | | | | | | | | | 10,00 | 12,40 | 5,40 | 0,80 | 4,85 | 3,0 |
| 0007 |  | ZNHW 120504FR-0007 | | | | | | | | | | | | | | ● | | | | | | | | | | | 10,00 | 12,40 | 5,40 | 0,40 | 4,85 | 7,0 |
| 1002 |  | ZNHW 1205EOER-1002 | | | | | | | | | | | ● | | | | | | | | | | | | | | 10,00 | 12,40 | 5,40 | | 4,85 | 2,0 |
| 1503 |  | ZNHW 1205POSR-1503 | | | | | | | | | | | | | | ● | | | | | | | | | | | 10,00 | 12,40 | 5,40 | | 4,85 | 3,0 |
| | | ZNHW 120504ER-1503 | | | | | | | | | | | | | | ● | | | | | | | | | | | 10,00 | 12,40 | 5,40 | 0,40 | 4,85 | 3,0 |
| | | ZNHW 120508ER-1503 | | | | | | | | | | | | | | ● | | | | | | | | | | | 10,00 | 12,40 | 5,40 | 0,80 | 4,85 | 3,0 |
| 1506 |  | ZNHW 1205POSR-1506 | | | | | | | | | | | | | | ● | | | | | | | | | | | 10,00 | 12,40 | 5,40 | | 4,85 | 6,0 |
| | | ZNHW 1205POSR-1506-R | | | | | | | | | | | | | | ● | | | | | | | | | | | 10,00 | 12,40 | 5,40 | | 4,85 | 6,0 |
| 1511 |  | ZNHW 1205POER-1511 | | | | | | | | | | | | | | ● | | | | | | | | | | | 10,00 | 12,40 | 5,40 | | 4,85 | 11,0 |
| 3003 |  | ZNHW 1205POSR-3003 | | | | | | | | | | | | | | ● | | | | | | | | | | | 10,00 | 12,40 | 5,40 | | 4,85 | 3,0 |
| 5003 |  | ZNHW 1205ZZSR-5003-Q | | | | | | | | | | | | | | ● | | | | | | | | | | | 10,00 | 12,40 | 5,40 | | 4,85 | 3,0 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | | d | l | s | r | $d_1$ | $a_{max}$ |




B12-B18
B165-B166
B21
B257-B266

## Feineinstellung




1. Montieren der Einstellkeile am Werkzeug (entspricht Auslieferungszustand) und Anziehen der Einstellschraube (1), ohne die Keile zu verformen.

2. Montieren der Platten und Anziehen aller Schrauben im Klemmkeil (2) mit 1,0 Nm.

3. Markieren der „höchsten Schneide" mit Hilfe eines Voreinstellgerätes.

4. Vorstellen dieser Wendeplatte um 0,02 mm durch Drehen der Einstellschraube (1) im Uhrzeigersinn. Verwenden Sie dazu den TORX-Winkelschlüssel (8095018900 / WS-L-T15-136mm)!

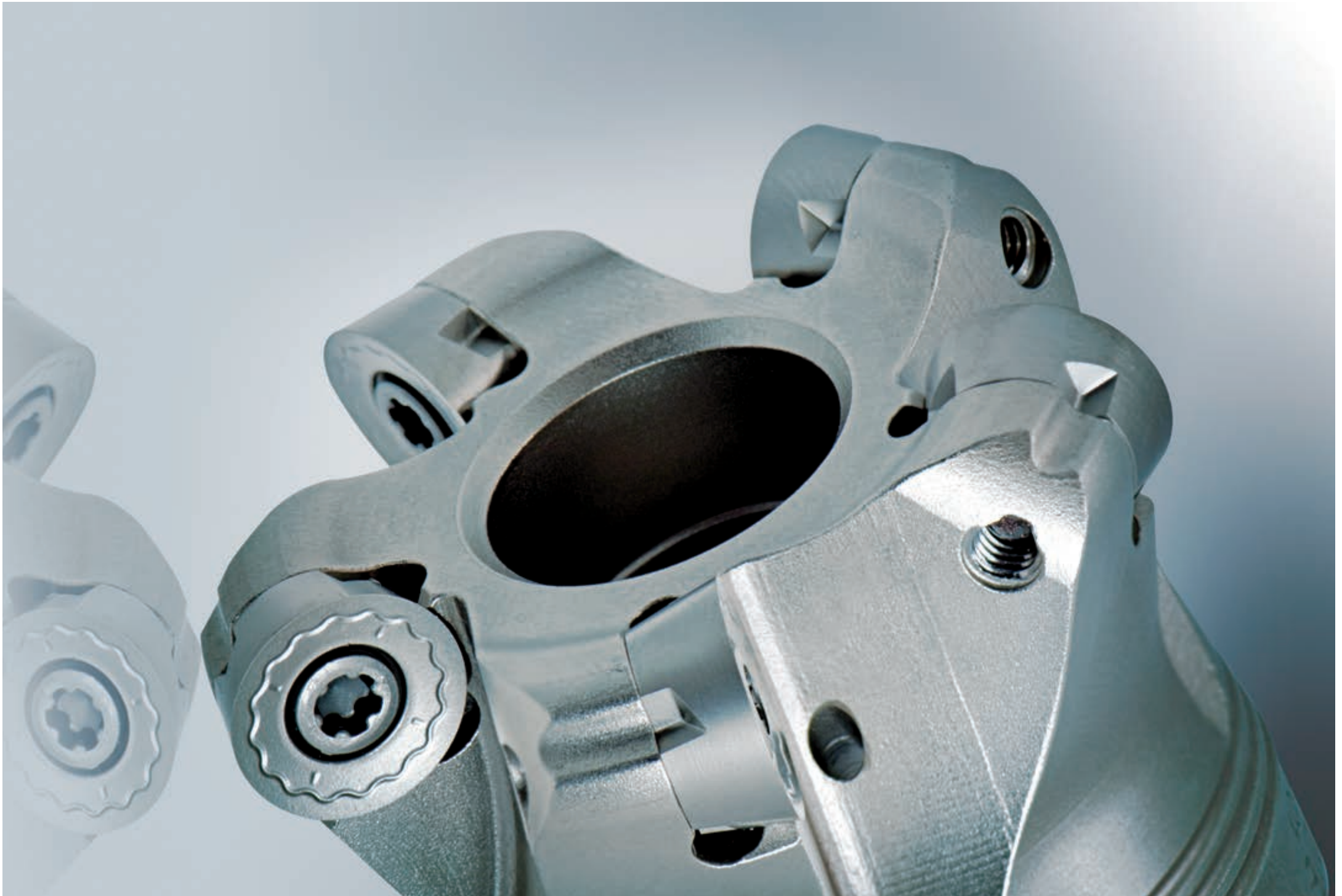
5. Einstellen aller anderen Schneidkanten auf dieses Niveau mit einer Abweichung von maximal 0,005 mm.

Maximaler Verstellweg = 0,10 mm.

6. Anziehen aller Spannschrauben (2) mit 5,0 Nm.

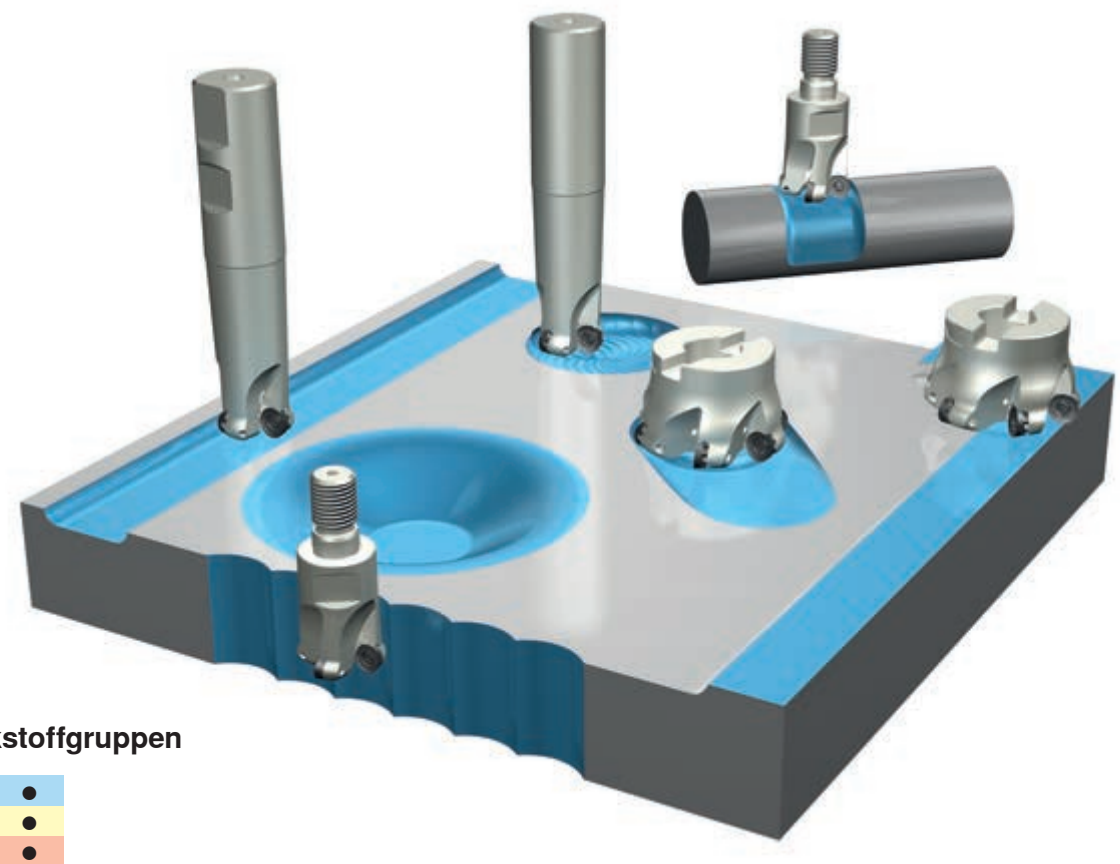
7. Kontrolle des Planlaufes aller Wendeplatten
→ Soll < 0,005 mm.

Bei Wendeplattenwechsel ist zunächst die Einstellschraube (1) gegen den Uhrzeigersinn zu lösen. Nach der Wendeplattenbestückung beginnt der Einstellvorgang wiederum bei Punkt 1.



## Rundplattenfräser zum Form- und Kopierfräsen

- speziell für die Schruppbearbeitung schwer zerspanbarer Materialien
- sehr hohe Vorschübe bei maximaler Stabilität



## Werkstoffgruppen

| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ○ |

## Einsatzmöglichkeiten


Planfräsen


Gassenfräsen


Schräges Eintauchen

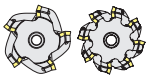

Auskammern


Freiformfräsen


Tauchfräsen


Drehfräsen

## Detailinformationen

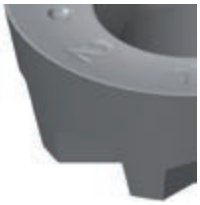
| Teilung | Ø-Bereich | Schneidplatten |
|---|---|---|
|  | Ø 10 - 125 mm | RP..10T3..<br>RP..1204..<br>RP..1605..<br>RP..2006.. |

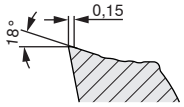
# System MaxiMill 251

Spanleitstufenübersicht

## -F50

- Positive Geometrie
- Geringe Schnittkräfte
- Für labile Aufspannungen
- Erste Wahl für austenitisch rostfreie Stahlwerkstoffe





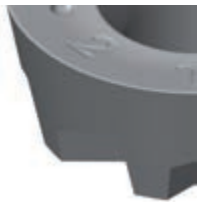

$f_z$ [mm]

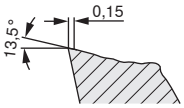
0,08 - 0,35

| Bearbeitungsbedingungen | | |
|---|---|---|
| CTCP230 **CTPP235** | CTCP230 **CTPP235** | |
| CTPM225 **CTPM240** | CTPM225 **CTPM240** | CTPM225 **CTPM240** |
| | | |
| | | |
| | | |
| | | |

## -M50

- Universelle Geometrie
- Leichte bis mittlere Schruppbearbeitung
- Erste Wahl für allgemeine Stahlwerkstoffe





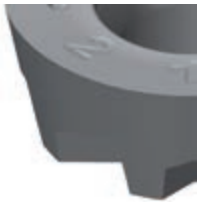

$f_z$ [mm]

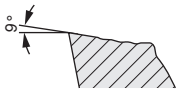
0,10 - 0,40

| Bearbeitungsbedingungen | | |
|---|---|---|
| CTCP230 **CTPP235** | CTCP230 **CTPP235** | CTCP230 **CTPP235** |
| CTPM240 | CTPM240 | CTPM240 |
| | | |
| | | |
| **CTC5235** | **CTC5235** | **CTC5235** |
| | | |

## -M30

- Mittlere Schruppbearbeitung
- Vereint geringe Schnittkraft und Stabilität
- Erste Wahl für martensitisch rostfreie Stahlwerkstoffe





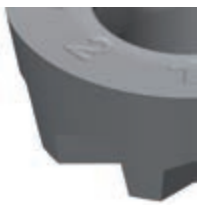

$f_z$ [mm]

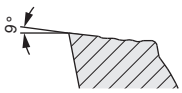
0,08 - 0,35

| Bearbeitungsbedingungen | | |
|---|---|---|
| | CTCP230 **CTPP235** | CTCP230 **CTPP235** |
| **CTCM235** CTPM225 | **CTCM235** CTPM225 | **CTCM235** CTPM225 |
| | | |
| | | |
| | | |
| | | |

## -R30

- Stabile Geometrie
- Starke Schruppbearbeitung
- Stark unterbrochene Schnitte
- Erste Wahl für hochlegierte Stähle und Eisengusswerkstoffe





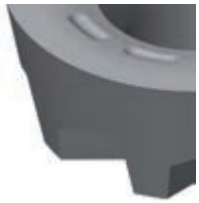

$f_z$ [mm]

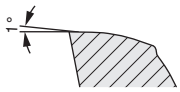
0,10 - 0,40

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | **CTCK215** | **CTCK215** |
| | | |
| | | **CTC5235** |
| | | |

## -R60

- Hochstabile Geometrie
- Für stabile Aufspannungen
- Erste Wahl zur Hartbearbeitung





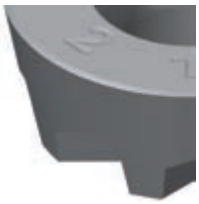

$f_z$ [mm]

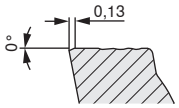
0,05 - 0,35

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| **CTP6215** | **CTP6215** | **CTP6215** |

## SN

- Robuste Wendescheidplatte
- Für schlechte Bearbeitungsbedingungen
- Erste Wahl für Eisen-/ Stahlgusswerkstoffe





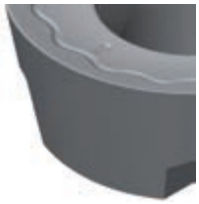

$f_z$ [mm]

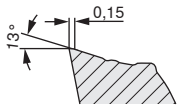
0,10 - 0,40

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | CTCP230<br>CTPP235 | CTCP230<br>**CTPP235** |
| | | |
| | **CTCK215**<br>CTPK220 | CTCK215<br>**CTPK220** |
| | | |
| | | |
| | | |

## -M31

- Positive Geometrie
- Universell einsetzbar
- Hohe Laufruhe
- Für hochwarmfeste Werkstoffe, Titan und Superlegierungen





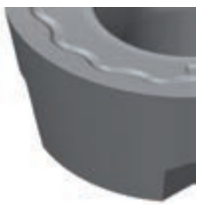

$f_z$ [mm]

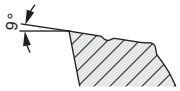
0,08 - 0,35

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| CTC5235<br>**CTC5240** | CTC5235<br>**CTC5240** | **CTC5235**<br>CTC5240 |
| | | |

## -M32

- Mittlere Schruppbearbeitung
- Geringe Schnittkraft und gute Stabilität
- Erste Wahl für martensitisch rostfreie Stahlwerkstoffe






$f_z$ [mm]

0,08 - 0,35

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| CTC5235 | **CTC5235** | **CTC5235** |
| | | |
| | | |
| | | |
| | | |

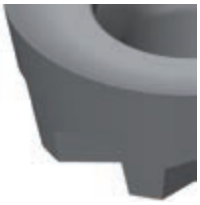
# System MaxiMill 251

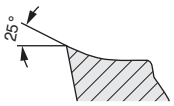
Spanleitstufenübersicht



## -27P

- Hochpositive Geometrie
- Scharfe Schneidkante
- Geringe Aufklebeneigung
- Erste Wahl für Nichteisenmetalle





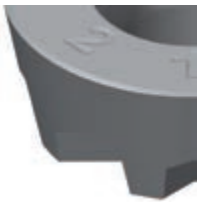

$f_z$ [mm]

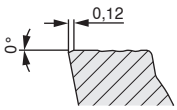
0,05 - 0,40

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| H216T | | |
| **H216T** | **H216T** | **H216T** |
| | | |
| | | |

## SN (Cermet)

- Stabile Geometrie
- Abgestimmt auf Cermet als Schneidstoff
- Leichte bis mittlere Schlichtbearbeitung
- Für Stahlwerkstoffe

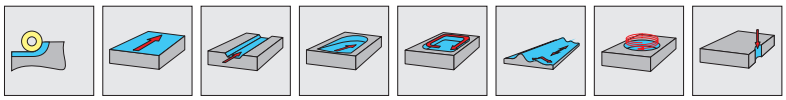





$f_z$ [mm]

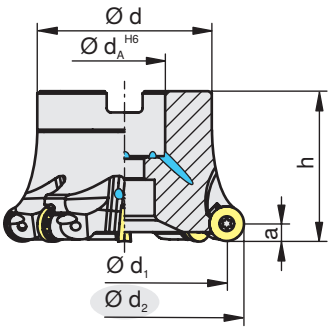
0,08 - 0,35

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| **TCM10** | **TCM10** | |
| TCM10 | | |
| TCM10 | | |
| | | |
| | | |
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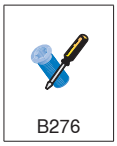






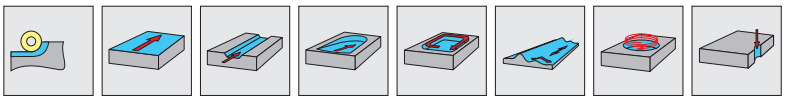

| $d_2$ [mm] | Type, Bezeichnung | $d_1$ [mm] | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | A251.40.R.03-10-RS | 30 | 40 | 38 | 16 | 5 | 3 | 15.900 | 2,0 | RP.. 10T3.. | E01 |
| 40 | A251.40.R.05-10-RE | 30 | 40 | 38 | 16 | 5 | 5 | 15.900 | 2,0 | RP.. 10T3.. | E01 |
| 40 | A251.40.R.05-10-RS | 30 | 40 | 38 | 16 | 5 | 5 | 15.900 | 2,0 | RP.. 10T3.. | E02 |
| 42 | A251.42.R.06-10-RE | 32 | 40 | 38 | 16 | 5 | 6 | 15.150 | 2,0 | RP.. 10T3.. | E01 |
| 42 | A251.42.R.06-10-RS | 32 | 40 | 38 | 16 | 5 | 6 | 15.150 | 2,0 | RP.. 10T3.. | E02 |
| 50 | A251.50.R.04-10-RS | 40 | 40 | 43 | 22 | 5 | 4 | 12.700 | 2,0 | RP.. 10T3.. | E01 |
| 50 | A251.50.R.06-10-RE | 40 | 40 | 43 | 22 | 5 | 6 | 12.700 | 2,0 | RP.. 10T3.. | E01 |
| 50 | A251.50.R.06-10-RS | 40 | 40 | 43 | 22 | 5 | 6 | 12.700 | 2,0 | RP.. 10T3.. | E01 |
| 52 | A251.52.R.06-10-RE | 42 | 40 | 43 | 22 | 5 | 6 | 12.200 | 2,0 | RP.. 10T3.. | E01 |
| 52 | A251.52.R.06-10-RS | 42 | 40 | 43 | 22 | 5 | 6 | 12.200 | 2,0 | RP.. 10T3.. | E01 |
| 40 | A251.40.R.04-12-RE | 28 | 40 | 38 | 16 | 6 | 4 | 15.900 | 3,2 | RP.. 1204.. | E03 |
| 40 | A251.40.R.04-12-RS | 28 | 40 | 38 | 16 | 6 | 4 | 15.900 | 3,2 | RP.. 1204.. | E04 |
| 50 | A251.50.R.04-12-RS | 38 | 40 | 43 | 22 | 6 | 4 | 12.700 | 3,2 | RP.. 1204.. | E05 |
| 50 | A251.50.R.05-12-RE | 38 | 40 | 43 | 22 | 6 | 5 | 12.700 | 3,2 | RP.. 1204.. | E03 |
| 50 | A251.50.R.05-12-RS | 38 | 40 | 43 | 22 | 6 | 5 | 12.700 | 3,2 | RP.. 1204.. | E05 |
| 52 | A251.52.R.05-12-RE | 40 | 40 | 43 | 22 | 6 | 5 | 12.200 | 3,2 | RP.. 1204.. | E06 |
| 52 | A251.52.R.05-12-RS | 40 | 40 | 43 | 22 | 6 | 5 | 12.200 | 3,2 | RP.. 1204.. | E05 |
| 63 | A251.63.R.06-12-RE | 51 | 40 | 48 | 22 | 6 | 6 | 10.100 | 3,2 | RP.. 1204.. | E03 |
| 63 | A251.63.R.06-12-RS | 51 | 40 | 48 | 22 | 6 | 6 | 10.100 | 3,2 | RP.. 1204.. | E05 |
| 66 | A251.66.R.07-12-RE | 54 | 40 | 48 | 22 | 6 | 7 | 9.650 | 3,2 | RP.. 1204.. | E03 |
| 66 | A251.66.R.07-12-RS | 54 | 40 | 48 | 22 | 6 | 7 | 9.650 | 3,2 | RP.. 1204.. | E05 |
| 80 | A251.80.R.05-12-RS | 68 | 50 | 58 | 27 | 6 | 5 | 7.950 | 3,2 | RP.. 1204.. | E05 |
| 80 | A251.80.R.07-12-RE | 68 | 45 | 58 | 27 | 6 | 7 | 7.950 | 3,2 | RP.. 1204.. | E03 |
| 80 | A251.80.R.07-12-RS | 68 | 50 | 58 | 27 | 6 | 7 | 7.950 | 3,2 | RP.. 1204.. | E05 |
| 100 | A251.100.R.06-12-RS | 88 | 50 | 78 | 32 | 6 | 6 | 6.350 | 3,2 | RP.. 1204.. | E05 |
| 100 | A251.100.R.10-12-RS | 88 | 50 | 78 | 32 | 6 | 10 | 6.350 | 3,2 | RP.. 1204.. | E05 |

| | | | | |
|---|---|---|---|---|
| E01 | | 11464141 | 11464183 | 8095010400 |
| E02 | 11036880 | 11464141 | 11464183 | 8095010400 |
| E03 | | 11610311 | 11450867 | 8095012000 |
| E04 | 11036880 | 165795 | 11149570 | 8095010500 |
| E05 | | 165795 | 11149570 | 8095010500 |
| E06 | | 11610311 | 11149570 | 8095012000 |


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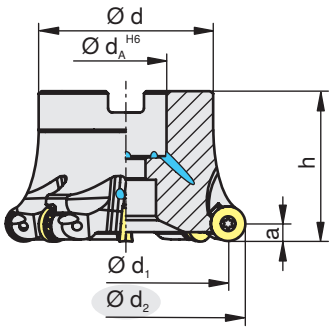
# System MaxiMill 251

A251-16/-20





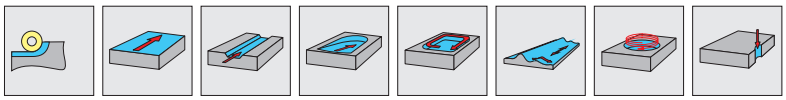




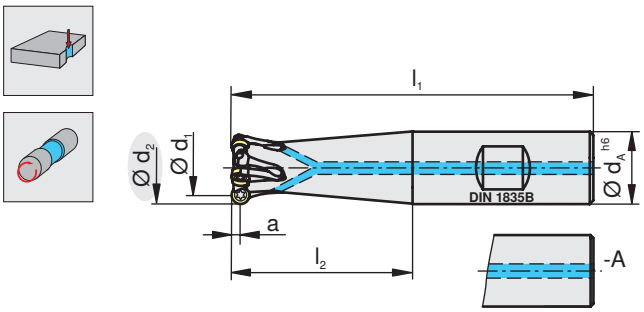

| $d_2$ [mm] | Type, Bezeichnung | $d_1$ [mm] | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | A251.50.R.04-16-RS | 34 | 40 | 48 | 22 | 8 | 4 | 12.700 | 5 | RP.. 1605.. | E01 |
| 52 | A251.52.R.04-16-RS | 36 | 40 | 48 | 22 | 8 | 4 | 12.700 | 5 | RP.. 1605.. | E01 |
| 63 | A251.63.R.05-16-RS | 47 | 40 | 48 | 22 | 8 | 5 | 10.100 | 5 | RP.. 1605.. | E02 |
| 80 | A251.80.R.06-16-RS | 64 | 50 | 58 | 27 | 8 | 6 | 7.950 | 5 | RP.. 1605.. | E02 |
| 100 | A251.100.R.07-16-RS | 84 | 50 | 78 | 32 | 8 | 7 | 6.350 | 5 | RP.. 1605.. | E02 |
| 80 | A251.80.R.05-20-RS | 60 | 50 | 58 | 27 | 10 | 5 | 7.950 | 5 | RP.. 2006.. | E03 |
| 100 | A251.100.R.06-20-RS | 80 | 50 | 78 | 32 | 10 | 6 | 6.350 | 5 | RP.. 2006.. | E03 |
| 125 | A251.125.R.06-20-RS | 105 | 63 | 88 | 40 | 10 | 6 | 5.050 | 5 | RP.. 2006.. | E03 |

| | | | | |
|---|---|---|---|---|
| E01 | 11040298 | 106022 | 11210490 | 8095010600 |
| E02 | | 106022 | 11210490 | 8095010600 |
| E03 | | 11107792 | 11210490 | 8095010600 |

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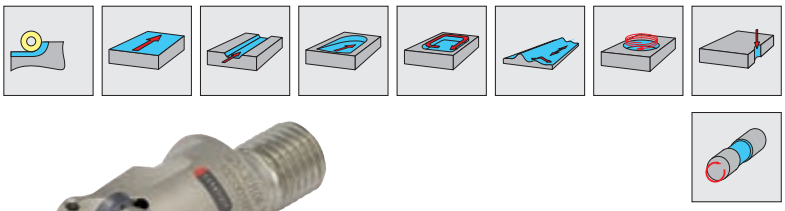

| $d_2$ [mm] | Type, Bezeichnung | $d_1$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | C251.10.R.02-05-A-25-165-RS | 5 | 165 | 25 | 10 | 2,5 | 2 | 12.000 | 0,7 | RD.. 0501.. | E01 |
| 10 | C251.10.R.02-05-B12-20-RS | 5 | 67 | 20 | 12 | 2,5 | 2 | 40.000 | 0,7 | RD.. 0501.. | E01 |
| 12 | C251.12.R.03-05-A-32-165-RS | 7 | 165 | 32 | 12 | 2,5 | 3 | 16.000 | 0,7 | RD.. 0501.. | E01 |
| 12 | C251.12.R.03-05-B16-25-RS | 7 | 75 | 25 | 16 | 2,5 | 3 | 40.000 | 0,7 | RD.. 0501.. | E01 |
| 16 | C251.16.R.04-05-A-40-165-RS | 11 | 165 | 40 | 16 | 2,5 | 4 | 18.000 | 0,7 | RD.. 0501.. | E01 |
| 16 | C251.16.R.04-05-B-32-RS | 11 | 81 | 32 | 16 | 2,5 | 4 | 40.000 | 0,7 | RD.. 0501.. | E01 |
| 20 | C251.20.R.05-05-A-50-165-RS | 15 | 165 | 50 | 20 | 2,5 | 5 | 18.000 | 0,7 | RD.. 0501.. | E01 |
| 20 | C251.20.R.05-05-B-40-RS | 15 | 91 | 40 | 20 | 2,5 | 5 | 31.800 | 0,7 | RD.. 0501.. | E01 |
| 16 | C251.16.R.02-08-A-40-RS-IN | 8 | 89 | 40 | 16 | 4 | 2 | 40.000 | 1,2 | RD.. 0802.. | E02 |
| 16 | C251.16.R.02-08-A-40-165-RS | 8 | 165 | 40 | 16 | 4 | 2 | 18.000 | 1,2 | RD.. 0802.. | E02 |
| 16 | C251.16.R.02-08-B-32-RS | 8 | 81 | 32 | 16 | 4 | 2 | 40.000 | 1,2 | RD.. 0802.. | E02 |
| 20 | C251.20.R.03-08-A-50-200-RS | 12 | 200 | 50 | 20 | 4 | 3 | 25.000 | 1,2 | RD.. 0802.. | E02 |
| 20 | C251.20.R.03-08-A-60-RS | 12 | 110 | 60 | 20 | 4 | 3 | 27.300 | 1,2 | RD.. 0802.. | E02 |
| 20 | C251.20.R.03-08-A-60-RS-IN | 12 | 110 | 60 | 20 | 4 | 3 | 27.300 | 1,2 | RD.. 0802.. | E02 |
| 20 | C251.20.R.03-08-B-40-RS | 12 | 91 | 40 | 20 | 4 | 3 | 31.800 | 1,2 | RD.. 0802.. | E02 |
| 25 | C251.25.R.04-08-A-60-RS | 17 | 116 | 60 | 25 | 4 | 4 | 20.000 | 1,2 | RD.. 0802.. | E02 |
| 25 | C251.25.R.04-08-A-60-RS-IN | 17 | 116 | 60 | 25 | 4 | 4 | 20.000 | 1,2 | RD.. 0802.. | E02 |
| 25 | C251.25.R.04-08-A-60-225-RS | 17 | 225 | 60 | 25 | 4 | 4 | 18.000 | 1,2 | RD.. 0802.. | E02 |
| 25 | C251.25.R.04-08-B-50-RS | 17 | 107 | 50 | 25 | 4 | 4 | 25.500 | 1,2 | RD.. 0802.. | E02 |
| 32 | C251.32.R.06-08-A-70-RS-IN | 25 | 130 | 70 | 32 | 4 | 6 | 19.000 | 1,2 | RD.. 0802.. | E02 |
| 20 | C251.20.R.02-10-A-50-RS | 10 | 102 | 50 | 20 | 5 | 2 | 31.800 | 2,0 | RP.. 10T3.. | E03 |
| 20 | C251.20.R.02-10-A-50-200-RS | 10 | 200 | 50 | 20 | 5 | 2 | 25.000 | 2,0 | RP.. 10T3.. | E03 |
| 25 | C251.25.R.03-10-A-RE | 15 | 117 | 60 | 25 | 5 | 3 | 20.000 | 2,0 | RP.. 10T3.. | E03 |
| 25 | C251.25.R.03-10-A-60-RS | 15 | 116 | 60 | 25 | 5 | 3 | 20.000 | 2,0 | RP.. 10T3.. | E03 |
| 25 | C251.25.R.03-10-A-60-225-RS | 15 | 225 | 60 | 25 | 5 | 3 | 18.000 | 2,0 | RP.. 10T3.. | E03 |
| 25 | C251.25.R.03-10-B-60-RS | 15 | 116 | 60 | 25 | 5 | 3 | 20.000 | 2,0 | RP.. 10T3.. | E03 |
| 32 | C251.32.R.04-10-A-RE | 22 | 131 | 70 | 32 | 5 | 4 | 19.000 | 2,0 | RP.. 10T3.. | E03 |
| 32 | C251.32.R.04-10-A-70-RS | 22 | 130 | 70 | 32 | 5 | 4 | 19.000 | 2,0 | RP.. 10T3.. | E03 |
| 25 | C251.25.R.02-12-B-30-RS | 13 | 86 | 30 | 25 | 6 | 2 | 25.000 | 3,2 | RP.. 1204.. | E04 |
| 32 | C251.32.R.03-12-A-40-RS | 20 | 100 | 40 | 32 | 6 | 3 | 19.000 | 3,2 | RP.. 1204.. | E04 |
| 32 | C251.32.R.03-12-B-40-RS | 20 | 100 | 40 | 32 | 6 | 3 | 19.000 | 3,2 | RP.. 1204.. | E04 |

| | | | |
|---|---|---|---|
| E01 | 11077874 | 11149517 | 8095010000 |
| E02 | 76913 | 11149541 | 8095010200 |
| E03 | 11464141 | 11464183 | 8095010400 |
| E04 | 165795 | 11149570 | 8095010500 |


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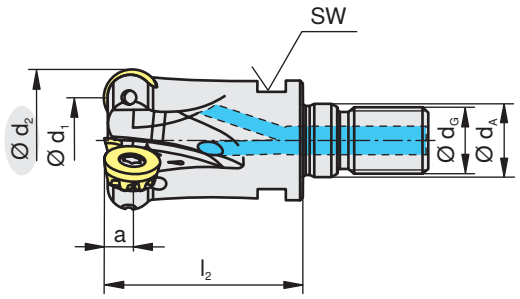
# System MaxiMill 251

G251







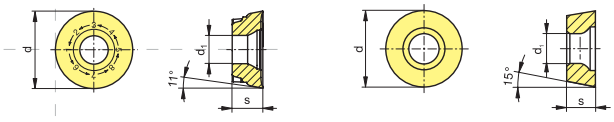



| $d_2$ [mm] | Type, Bezeichnung | $d_1$ [mm] | $l_2$ [mm] | $d_A$ [mm] | $d_G$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | G251.20.R.05-05-RS | 15 | 33 | 10,5 | 10 | 2,5 | 5 | 31.800 | 0,7 | RD.. 0501.. | E01 |
| 25 | G251.25.R.06-05-RS | 20 | 35 | 12,5 | 12 | 2,5 | 6 | 25.450 | 0,7 | RD.. 0501.. | E01 |
| 32 | G251.32.R.07-05-RS | 27 | 35 | 17,0 | 16 | 2,5 | 7 | 19.850 | 0,7 | RD.. 0501.. | E01 |
| 20 | G251.20.R.03-08-RS | 12 | 33 | 10,5 | 10 | 4 | 3 | 31.800 | 1,2 | RD.. 0802.. | E02 |
| 25 | G251.25.R.04-08-RS | 17 | 35 | 12,5 | 12 | 4 | 4 | 25.450 | 1,2 | RD.. 0802.. | E02 |
| 32 | G251.32.R.05-08-RS | 24 | 35 | 17,0 | 16 | 4 | 5 | 19.850 | 1,2 | RD.. 0802.. | E02 |
| 20 | G251.20.R.02-10-RS | 10 | 33 | 10,5 | 10 | 5 | 2 | 31.800 | 2,0 | RP.. 10T3.. | E03 |
| 25 | G251.25.R.03-10-RE | 15 | 35 | 12,5 | 12 | 5 | 3 | 25.450 | 2,0 | RP.. 10T3.. | E03 |
| 25 | G251.25.R.03-10-RS | 15 | 35 | 12,5 | 12 | 5 | 3 | 25.450 | 2,0 | RP.. 10T3.. | E03 |
| 32 | G251.32.R.04-10-RE | 22 | 35 | 17,0 | 16 | 5 | 4 | 19.850 | 2,0 | RP.. 10T3.. | E03 |
| 32 | G251.32.R.04-10-RS | 22 | 35 | 17,0 | 16 | 5 | 4 | 19.850 | 2,0 | RP.. 10T3.. | E03 |
| 35 | G251.35.R.05-10-RE | 25 | 35 | 17,0 | 16 | 5 | 5 | 19.000 | 2,0 | RP.. 10T3.. | E03 |
| 25 | G251.25.R.02-12-35-RS | 13 | 35 | 12,5 | 12 | 6 | 2 | 25.000 | 3,2 | RP.. 1204.. | E04 |
| 32 | G251.32.R.03-12-35-RS | 20 | 35 | 17,0 | 16 | 6 | 3 | 19.000 | 3,2 | RP.. 1204.. | E04 |
| 35 | G251.35.R.03-12-35-RS | 23 | 35 | 17,0 | 16 | 6 | 3 | 15.900 | 3,2 | RP.. 1204.. | E04 |
| 42 | G251.42.R.04-12-42-RS | 30 | 42 | 17,0 | 16 | 6 | 4 | 15.000 | 3,2 | RP.. 1204.. | E04 |

| | | | |
|---|---|---|---|
| E01 | 11077874 | 11149517 | 8095010000 |
| E02 | 76913 | 11149541 | 8095010200 |
| E03 | 11464141 | 11464183 | 8095010400 |
| E04 | 165795 | 11149570 | 8095010500 |

B276

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | d [mm] | s [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | ○ | | | ○ | | | | | |
| | | M | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | ● | | | | | |
| | | K | | ○ | ● | ● | ● | | | | | ● | ● | ● | ● | | ○ | ● | ● | ○ | | ● | | | |
| | | N | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | |
| | | S | | | | | | | | | | | | | | | | | | ● | ● | | | | |
| | | H | | | | | | | | | | | ○ | | | | | | | | | ● | | | |
| -27P | | RPHX 10T3MOFN-27P | | | | | | | | | | | | | | | | ● | | | | | 10,00 | 3,97 | 3,40 |
| | | RPHX 1204MOFN-27P | | | | | | | | | | | | | | | | ● | | | | | 12,00 | 4,76 | 4,40 |
| | | RPHX 1605MOFN-27P | | | | | | | | | | | | | | | | ● | | | | | 16,00 | 5,56 | 5,50 |
| RDHX-F50 | | RDHX 0802MOSN-F50 | | | | | | | | | ● | | | | | | | | | | | | 8,00 | 2,38 | 2,80 |
| -F50 | | RPHX 10T3MOSN-F50 | | | | | ● | ● | | | ● | | | | | | | | | | | | 10,00 | 3,97 | 3,40 |
| | | RPHX 1204MOSN-F50 | | | | | | ● | ● | ● | ● | | | | | | | | | | | | 12,00 | 4,76 | 4,40 |
| | | RPHX 1605MOSN-F50 | | | | | | | | | ● | | | | | | | | | | | | 16,00 | 5,56 | 5,50 |
| | | RPNX 10T3MOSN-F50 | | | | | | ● | | | | | | | | | | | | | | | 10,00 | 3,97 | 3,40 |
| | | RPNX 1204MOSN-F50 | | | | | ● | ● | | | | | | | | | | | | | | | 12,00 | 4,76 | 4,40 |
| | | RPNX 1605MOSN-F50 | | | | | | ● | | | | | | | | | | | | | | | 16,00 | 5,56 | 5,50 |
| | | RPNX 2006MOSN-F50 | | | | | | | | | ● | | | | | | | | | | | | 20,00 | 6,35 | 6,00 |
| -M30 | | RPHX 10T3MOEN-M30 | | | | | | ● | | | ● | | | | | | | | | | | | 10,00 | 3,97 | 3,40 |
| | | RPHX 1204MOEN-M30 | | | | | | | ● | ● | ● | | | | | | | | | | | | 12,00 | 4,76 | 4,40 |
| | | RPHX 1605MOEN-M30 | | | | | | | | | ● | | | | | | | | | | | | 16,00 | 5,56 | 5,50 |
| | | RPNX 2006MOEN-M30 | | | | | | ● | | | ● | | | | | | | | | | | | 20,00 | 6,35 | 6,00 |
| RDHX -M31 | | RDHX 0501MOEN-M31 | | | | | | | | | | | | | | | | | | ● | | | 5,00 | 1,59 | 2,50 |
| | | RDHX 0802MOEN-M31 | | | | | | | | | | | | | | | | | | ● | ● | | 8,00 | 2,38 | 2,80 |
| | | RDHX 0802M4EN-M31 | | | | | | | | | | | | | | | | | | ● | ● | | 8,00 | 2,38 | 2,80 |
| -M31 | | RPHX 10T3M4EN-M31 | | | | | | | | | | | | | | | | | | ● | ● | | 10,00 | 3,97 | 3,40 |
| | | RPHX 10T3M8EN-M31 | | | | | | | | | | | | | | | | | | ● | ● | | 10,00 | 3,97 | 3,40 |
| | | RPHX 1204M4EN-M31 | | | | | | | | | | | | | | | | | | ● | ● | | 12,00 | 4,76 | 4,40 |
| | | RPHX 1204M6EN-M31 | | | | | | | | | | | | | | | | | | ● | ● | | 12,00 | 4,76 | 4,40 |
| | | RPHX 1204M8EN-M31 | | | | | | | | | | | | | | | | | | ● | ● | | 12,00 | 4,76 | 4,40 |
| | | RPHX 1605M8EN-M31 | | | | | | | | | | | | | | | | | | ● | ● | | 16,00 | 5,56 | 5,50 |
| | | RPHX 2006M4EN-M31 | | | | | | | | | | | | | | | | | | ● | | | 20,00 | 6,35 | 6,00 |
| | | RPNX 10T3M4EN-M31 | | | | | | | | | | | | | | | | | | ● | | | 10,00 | 3,97 | 3,40 |
| | | RPNX 10T3M8EN-M31 | | | | | | | | | | | | | | | | | | ● | | | 10,00 | 3,97 | 3,40 |
| | | RPNX 1204M4EN-M31 | | | | | | | | | | | | | | | | | | ● | | | 12,00 | 4,76 | 4,40 |
| | | RPNX 1204M8EN-M31 | | | | | | | | | | | | | | | | | | ● | | | 12,00 | 4,76 | 4,40 |
| | | RPNX 2006M8EN-M31 | | | | | | | | | | | | | | | | | | ● | ● | | 20,00 | 6,35 | 6,00 |
| -M32 | | RPHX 10T3M4EN-M32 | | | | | | | | | | | | | | | | | | ● | | | 10,00 | 3,97 | 3,40 |
| | | RPHX 1204M4EN-M32 | | | | | | | | | | | | | | | | | | ● | | | 12,00 | 4,76 | 4,40 |
| -M50 | | RPHX 10T3MOSN-M50 | | | | | | ● | | | ● | | | | | | | | | ● | | | 10,00 | 3,97 | 3,40 |
| | | RPHX 1204MOSN-M50 | | | | | | | | | ● | | | | | | | | | ● | | | 12,00 | 4,76 | 4,40 |
| | | RPNX 10T3MOSN-M50 | | | | | ● | ● | | | | | | | | | | | | | | | 10,00 | 3,97 | 3,40 |
| | | RPNX 1204MOSN-M50 | | | | | ● | ● | | | | | | | | | | | | | | | 12,00 | 4,76 | 4,40 |
| | | RPNX 1605MOSN-M50 | | | | | ● | ● | | | | | | | | | | | | | | | 16,00 | 5,56 | 5,50 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | d | s | $d_1$ |

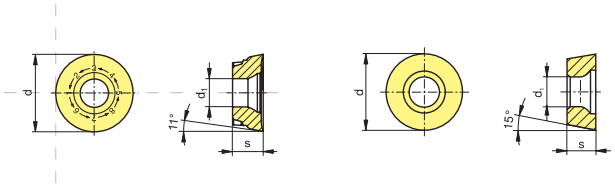



B12-B18
B175-B177
B21
B257-B266

# System MaxiMill 251

RD.. RP..

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d [mm] | s [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | | | ○ | | | ○ | | | | | | | | |
| M | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | | | ● | | | | | | | | |
| K | | ○ | ● | ● | ● | | | | | ● | ● | ● | ● | | | ○ | ● | ● | ● | ○ | | ● | | | | | | |
| N | | | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | |
| S | | | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | |
| H | | | | | | | | | | | | | ○ | | | | | | | | | ● | | | | | | |
| -R30 |  | RPHX 10T3MOEN-R30 | | | | | | | | | | | | | | | | | | ● | | | | | | 10,00 | 3,97 | 3,40 |
| | | RPHX 1204MOEN-R30 | | | | | | | | | | | | | | | | | | ● | | | | | | 12,00 | 4,76 | 4,40 |
| | | RPNX 10T3MOEN-R30 | | | | | | | | | | | | ● | | | | | | | | | | | | 10,00 | 3,97 | 3,40 |
| | | RPNX 1204MOEN-R30 | | | | | | | | | | | | ● | | | | | | | | | | | | 12,00 | 4,76 | 4,40 |
| -R60 |  | RPNX 1204M8EN-R60 | | | | | | | | | | | | | | | | | | | | ● | | | | 12,00 | 4,76 | 4,40 |
| RDHX |  | RDHX 0501MOFN | | | | | | | | | | | | | | | | ● | | | | | | | | 5,00 | 1,59 | 2,50 |
| | | RDHX 0501MOSN | | | | | ● | ● | | | | | | | | | | | | | | | | | | 5,00 | 1,59 | 2,50 |
| | | RDHX 0802MOEN | | | | | | | | | | | | ● | | | | | | | | | | | | 8,00 | 2,38 | 2,80 |
| | | RDHX 0802MOFN | | | | | | | | | | | | | | | | ● | | | | | | | | 8,00 | 2,38 | 2,80 |
| | | RDHX 0802MOSN | | | | | ● | ● | | | | | | | | | | | | | | | | | | 8,00 | 2,38 | 2,80 |
| RPHX |  | RPHX 10T3MOSN | | ● | | | ● | ● | | | | | | ● | | | | | | | | | | | | 10,00 | 3,97 | 3,40 |
| | | RPHX 1204MOSN | | ● | | | ● | ● | ● | | | | | ● | | | | | | | | | | | | 12,00 | 4,76 | 4,40 |
| | | RPHX 1204M4EN | | | | | | | | | | | | | | | | | | ● | | | | | | 12,00 | 4,76 | 4,40 |
| | | RPHX 1605MOSN | | | | | ● | ● | | | | | | ● | | | | | | | | | | | | 16,00 | 5,56 | 5,50 |
| | | RPNX 10T3MOSN | | | | | | | | | | | | | ● | | | | | | | | | | | 10,00 | 3,97 | 3,40 |
| | | RPNX 1204MOSN | | | | | ● | ● | | | | | | ● | ● | | | | | | | | | | | 12,00 | 4,76 | 4,40 |
| | | RPNX 1605MOSN | | | | | ● | ● | | | | | | ● | ● | | | | | | | | | | | 16,00 | 5,56 | 5,50 |
| | | RPNX 2006MOSN | | | | | ● | ● | | | | | | ● | ● | | | | | | | | | | | 20,00 | 6,35 | 6,00 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d | s | $d_1$ |

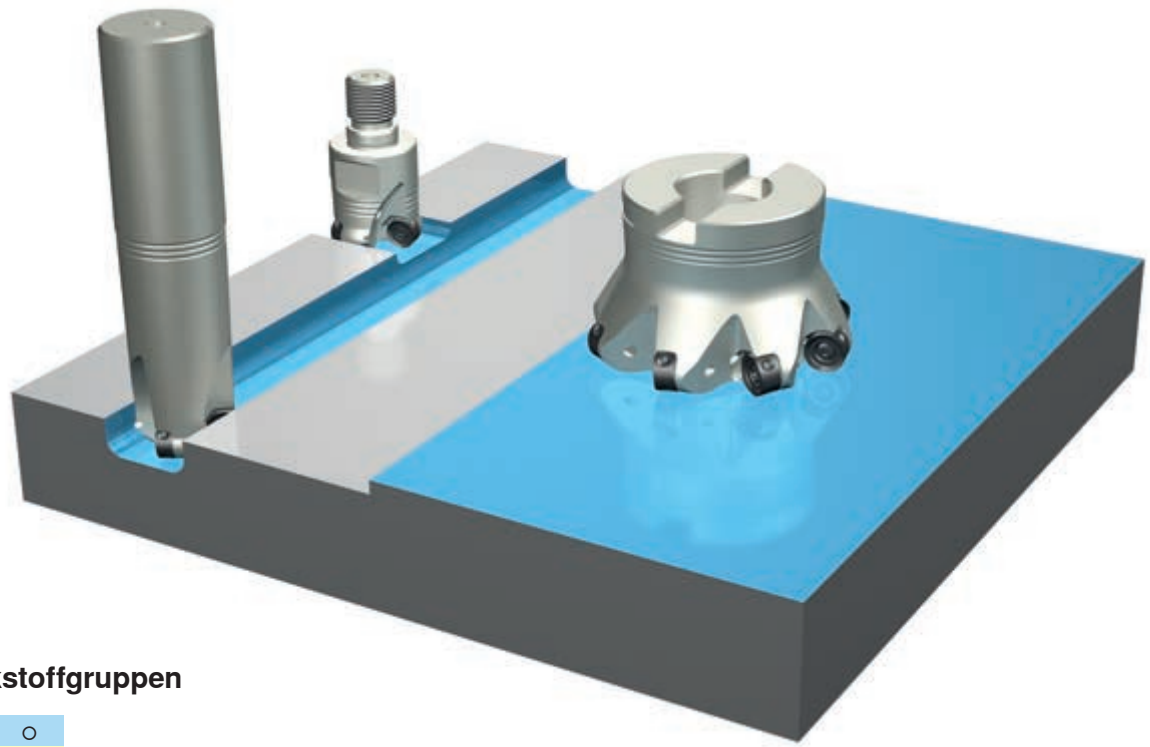



B12-B18
B175-B177
B21
B257-B266


CERATIZIT

## Doppelseitiges Frässystem für doppelte Wirtschaftlichkeit

- Verdoppelung der Schneidenanzahl bei optimaler Schnitttiefe
- schnelle Bearbeitung mit hohem Spanvolumen



## Werkstoffgruppen

| | |
|---|---|
| P | ○ |
| M | ● |
| K | |
| N | |
| S | ○ |
| H | |

## Einsatzmöglichkeiten


Planfräsen


Gassenfräsen

## Detailinformationen

| Teilung | Ø-Bereich | Schneidplatten |
|---|---|---|
|  | Ø 22 - 68 mm | RN..1004..<br>RN..1205.. |

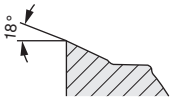
# System MaxiMill 252

Spanleitstufenübersicht

## -M31

- Positive Geometrie
- Universell einsetzbar
- Hohe Laufruhe
- Für hochwarmfeste Werkstoffe, Titan und Superlegierungen






$f_z$ [mm]

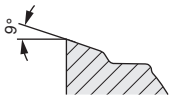
0,08 - 0,35

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| CTC5235 **CTC5240** | CTC5235 **CTC5240** | **CTC5235** CTC5240 |
| | | |

## -M32

- Mittlere Schruppbearbeitung
- Geringe Schnittkraft und gute Stabilität
- Erste Wahl für martensitisch rostfreie Stahlwerkstoffe

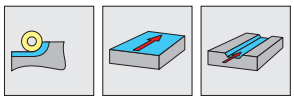




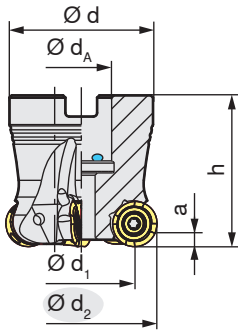

$f_z$ [mm]

0,05 - 0,35

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| CTC5235 | **CTC5235** | **CTC5235** |
| | | |
| | | |
| | | |







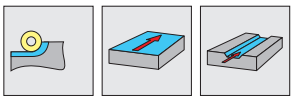

| $d_2$ [mm] | Type, Bezeichnung | $d_1$ [mm] | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | $n_{max}$ [$min^{-1}$] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | A252.40.R.05-10 | 30 | 40 | 38 | 16 | 2,5 | 5 | 15.900 | 2 | RN.. 1004.. | E01 |
| 42 | A252.42.R.05-10 | 32 | 40 | 38 | 16 | 2,5 | 5 | 15.150 | 2 | RN.. 1004.. | E01 |
| 50 | A252.50.R.06-10 | 40 | 40 | 43 | 22 | 2,5 | 6 | 12.700 | 2 | RN.. 1004.. | E01 |
| 52 | A252.52.R.07-10 | 42 | 40 | 43 | 22 | 2,5 | 7 | 12.200 | 2 | RN.. 1004.. | E01 |
| 40 | A252.40.R.04-12 | 28 | 40 | 38 | 16 | 3,0 | 4 | 15.900 | 3,2 | RN.. 1205.. | E02 |
| 50 | A252.50.R.05-12 | 38 | 40 | 43 | 22 | 3,0 | 5 | 12.700 | 3,2 | RN.. 1205.. | E03 |
| 52 | A252.52.R.05-12 | 40 | 40 | 43 | 22 | 3,0 | 5 | 12.200 | 3,2 | RN.. 1205.. | E03 |
| 63 | A252.63.R.06-12 | 51 | 40 | 48 | 22 | 3,0 | 6 | 10.100 | 3,2 | RN.. 1205.. | E03 |
| 66 | A252.66.R.07-12 | 54 | 40 | 48 | 22 | 3,0 | 7 | 9.650 | 3,2 | RN.. 1205.. | E03 |
| 80 | A252.80.R.08-12 | 68 | 50 | 58 | 27 | 3,0 | 8 | 7.950 | 3,2 | RN.. 1205.. | E03 |

| | | | |
|---|---|---|---|
| E01 | | 11689894 | 11696194 |
| E02 | 11036880 | 11610311 | 11450867 |
| E03 | | 11610311 | 11450867 |

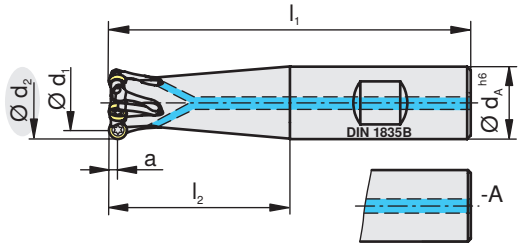
B276

# System MaxiMill 252

C252



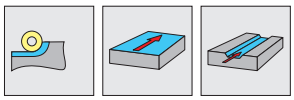




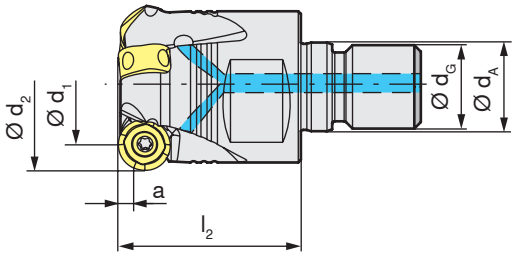

| d2 [mm] | Type, Bezeichnung | d1 [mm] | l1 [mm] | l2 [mm] | dA [mm] | a [mm] | z | nmax [min-1] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | C252.32.R.04-10-A-70 | 22 | 131 | 70 | 32 | 2,5 | 4 | 19.850 | 2 | RN.. 1004.. | E01 |

| | | |
|---|---|---|
| E01 | 11689894 | 11696194 |

B276








| d2 [mm] | Type, Bezeichnung | d1 [mm] | l2 [mm] | dA [mm] | dG [mm] | a [mm] | z | nmax [min-1] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | G252.32.R.04-10 | 22 | 35 | 17,0 | 16 | 2,5 | 4 | 19.850 | 2 | RN.. 1004.. | E01 |

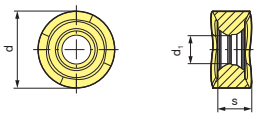
| | | |
|---|---|---|
| E01 | 11689894 | 11696194 |

B276

# System MaxiMill 252

RN..

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d [mm] | s [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | ○ | | | ○ | | | | | | | | | |
| | | M | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | ● | | | | | | | | | |
| | | K | | ○ | ● | ● | ● | | | | | ● | ● | ● | ● | | ○ | ● | ● | ○ | | ● | | | | | | | |
| | | N | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | | |
| | | S | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | | |
| | | H | | | | | | | | | | | ○ | | | | | | | | | ● | | | | | | | |
| -M31 |  | RNHU 1004M4ER-M31 | | | | | | | | | | | | | | | | | | ● | ● | | | | | 10,00 | 5,28 | 3,40 |
| | | RNHU 1205M4ER-M31 | | | | | | | | | | | | | | | | | | ● | ● | | | | | 12,00 | 6,34 | 4,40 |
| -M32 |  | RNHU 1004M4ER-M32 | | | | | | | | | | | | | | | | | | ● | | | | | | 10,00 | 5,28 | 3,40 |
| | | RNHU 1205M4ER-M32 | | | | | | | | | | | | | | | | | | ● | | | | | | 12,00 | 6,34 | 4,40 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d | s | $d_1$ |



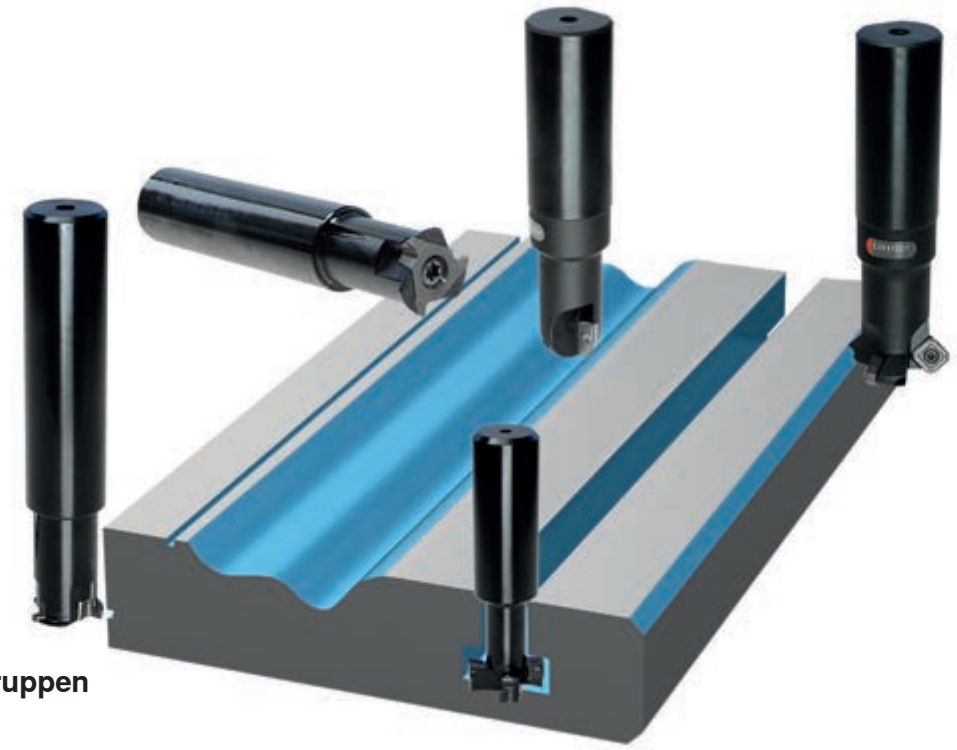



B12-B18
B187
B21
B257-B266


NF.20.R.01

## Profilfräser für Freiformflächen, Fasen und Nutprofile

○ Lösungen für die wichtigsten Zerspanungsaufgaben



## Werkstoffgruppen

| | |
|---|---|
| P | ● |
| M | ○ |
| K | ○ |
| N | ○ |
| S | |
| H | |

## Einsatzmöglichkeiten


Freiformfräsen


Fasfräsen


T-Nutenfräsen

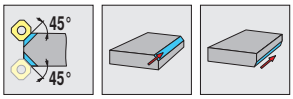

Ringnutenfräsen

## Detailinformationen

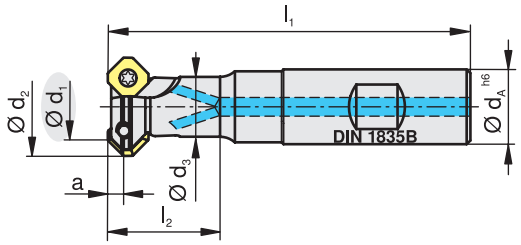
| Teilung | Ø-Bereich | Schneidplatten |
|---|---|---|
|  | - | SD..0903..<br>R06E../R08E../R10D../ R12D../R16D..<br>SP..05../CP..06../CP..09..<br>TC 11../TC 16.. |

# System MaxiMill 272

C272-09





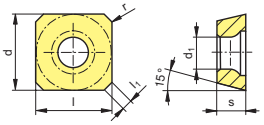




| d1 [mm] | Type, Bezeichnung | d2 [mm] | l1 [mm] | l2 [mm] | d3 [mm] | dA [mm] | a [mm] | z | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | C272.06.R.01-09 | 14,4 | 91 | 24 | 10 | 16 | 4 | 1 | 1,2 | SD.. 0903.. | E01 |
| 8 | C272.08.R.01-09 | 16,4 | 91 | 25,5 | 10 | 16 | 4 | 1 | 1,2 | SD.. 0903.. | E01 |
| 12 | C272.12.R.01-09 | 20,4 | 91 | 26 | 12 | 16 | 4 | 1 | 1,2 | SD.. 0903.. | E01 |
| 16 | C272.16.R.02-09 | 24,4 | 97 | 30 | 15 | 20 | 4 | 2 | 1,2 | SD.. 0903.. | E02 |
| 18 | C272.18.R.02-09 | 26,4 | 97 | 30 | 16 | 20 | 4 | 2 | 1,2 | SD.. 0903.. | E02 |
| 25 | C272.25.R.03-09 | 33,4 | 109 | 35 | 21 | 25 | 4 | 3 | 1,2 | SD.. 0903.. | E02 |

| | | | |
|---|---|---|---|
| E01 | 169857 | 11149541 | 8095010200 |
| E02 | 77613 | 11149541 | 8095010200 |

B276

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d [mm] | l [mm] | s [mm] | $l_1$ [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | | | ○ | | | ○ | | | | | | | | | | | |
| M | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | | | ● | | | | | | | | | | | |
| K | | ○ | ● | ● | ● | | | | | ● | ● | ● | ● | | | ○ | ● | ● | ○ | | ● | | | | | | | | | | |
| N | | | | | | | | | | | | | | | | ● | ● | ● | | | | | | | | | | | | | |
| S | | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | | |
| H | | | | | | | | | | | | ○ | | | | | | | | | | ● | | | | | | | | | |
| -27P | | SDHT 0903AEFN-27P | | | | | | | | | | | | | | | ● | ● | | | | | | | | 9,52 | 9,52 | 3,18 | 1,68 | 1,00 | 3,40 |
| -29 | | SDNT 0903AESN-29 | | | | | ● | ● | | | | | | | | | | | | | | | | | | 9,52 | 9,52 | 3,18 | 1,68 | 1,00 | 3,40 |
| -31 | | SDNT 0903AESN-31 | | | | | | | | | | | | ● | | | | | | | | | | | | 9,52 | 9,52 | 3,18 | 1,61 | 1,00 | 3,40 |
| -33 | | SDHT 0903AESN-33 | | | | | | | | | ● | | | | | | | | | | | | | | | 9,52 | 9,52 | 3,18 | 1,68 | 1,00 | 3,40 |
| | | SDHT 0903AESN-33P | | | | | | | | | ● | | | | | | | | | | | | | | | 9,52 | 9,52 | 3,18 | 1,68 | 1,00 | 3,40 |
| -M31 | | SDHT 0903AESN-M31 | | | | | | | | | | | | | | | | | | ● | ● | | | | | 9,52 | 9,52 | 3,18 | 1,68 | 1,00 | 3,40 |
| SD..W | | SDHW 0903AESN | | ● | | | | | | | | | | | | | | | | | | | | | | 9,52 | 9,52 | 3,18 | 1,68 | 1,00 | 3,40 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d | l | s | $l_1$ | r | $d_1$ |

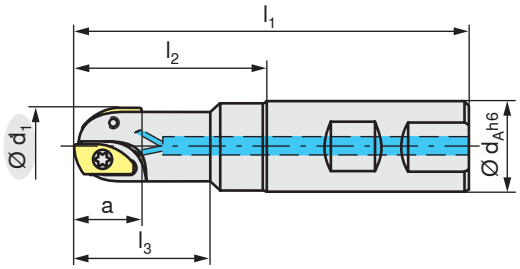



B12-B18 | B21 | B257-B266

# System MaxiMill Profilfräser

CKF



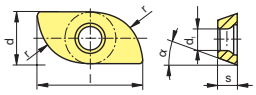



| d1 [mm] | Type, Bezeichnung | l1 [mm] | l2 [mm] | l3 [mm] | dA [mm] | a [mm] | z | n | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | C KF.12.R.01 | 87 | 39 | 24 | 16 | 10 | 1 | 1 | 1,2 | R06E 0602.. | E01 |
| 16 | C KF.16.R.01 | 96 | 46 | 31 | 20 | 12 | 1 | 1 | 1,2 | R08E 0803.. | E02 |
| 20 | C KF.20.R.01 | 109 | 53 | 37 | 25 | 12 | 1 | 2 | 1,2 | R10D 0602.. | E03 |
| 25 | C KF.25.R.01 | 112 | 56 | 56 | 25 | 14 | 1 | 2 | 1,2 | R12D 0803.. | E04 |
| 32 | C KF.32.R.01 | 120 | 60 | 60 | 32 | 16 | 1 | 2 | 3,2 | R16D 10T3.. | E05 |

| | | | |
|---|---|---|---|
| E01 | 157823 | 11149541 | 8095010200 |
| E02 | 169856 | 11149541 | 8095010200 |
| E03 | 76913 | 11149541 | 8095010200 |
| E04 | 77613 | 11149541 | 8095010200 |
| E05 | 54976 | 11149541 | 8095010500 |

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| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | ○ | | | ○ | | | | | | | | |
| M | | | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | ● | | | | | | | | |
| K | | | ○ | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | ○ | ● | ● | ○ | | ● | | | | | | |
| N | | | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | |
| S | | | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | |
| H | | | | | | | | | | | | | ○ | | | | | | | | | ● | | | | | | |
| R..E | | R06E 0602ZZER | | | | | | ● | | | | | | | | | | | | | | | 6,35 | 13,00 | 2,38 | 6,00 | 2,80 |
| | | R08E 0803ZZSR | | | | | | ● | | | | | | | | | | | | | | | 8,33 | 14,93 | 3,18 | 8,00 | 3,40 |
| R..D | | R10D 0602ZZER | | | | | | ● | | | | | | | | | | | | | | | 6,35 | 13,40 | 2,38 | 10,00 | 2,80 |
| | | R12D 0803ZZSR | | | | | | ● | | | | | | | | | | | | | | | 8,00 | 17,00 | 3,18 | 12,50 | 3,40 |
| | | R16D 10T3ZZER | | | | | | ● | | | | | | | | | | | | | | | 10,00 | 17,00 | 3,97 | 16,00 | 4,40 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | d | l | s | r | $d_1$ |



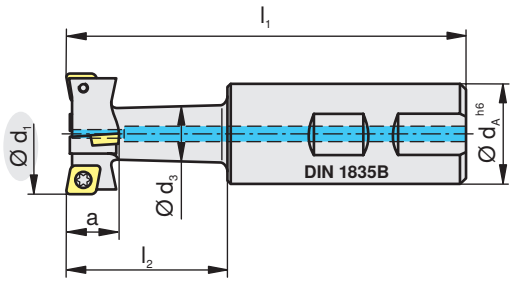

B12-B18
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B257-B266

# System MaxiMill Profilfräser

CNF





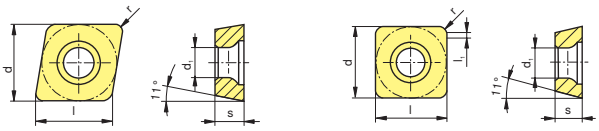



| $d_1$ [mm] | Type, Bezeichnung | $l_1$ [mm] | $l_2$ [mm] | $d_3$ [mm] | $d_A$ [mm] | a [mm] | z | n | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 17,5 | C NF.17.R.01 | 80 | 25 | 8,5 | 16 | 8 | 1 | 2 | 1,2 | SP.. 0502.. | E01 |
| 20,5 | C NF.20.R.01 | 85 | 30 | 10,5 | 16 | 9 | 1 | 2 | 1,2 | CP.. 0603.. | E02 |
| 24,0 | C NF.23.R.01 | 95 | 32 | 12,5 | 25 | 10 | 1 | 2 | 1,2 | CP.. 0603.. | E02 |
| 31,0 | C NF.30.R.02 | 105 | 40 | 16 | 25 | 12 | 2 | 4 | 1,2 | CP.. 0603.. | E02 |
| 38,5 | C NF.37.R.02 | 115 | 50 | 20 | 32 | 16 | 2 | 4 | 3,2 | CP.. 09T3.. | E03 |
| 48,0 | C NF.47.R.02 | 125 | 60 | 26 | 32 | 20 | 2 | 4 | 3,2 | CP.. 09T3.. | E03 |

| | | | |
|---|---|---|---|
| E01 | 76913 | 11149541 | 8095010200 |
| E02 | 24645 | 11149541 | 8095010200 |
| E03 | 54976 | 11149541 | 8095010500 |

B276

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | ○ | | | ○ | | | | | | | | | | |
| M | | | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | ● | | | | | | | | | | |
| K | | | ○ | ● | ● | ● | | | | | | ● | ● | ● | ● | | ○ | ● | ● | ○ | | ● | | | | | | | | |
| N | | | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | | | |
| S | | | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | |
| H | | | | | | | | | | | | | ○ | | | | | | | | | ● | | | | | | | | |
| CPMT | | CPMT 060304EN | | | | | | ● | | | | | | | | | | | | | | | | | | 6,35 | 6,40 | 3,18 | 0,40 | 2,80 |
| | | CPMT 09T308SN | | | | | | ● | | | | | | | | | | | | | | | | | | 9,52 | 9,70 | 3,97 | 0,80 | 4,40 |
| CPMW | | CPMW 060304EN | | | | | | | | | | | | ● | | | | | | | | | | | | 6,35 | 6,40 | 3,18 | 0,40 | 2,80 |
| | | CPMW 09T308EN | | | | | | | | | | | | ● | | | | ● | | | | | | | | 9,52 | 9,70 | 3,97 | 0,80 | 4,40 |
| SP..W | | SPGW 050204EN | | | | | | ● | | | | | | | | | | | | | | | | | | 5,56 | 5,56 | 2,38 | 0,40 | 2,80 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d | l | s | r | $d_1$ |





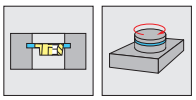
B12-B18

B21

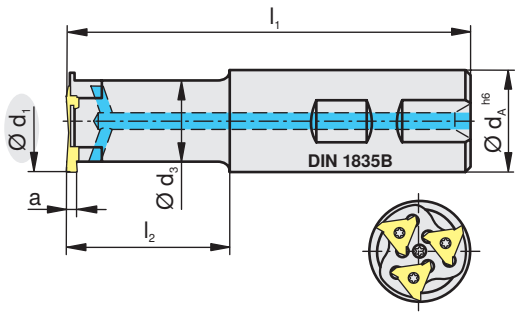
B257-B266

# System MaxiMill Profilfräser

CZF





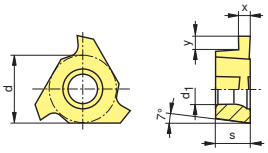



| d1 [mm] | Type, Bezeichnung | l1 [mm] | l2 [mm] | d3 [mm] | dA [mm] | a [mm] | z | n | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | C ZF.16.R.03 | 84 | 24 | 13 | 16 | 1,6 | 3 | 1 | 3,2 | TC 16T3.. | E01 |
| 25 | C ZF.25.R.03 | 100 | 40 | 20,5 | 25 | 2,65 | 3 | 3 | 1,2 | TC 1103.. | E02 |

| | | | |
|---|---|---|---|
| E01 | 165795 | 11149570 | 8095010500 |
| E02 | 24645 | 11149541 | 8095010200 |

B276

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d [mm] | s [mm] | $d_1$ [mm] | y [mm] | x [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | ○ | | | ○ | | | | | | | | | | |
| | | M | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | ● | | | | | | | | | | |
| | | K | | ○ | ● | ● | ● | | | | | ● | ● | ● | ● | | ○ | ● | ● | ○ | | ● | | | | | | | | |
| | | N | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | | | |
| | | S | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | |
| | | H | | | | | | | | | | | ○ | | | | | | | | | ● | | | | | | | | |
| TC.. |  | TC 1103ER160 | | | | | | ● | | | | | | | | | | | | | | | | | | 6,35 | 3,18 | 2,80 | 1,40 | 1,60 |
| | | TC 1103ER185 | | | | | | ● | | | | | | | | | | | | | | | | | | 6,35 | 3,18 | 2,80 | 1,70 | 1,85 |
| | | TC 1103ER215 | | | | | | ● | | | | | | | | | | | | | | | | | | 6,35 | 3,18 | 2,80 | 2,00 | 2,15 |
| | | TC 1103ER265 | | | | | | ● | | | | | | | | | | | | | | | | | | 6,35 | 3,18 | 2,80 | 2,20 | 2,65 |
| | | TC 16T3ER110 | | | | | | ● | | | | | | | | | | | | | | | | | | 9,53 | 3,97 | 4,20 | 0,90 | 1,10 |
| | | TC 16T3ER130 | | | | | | ● | | | | | | | | | | | | | | | | | | 9,53 | 3,97 | 4,20 | 1,30 | 1,30 |
| | | TC 16T3ER160 | | | | | | ● | | | | | | | | | | | | | | | | | | 9,53 | 3,97 | 4,20 | 1,40 | 1,60 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d | s | $d_1$ | y | x |





B12-B18

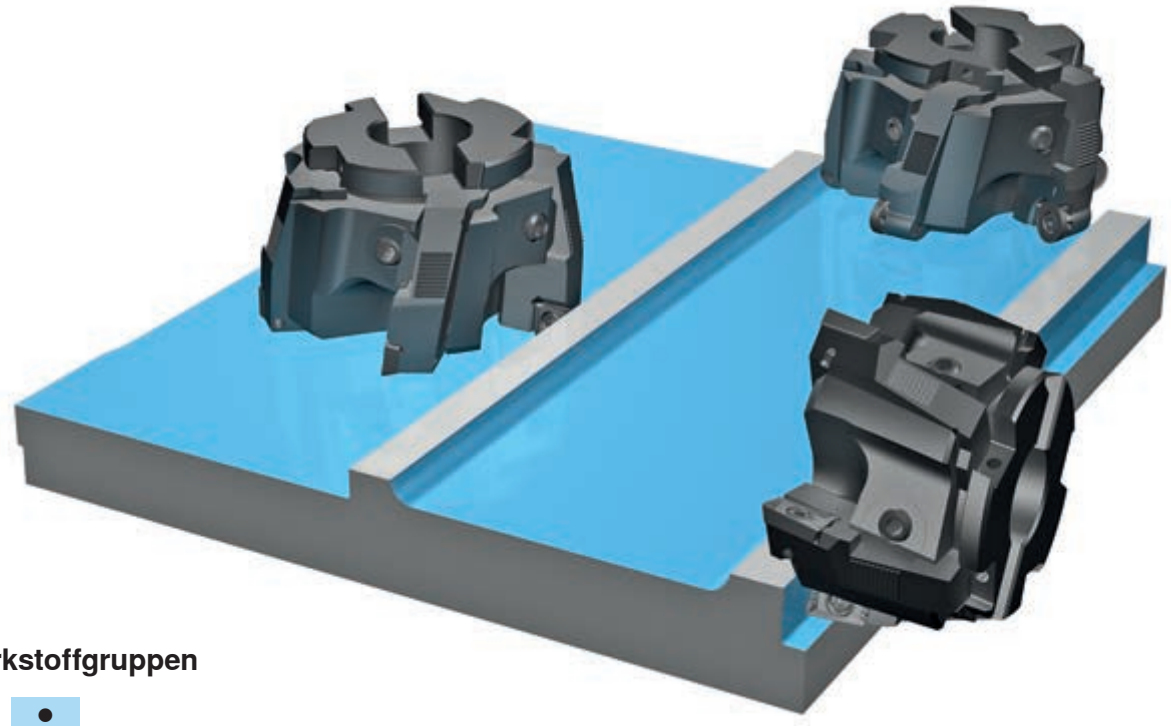
B21

B257-B266


18043
A 260.08.R05
CERATIZIT
18031
18043

## Der Kassettenfräser - speziell für große Durchmesser

- Universell einsetzbar bei optimaler Stabilität
- einstellbare Schlichtschneiden
- vielseitiger Einsatz durch unterschiedliche Kassetten



## Werkstoffgruppen

| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ○ |
| S | ○ |
| H | |

## Einsatzmöglichkeiten


Planfräsen


Eckfräsen


Gassenfräsen


Besäumen

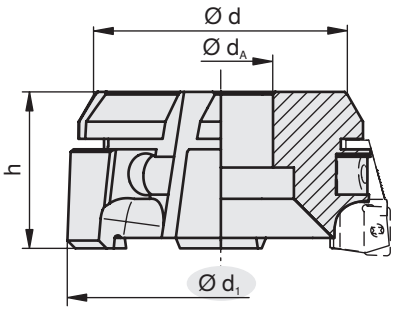
## Detailinformationen

| Teilung | Ø-Bereich | Schneidplatten |
|---|---|---|
|  | Ø 80 - 400 mm | Siehe Seite B206 |

# System MaxiMill 260

Grundkörper

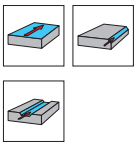
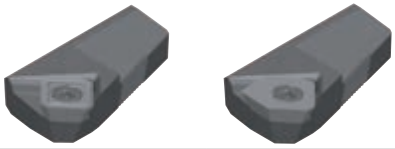
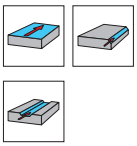
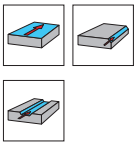
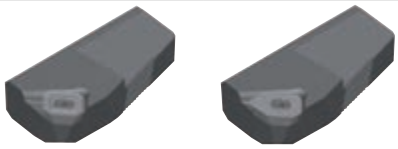
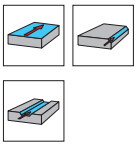
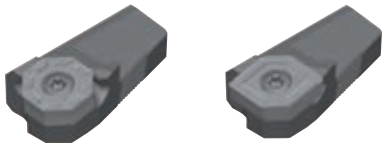
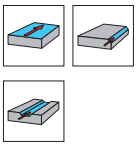
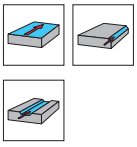
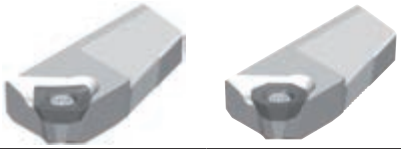
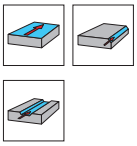
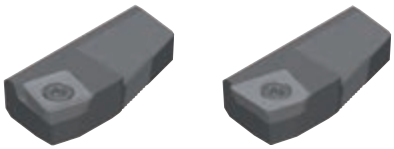
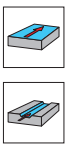





| $d_1$ [mm] | Type, Bezeichnung | h [mm] | d [mm] | [kg] | | |
|---|---|---|---|---|---|---|
| 80 | A260.08.R.05 | 49 | 66 | 0,97 | 78180.. | E01 |
| 98 | A260.10.R.06 | 49 | 86 | 1,52 | 78180.. | E01 |
| 119 | A260.12.R.07 | 60 | 95 | 2,99 | 78180.. | E01 |
| 154 | A260.16.R.10 | 60 | 130 | 5,33 | 78180.. | E01 |
| 194 | A260.20.R.12 | 60 | 172 | 9,05 | 78180.. | E01 |
| 244 | A260.25.R.14 | 60 | 222 | 15,75 | 78180.. | E01 |
| 309 | A260.31.R.18 | 77 | 280 | 30,23 | 78180.. | E01 |
| 394 | A260.40.R.22 | 77 | 365 | 66,00 | 78180.. | E01 |

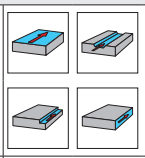
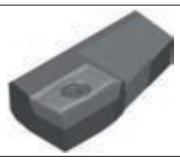
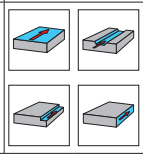
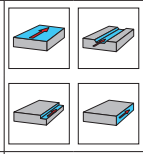
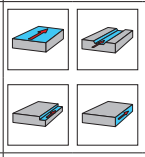
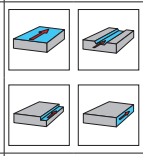
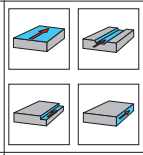
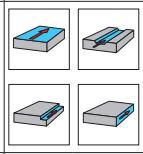
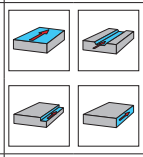
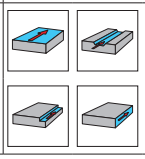
| | | | | |
|---|---|---|---|---|
| E01 | 106607 | 106934 | 112188 | 4425 |

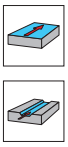
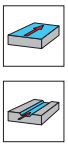
B276

| Kassette | | Max. Schnitttiefe [mm] | Wendeplatte | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|
| 45° | Anstellwinkel 45° | | | | |
| 029 |  | 6 | SE.. 1204.. |  | B212 |
| 031 |  | 6 | SD/XD.. 1204.. |  | B211 |
| 032 |  | 9 | SD.. 1504.. |  | B212 |
| 041 |  | 4 | SD/XD.. 0903.. |  | B211 |
| 057 |  | 5,5 | OA/XA.. 0605.. |  | B213 |
| 058 |  | 8,4 | SAKU 1706.. |  | B214 |
| 059 |  | 6,0 | OF..0504.. / SF..1204.. |  | B209 |
| 75° | Kassettenfräser, MaxiMill 260 75° | | | | |
| 018 |  | 9 | SP.. 1204.. |  | B215 |

# System MaxiMill 260

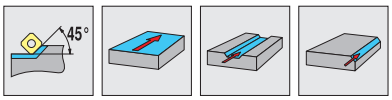
Kassetten

| Kassette | | Max. Schnitttiefe [mm] | Wendeplatte | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|
|  | Anstellwinkel 90° | | | | |
| 025 |  | 18 | TP.. 2204.. |  | B218 |
| 026 |  | 18 | LP.. 2004.. |  | B219 |
| 039 |  | 11 | SD.. 1205.. |  | B217 |
| 040 |  | 14 | AD.. 1505.. |  | B219 |
| 042 |  | 8 | AP.. 1003.. |  | B216 |
| 051 |  | 14 | LD.. 1504.. |  | B216 |
| 054 |  | 10 | XD.. 11.. |  | B220 |
| 055 |  | 8 | SD.. 09T3.. |  | B217 |
| 056 |  | 14 | XD.. 15.. |  | B220 |

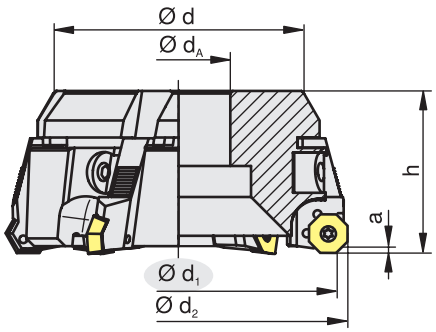
| Kassette | | Max. Schnitttiefe [mm] | Wendeplatte | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|
|  | Rundplatte | | | | |
| 052 |  | 6 | RP.. 1204.. |  | B221 |
| 053 |  | 8 | RP.. 1605.. |  | B221 |

# System MaxiMill 260

A260-059/OF..



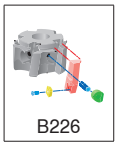



| $d_1$ [mm] | Type, Bezeichnung | $d_2$ [mm] | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | [kg] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 80,2 | A260.08.R.05/059 | 88,1 | 52 | 66 | 27 | 3,0 | 5 | 1,50 | 5 | OF.. 0504.. | E01 |
| 100,1 | A260.10.R.06/059 | 108,1 | 52 | 86 | 32 | 3,0 | 6 | 2,00 | 5 | OF.. 0504.. | E01 |
| 123,1 | A260.12.R.07/059 | 131,1 | 63 | 95 | 40 | 3,0 | 7 | 3,50 | 5 | OF.. 0504.. | E01 |
| 158 | A260.16.R.10/059 | 166,1 | 63 | 130 | 40 | 3,0 | 10 | 6,00 | 5 | OF.. 0504.. | E01 |
| 198 | A260.20.R.12/059 | 206,1 | 63 | 172 | 60 | 3,0 | 12 | 10,00 | 5 | OF.. 0504.. | E01 |
| 247,9 | A260.25.R.14/059 | 256,1 | 63 | 222 | 60 | 3,0 | 14 | 18,00 | 5 | OF.. 0504.. | E01 |
| 312,9 | A260.31.R.18/059 | 321,1 | 80 | 280 | 60 | 3,0 | 18 | 31,50 | 5 | OF.. 0504.. | E01 |
| 397,9 | A260.40.R.22/059 | 406,1 | 80 | 365 | 60 | 3,0 | 22 | 68,00 | 5 | OF.. 0504.. | E01 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 106607 | 11803957 | 106934 | 112188 | 11450867 | 8095012000 | 4425 |

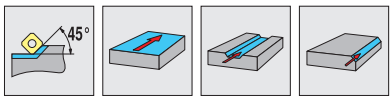


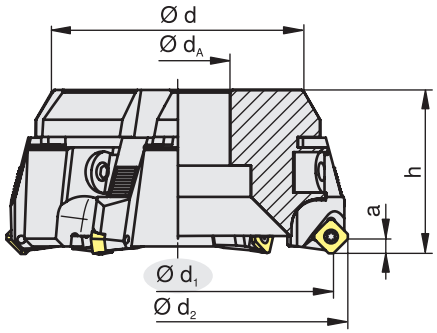










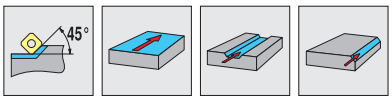

| d1 [mm] | Type, Bezeichnung | d2 [mm] | h [mm] | d [mm] | dA [mm] | a [mm] | z | [kg] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 77,1 | A260.08.R.05/059 | 91,1 | 53,5 | 66 | 27 | 6,0 | 5 | 1,50 | 5 | SF.. 1204.. | E01 |
| 97 | A260.10.R.06/059 | 111,1 | 53,5 | 86 | 32 | 6,0 | 6 | 2,00 | 5 | SF.. 1204.. | E01 |
| 119,9 | A260.12.R.07/059 | 134 | 64,5 | 95 | 40 | 6,0 | 7 | 3,50 | 5 | SF.. 1204.. | E01 |
| 154,8 | A260.16.R.10/059 | 169 | 64,5 | 130 | 40 | 6,0 | 10 | 6,00 | 5 | SF.. 1204.. | E01 |
| 194,8 | A260.20.R.12/059 | 209 | 64,5 | 172 | 60 | 6,0 | 12 | 10,00 | 5 | SF.. 1204.. | E01 |
| 244,8 | A260.25.R.14/059 | 259 | 64,5 | 222 | 60 | 6,0 | 14 | 18,00 | 5 | SF.. 1204.. | E01 |
| 309,7 | A260.31.R.18/059 | 324 | 81,5 | 280 | 60 | 6,0 | 18 | 31,50 | 5 | SF.. 1204.. | E01 |
| 394,7 | A260.40.R.22/059 | 409 | 81,5 | 365 | 60 | 6,0 | 22 | 68,00 | 5 | SF.. 1204.. | E01 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 106607 | 11803957 | 106934 | 112188 | 11450867 | 8095012000 | 4425 |

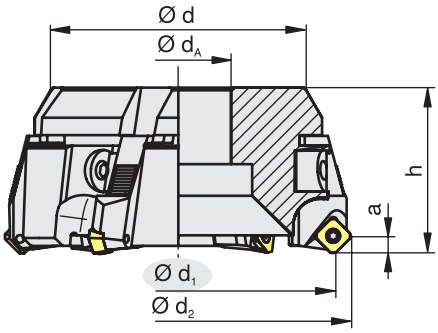
B276 B226 B46 B206-B208

# System MaxiMill 260

A260-031/-041



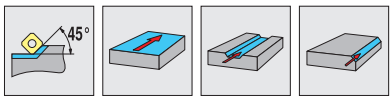


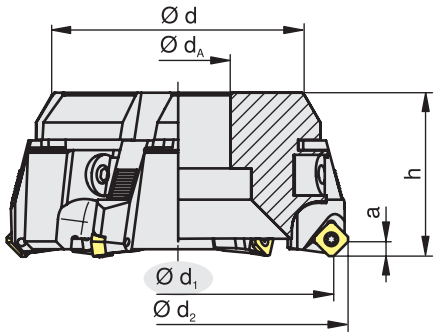

| $d_1$ [mm] | Type, Bezeichnung | $d_2$ [mm] | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | [kg] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 80 | A260.08.R.05/041 | 88,4 | 52 | 66 | 27 | 4 | 5 | 1,33 | 1,2 | SD/XD.. 0903.. | E01 |
| 100 | A260.10.R.06/041 | 108,4 | 52 | 86 | 32 | 4 | 6 | 1,94 | 1,2 | SD/XD.. 0903.. | E01 |
| 123 | A260.12.R.07/041 | 131,4 | 63 | 95 | 40 | 4 | 7 | 3,49 | 1,2 | SD/XD.. 0903.. | E01 |
| 158 | A260.16.R.10/041 | 166,4 | 63 | 130 | 40 | 4 | 10 | 6,04 | 1,2 | SD/XD.. 0903.. | E01 |
| 198 | A260.20.R.12/041 | 206,4 | 63 | 172 | 60 | 4 | 12 | 9,91 | 1,2 | SD/XD.. 0903.. | E01 |
| 248 | A260.25.R.14/041 | 256,4 | 63 | 222 | 60 | 4 | 14 | 16,74 | 1,2 | SD/XD.. 0903.. | E01 |
| 313 | A260.31.R.18/041 | 321,4 | 80 | 280 | 60 | 4 | 18 | 31,51 | 1,2 | SD/XD.. 0903.. | E01 |
| 398 | A260.40.R.22/041 | 406,4 | 80 | 365 | 60 | 4 | 22 | 67,57 | 1,2 | SD/XD.. 0903.. | E01 |
| 80 | A260.08.R.05/031 | 94,5 | 52 | 66 | 27 | 6 | 5 | 1,31 | 5 | SD/XD.. 1204.. | E02 |
| 100 | A260.10.R.06/031 | 114,5 | 52 | 86 | 32 | 6 | 6 | 1,93 | 5 | SD/XD.. 1204.. | E02 |
| 123 | A260.12.R.07/031 | 137,5 | 63 | 95 | 40 | 6 | 7 | 3,47 | 5 | SD/XD.. 1204.. | E02 |
| 158 | A260.16.R.10/031 | 172,5 | 63 | 130 | 40 | 6 | 10 | 6,02 | 5 | SD/XD.. 1204.. | E02 |
| 198 | A260.20.R.12/031 | 212,5 | 63 | 172 | 60 | 6 | 12 | 9,88 | 5 | SD/XD.. 1204.. | E02 |
| 248 | A260.25.R.14/031 | 262,5 | 63 | 222 | 60 | 6 | 14 | 16,71 | 5 | SD/XD.. 1204.. | E02 |
| 313 | A260.31.R.18/031 | 327,5 | 80 | 280 | 60 | 6 | 18 | 31,45 | 5 | SD/XD.. 1204.. | E02 |
| 398 | A260.40.R.22/031 | 412,5 | 80 | 365 | 60 | 6 | 22 | 67,51 | 5 | SD/XD.. 1204.. | E02 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 106607 | 77613 | 106934 | 112188 | 11149541 | 8095010200 | 4425 |
| E02 | 106607 | 106022 | 106934 | 112188 | 11149571 | 8095010600 | 4425 |

B276 B226 B60-B61 B206-B208



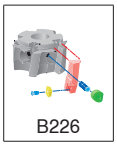


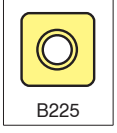



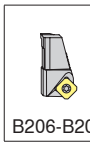

| $d_1$ [mm] | Type, Bezeichnung | $d_2$ [mm] | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | [kg] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 80 | A260.08.R.05/029 | 93 | 52 | 66 | 27 | 6 | 5 | 1,30 | 5 | SE.. 1204.. | E01 |
| 100 | A260.10.R.06/029 | 113 | 52 | 86 | 32 | 6 | 6 | 1,91 | 5 | SE.. 1204.. | E01 |
| 123 | A260.12.R.07/029 | 136 | 63 | 95 | 40 | 6 | 7 | 3,46 | 5 | SE.. 1204.. | E01 |
| 158 | A260.16.R.10/029 | 171 | 63 | 130 | 40 | 6 | 10 | 5,99 | 5 | SE.. 1204.. | E01 |
| 198 | A260.20.R.12/029 | 211 | 63 | 172 | 60 | 6 | 12 | 9,85 | 5 | SE.. 1204.. | E01 |
| 248 | A260.25.R.14/029 | 261 | 63 | 222 | 60 | 6 | 14 | 16,67 | 5 | SE.. 1204.. | E01 |
| 313 | A260.31.R.18/029 | 326 | 80 | 280 | 60 | 6 | 18 | 31,41 | 5 | SE.. 1204.. | E01 |
| 398 | A260.40.R.22/029 | 411 | 80 | 365 | 60 | 6 | 22 | 67,45 | 5 | SE.. 1204.. | E01 |
| 75 | A260.08.R.05/032 | 94 | 52 | 66 | 27 | 9 | 5 | 1,31 | 5 | SD.. 1504.. | E01 |
| 95 | A260.10.R.06/032 | 114 | 52 | 86 | 32 | 9 | 6 | 1,77 | 5 | SD.. 1504.. | E01 |
| 118 | A260.12.R.07/032 | 137 | 63 | 95 | 40 | 9 | 7 | 3,37 | 5 | SD.. 1504.. | E01 |
| 153 | A260.16.R.10/032 | 172 | 63 | 130 | 40 | 9 | 10 | 5,83 | 5 | SD.. 1504.. | E01 |
| 193 | A260.20.R.12/032 | 212 | 63 | 172 | 60 | 9 | 12 | 12,67 | 5 | SD.. 1504.. | E01 |
| 243 | A260.25.R.14/032 | 262 | 63 | 222 | 60 | 9 | 14 | 16,35 | 5 | SD.. 1504.. | E01 |
| 308 | A260.31.R.18/032 | 327 | 80 | 280 | 60 | 9 | 18 | 32,15 | 5 | SD.. 1504.. | E01 |
| 393 | A260.40.R.22/032 | 412 | 80 | 365 | 60 | 9 | 22 | 52,07 | 5 | SD.. 1504.. | E01 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 106607 | 106022 | 106934 | 112188 | 11149571 | 8095010600 | 4425 |


B276

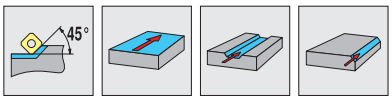

B226


B225

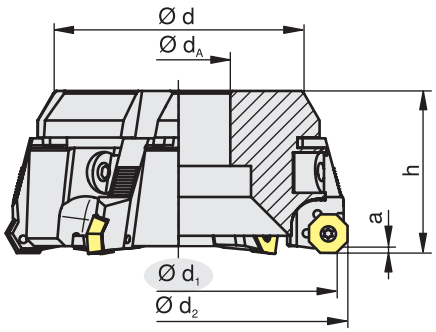

B206-B208

# System MaxiMill 260

A260-057



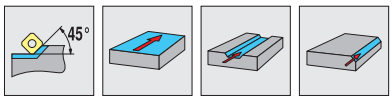


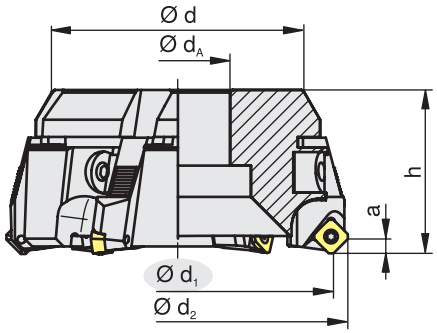

| $d_1$ [mm] | Type, Bezeichnung | $d_2$ [mm] | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | [kg] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 82 | A260.08.R.05/057 | 92,2 | 54 | 66 | 27 | 3,5 | 5 | 1,52 | 5 | OA/XA.. 0605.. | E01 |
| 102 | A260.10.R.06/057 | 112,2 | 54 | 86 | 32 | 3,5 | 6 | 1,90 | 5 | OA/XA.. 0605.. | E01 |
| 125 | A260.12.R.07/057 | 135,2 | 65 | 95 | 40 | 3,5 | 7 | 3,48 | 5 | OA/XA.. 0605.. | E01 |
| 160 | A260.16.R.10/057 | 170,2 | 65 | 130 | 40 | 3,5 | 10 | 5,98 | 5 | OA/XA.. 0605.. | E01 |
| 200 | A260.20.R.12/057 | 210,2 | 65 | 172 | 60 | 3,5 | 12 | 9,75 | 5 | OA/XA.. 0605.. | E01 |
| 250 | A260.25.R.14/057 | 260,2 | 65 | 222 | 60 | 3,5 | 14 | 15,69 | 5 | OA/XA.. 0605.. | E01 |
| 315 | A260.31.R.18/057 | 325,2 | 82 | 280 | 60 | 3,5 | 18 | 31,38 | 5 | OA/XA.. 0605.. | E01 |
| 400 | A260.40.R.22/057 | 410,2 | 82 | 365 | 60 | 3,5 | 22 | 67,33 | 5 | OA/XA.. 0605.. | E01 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 106607 | 11107792 | 106934 | 112188 | 11210490 | 8095010600 | 4425 |

B276 B226 B70-B71 B206-B208





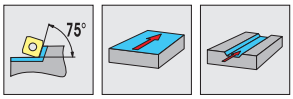

| $d_1$ [mm] | Type, Bezeichnung | $d_2$ [mm] | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | [kg] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 77 | A260.08.R.05/058 | 93 | 56 | 66 | 27 | 8,4 | 5 | 1,39 | 5 | SAKU 1706.. | E01 |
| 97 | A260.10.R.06/058 | 113 | 56 | 86 | 32 | 8,4 | 6 | 2,01 | 5 | SAKU 1706.. | E01 |
| 120 | A260.12.R.07/058 | 136 | 67 | 95 | 40 | 8,4 | 7 | 3,55 | 5 | SAKU 1706.. | E01 |
| 155 | A260.16.R.10/058 | 171 | 67 | 130 | 40 | 8,4 | 10 | 6,09 | 5 | SAKU 1706.. | E01 |
| 195 | A260.20.R.12/058 | 211 | 67 | 172 | 60 | 8,4 | 12 | 9,96 | 5 | SAKU 1706.. | E01 |
| 245 | A260.25.R.14/058 | 261 | 67 | 222 | 60 | 8,4 | 14 | 16,79 | 5 | SAKU 1706.. | E01 |
| 310 | A260.31.R.18/058 | 326 | 84 | 280 | 60 | 8,4 | 18 | 31,53 | 5 | SAKU 1706.. | E01 |
| 395 | A260.40.R.22/058 | 411 | 84 | 365 | 60 | 8,4 | 22 | 67,98 | 5 | SAKU 1706.. | E01 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 106607 | 11107792 | 106934 | 112188 | 11210490 | 8095010600 | 4425 |

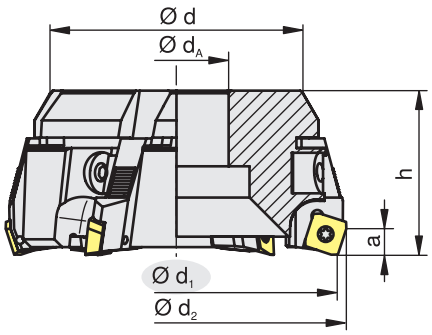
B276 B226 B79 B206-B208

# System MaxiMill 260

A260-018

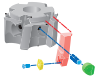


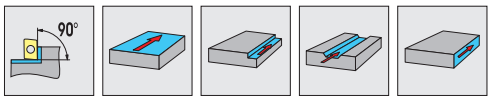


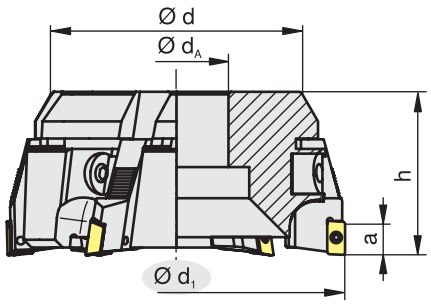

| $d_1$ [mm] | Type, Bezeichnung | $d_2$ [mm] | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | [kg] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 82 | A260.08.R.05/018 | 88 | 52 | 66 | 27 | 9 | 5 | 1,31 | 5 | SP../SPEX.. 1204.. | E01 |
| 102 | A260.10.R.06/018 | 108 | 52 | 86 | 32 | 9 | 6 | 1,92 | 5 | SP../SPEX.. 1204.. | E01 |
| 125 | A260.12.R.07/018 | 131 | 63 | 95 | 40 | 9 | 7 | 3,47 | 5 | SP../SPEX.. 1204.. | E01 |
| 160 | A260.16.R.10/018 | 166 | 63 | 130 | 40 | 9 | 10 | 6,01 | 5 | SP../SPEX.. 1204.. | E01 |
| 200 | A260.20.R.12/018 | 206 | 63 | 172 | 60 | 9 | 12 | 9,87 | 5 | SP../SPEX.. 1204.. | E01 |
| 250 | A260.25.R.14/018 | 256 | 63 | 222 | 60 | 9 | 14 | 16,69 | 5 | SP../SPEX.. 1204.. | E01 |
| 315 | A260.31.R.18/018 | 321 | 80 | 280 | 60 | 9 | 18 | 31,44 | 5 | SP../SPEX.. 1204.. | E01 |
| 400 | A260.40.R.22/018 | 406 | 80 | 365 | 60 | 9 | 22 | 67,49 | 5 | SP../SPEX.. 1204.. | E01 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |
| E01 | 106607 | 106022 | 106934 | 112188 | 11149571 | 8095010600 | 4425 |

| | | | |
|---|---|---|---|
|  |  |  |  |
| B276 | B226 | B224 | B206-B208 |

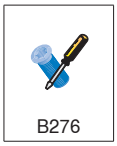


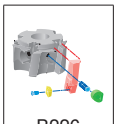



| $d_1$ [mm] | Type, Bezeichnung | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | [kg] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 89 | A260.08.R.05/042 | 52 | 66 | 27 | 8 | 5 | 1,33 | 1,2 | AP.. 1003.. | E01 |
| 109 | A260.10.R.06/042 | 52 | 86 | 32 | 8 | 6 | 1,94 | 1,2 | AP.. 1003.. | E01 |
| 132 | A260.12.R.07/042 | 63 | 95 | 40 | 8 | 7 | 3,49 | 1,2 | AP.. 1003.. | E01 |
| 167 | A260.16.R.10/042 | 63 | 130 | 40 | 8 | 10 | 6,04 | 1,2 | AP.. 1003.. | E01 |
| 207 | A260.20.R.12/042 | 63 | 172 | 60 | 8 | 12 | 9,91 | 1,2 | AP.. 1003.. | E01 |
| 257 | A260.25.R.14/042 | 63 | 222 | 60 | 8 | 14 | 16,74 | 1,2 | AP.. 1003.. | E01 |
| 322 | A260.31.R.18/042 | 80 | 280 | 60 | 8 | 18 | 31,50 | 1,2 | AP.. 1003.. | E01 |
| 407 | A260.40.R.22/042 | 80 | 365 | 60 | 8 | 22 | 67,56 | 1,2 | AP.. 1003.. | E01 |
| 89 | A260.08.R.05/051 | 52 | 66 | 27 | 14 | 5 | 1,32 | 3,2 | LD.. 1504.. | E02 |
| 109 | A260.10.R.06/051 | 52 | 86 | 32 | 14 | 6 | 1,94 | 3,2 | LD.. 1504.. | E02 |
| 132 | A260.12.R.07/051 | 63 | 95 | 40 | 14 | 7 | 3,49 | 3,2 | LD.. 1504.. | E02 |
| 167 | A260.16.R.10/051 | 63 | 130 | 40 | 14 | 10 | 6,04 | 3,2 | LD.. 1504.. | E02 |
| 207 | A260.20.R.12/051 | 63 | 172 | 60 | 14 | 12 | 9,90 | 3,2 | LD.. 1504.. | E02 |
| 257 | A260.25.R.14/051 | 63 | 222 | 60 | 14 | 14 | 16,74 | 3,2 | LD.. 1504.. | E02 |
| 322 | A260.31.R.18/051 | 80 | 280 | 60 | 14 | 18 | 31,50 | 3,2 | LD.. 1504.. | E02 |
| 407 | A260.40.R.22/051 | 80 | 365 | 60 | 14 | 22 | 67,56 | 3,2 | LD.. 1504.. | E02 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 106607 | 24645 | 106934 | 112188 | 11149541 | 8095010200 | 4425 |
| E02 | 106607 | 165795 | 106934 | 112188 | 11149570 | 8095010500 | 4425 |


B276

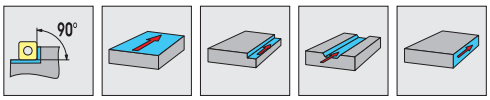

B226


B222-B223

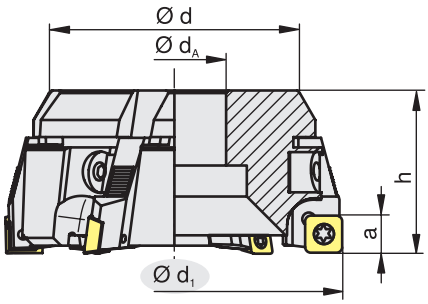

B206-B208

# System MaxiMill 260

A260-039/-055



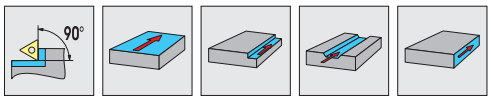


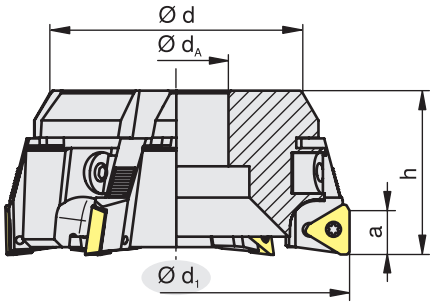

| $d_1$ [mm] | Type, Bezeichnung | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | [kg] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 89 | A260.08.R.05/055 | 52 | 66 | 27 | 7,3 | 5 | 1,34 | 3,2 | SD.. 09T3.. | E01 |
| 109 | A260.10.R.06/055 | 52 | 86 | 32 | 7,3 | 6 | 1,96 | 3,2 | SD.. 09T3.. | E01 |
| 132 | A260.12.R.07/055 | 63 | 95 | 40 | 7,3 | 7 | 3,51 | 3,2 | SD.. 09T3.. | E01 |
| 167 | A260.16.R.10/055 | 63 | 130 | 40 | 7,3 | 10 | 6,07 | 3,2 | SD.. 09T3.. | E01 |
| 207 | A260.20.R.12/055 | 63 | 172 | 60 | 7,3 | 12 | 9,94 | 3,2 | SD.. 09T3.. | E01 |
| 257 | A260.25.R.14/055 | 63 | 222 | 60 | 7,3 | 14 | 16,78 | 3,2 | SD.. 09T3.. | E01 |
| 322 | A260.31.R.18/055 | 80 | 280 | 60 | 7,3 | 18 | 31,55 | 3,2 | SD.. 09T3.. | E01 |
| 407 | A260.40.R.22/055 | 80 | 365 | 60 | 7,3 | 22 | 67,62 | 3,2 | SD.. 09T3.. | E01 |
| 89 | A260.08.R.05/039 | 52 | 66 | 27 | 10,7 | 5 | 1,32 | 5 | SD.. 1205.. | E02 |
| 109 | A260.10.R.06/039 | 52 | 86 | 32 | 10,7 | 6 | 1,94 | 5 | SD.. 1205.. | E02 |
| 132 | A260.12.R.07/039 | 63 | 95 | 40 | 10,7 | 7 | 3,48 | 5 | SD.. 1205.. | E02 |
| 167 | A260.16.R.10/039 | 63 | 130 | 40 | 10,7 | 10 | 6,03 | 5 | SD.. 1205.. | E02 |
| 207 | A260.20.R.12/039 | 63 | 172 | 60 | 10,7 | 12 | 9,89 | 5 | SD.. 1205.. | E02 |
| 257 | A260.25.R.14/039 | 63 | 222 | 60 | 10,7 | 14 | 16,73 | 5 | SD.. 1205.. | E02 |
| 322 | A260.31.R.18/039 | 80 | 280 | 60 | 10,7 | 18 | 31,49 | 5 | SD.. 1205.. | E02 |
| 407 | A260.40.R.22/039 | 80 | 365 | 60 | 10,7 | 22 | 67,54 | 5 | SD.. 1205.. | E02 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 106607 | 54976 | 106934 | 112188 | 11149570 | 8095010500 | 4425 |
| E02 | 106607 | 106022 | 106934 | 112188 | 11149571 | 8095010600 | 4425 |

B276 B226 B142 B206-B208





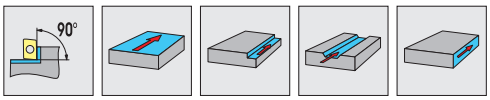

| $d_1$ [mm] | Type, Bezeichnung | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | [kg] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 89 | A260.08.R.05/025 | 52 | 66 | 27 | 18 | 5 | 1,31 | 5 | TP.. 2204.. | E01 |
| 109 | A260.10.R.06/025 | 52 | 86 | 32 | 18 | 6 | 1,93 | 5 | TP.. 2204.. | E01 |
| 132 | A260.12.R.07/025 | 63 | 95 | 40 | 18 | 7 | 3,47 | 5 | TP.. 2204.. | E01 |
| 167 | A260.16.R.10/025 | 63 | 130 | 40 | 18 | 10 | 6,02 | 5 | TP.. 2204.. | E01 |
| 207 | A260.20.R.12/025 | 63 | 172 | 60 | 18 | 12 | 9,88 | 5 | TP.. 2204.. | E01 |
| 257 | A260.25.R.14/025 | 63 | 222 | 60 | 18 | 14 | 16,71 | 5 | TP.. 2204.. | E01 |
| 322 | A260.31.R.18/025 | 80 | 280 | 60 | 18 | 18 | 31,46 | 5 | TP.. 2204.. | E01 |
| 407 | A260.40.R.22/025 | 80 | 365 | 60 | 18 | 22 | 67,51 | 5 | TP.. 2204.. | E01 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 106607 | 106022 | 106934 | 112188 | 11149571 | 8095010600 | 4425 |

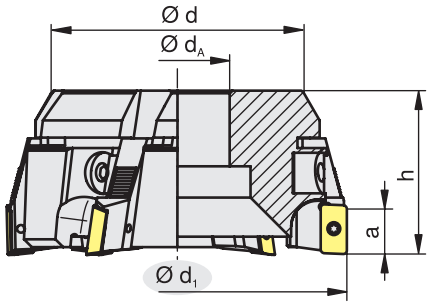
B276 B226 B224 B206-B208

# System MaxiMill 260

A260-026/-040



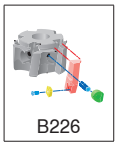



| $d_1$ [mm] | Type, Bezeichnung | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | [kg] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 89 | A260.08.R.05/040 | 52 | 66 | 27 | 14 | 5 | 1,31 | 3,2 | AD.. 1505.. | E01 |
| 109 | A260.10.R.06/040 | 52 | 86 | 32 | 14 | 6 | 1,92 | 3,2 | AD.. 1505.. | E01 |
| 132 | A260.12.R.07/040 | 63 | 95 | 40 | 14 | 7 | 3,47 | 3,2 | AD.. 1505.. | E01 |
| 167 | A260.16.R.10/040 | 63 | 130 | 40 | 14 | 10 | 6,01 | 3,2 | AD.. 1505.. | E01 |
| 207 | A260.20.R.12/040 | 63 | 172 | 60 | 14 | 12 | 9,87 | 3,2 | AD.. 1505.. | E01 |
| 257 | A260.25.R.14/040 | 63 | 222 | 60 | 14 | 14 | 16,70 | 3,2 | AD.. 1505.. | E01 |
| 322 | A260.31.R.18/040 | 80 | 280 | 60 | 14 | 18 | 31,45 | 3,2 | AD.. 1505.. | E01 |
| 407 | A260.40.R.22/040 | 80 | 365 | 60 | 14 | 22 | 67,50 | 3,2 | AD.. 1505.. | E01 |
| 89 | A260.08.R.05/026 | 52 | 66 | 27 | 18 | 5 | 1,31 | 5 | LP.. 2004.. | E02 |
| 109 | A260.10.R.06/026 | 52 | 86 | 32 | 18 | 6 | 1,93 | 5 | LP.. 2004.. | E02 |
| 132 | A260.12.R.07/026 | 63 | 95 | 40 | 18 | 7 | 3,47 | 5 | LP.. 2004.. | E02 |
| 167 | A260.16.R.10/026 | 63 | 130 | 40 | 18 | 10 | 6,02 | 5 | LP.. 2004.. | E02 |
| 207 | A260.20.R.12/026 | 63 | 172 | 60 | 18 | 12 | 9,88 | 5 | LP.. 2004.. | E02 |
| 257 | A260.25.R.14/026 | 63 | 222 | 60 | 18 | 14 | 16,71 | 5 | LP.. 2004.. | E02 |
| 322 | A260.31.R.18/026 | 80 | 280 | 60 | 18 | 18 | 31,46 | 5 | LP.. 2004.. | E02 |
| 407 | A260.40.R.22/026 | 80 | 365 | 60 | 18 | 22 | 67,51 | 5 | LP.. 2004.. | E02 |

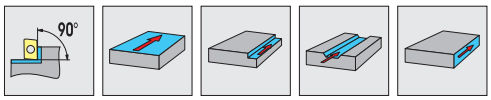
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 106607 | 165795 | 106934 | 112188 | 11149570 | 8095010500 | 4425 |
| E02 | 106607 | 106022 | 106934 | 112188 | 11149571 | 8095010600 | 4425 |


B276

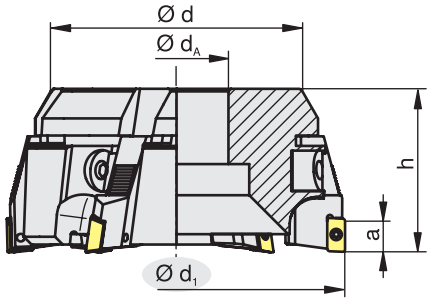

B226


B222+B224


B206-B208





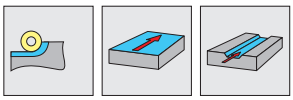

| $d_1$ [mm] | Type, Bezeichnung | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | [kg] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 89 | A260.08.R.05/054 | 52 | 66 | 27 | 10 | 5 | 1,33 | 1,6 | XD.. 11.. | E01 |
| 109 | A260.10.R.06/054 | 52 | 89 | 32 | 10 | 6 | 1,95 | 1,6 | XD.. 11.. | E01 |
| 132 | A260.12.R.07/054 | 63 | 95 | 40 | 10 | 7 | 3,50 | 1,6 | XD.. 11.. | E01 |
| 167 | A260.16.R.10/054 | 63 | 130 | 40 | 10 | 10 | 6,05 | 1,6 | XD.. 11.. | E01 |
| 207 | A260.20.R.12/054 | 63 | 172 | 60 | 10 | 12 | 9,92 | 1,6 | XD.. 11.. | E01 |
| 257 | A260.25.R.14/054 | 63 | 222 | 60 | 10 | 14 | 16,76 | 1,6 | XD.. 11.. | E01 |
| 322 | A260.31.R.18/054 | 80 | 280 | 60 | 10 | 18 | 31,53 | 1,6 | XD.. 11.. | E01 |
| 407 | A260.40.R.22/054 | 80 | 365 | 60 | 10 | 22 | 67,59 | 1,6 | XD.. 11.. | E01 |
| 89 | A260.08.R.05/056 | 52 | 66 | 27 | 14 | 5 | 1,33 | 3,2 | XD.. 15.. | E02 |
| 109 | A260.10.R.06/056 | 52 | 89 | 32 | 14 | 6 | 1,95 | 3,2 | XD.. 15.. | E02 |
| 132 | A260.12.R.07/056 | 63 | 95 | 40 | 14 | 7 | 3,50 | 3,2 | XD.. 15.. | E02 |
| 167 | A260.16.R.10/056 | 63 | 130 | 40 | 14 | 10 | 6,05 | 3,2 | XD.. 15.. | E02 |
| 207 | A260.20.R.12/056 | 63 | 172 | 60 | 14 | 12 | 9,92 | 3,2 | XD.. 15.. | E02 |
| 257 | A260.25.R.14/056 | 63 | 222 | 60 | 14 | 14 | 16,76 | 3,2 | XD.. 15.. | E02 |
| 322 | A260.31.R.18/056 | 80 | 280 | 60 | 14 | 18 | 31,53 | 3,2 | XD.. 15.. | E02 |
| 407 | A260.40.R.22/056 | 80 | 365 | 60 | 14 | 22 | 67,59 | 3,2 | XD.. 15.. | E02 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 106607 | 11114242 | 106934 | 112188 | 11254598 | 8095003900 | 4425 |
| E02 | 106607 | 11450042 | 106934 | 112188 | 11450867 | 8095012000 | 4425 |

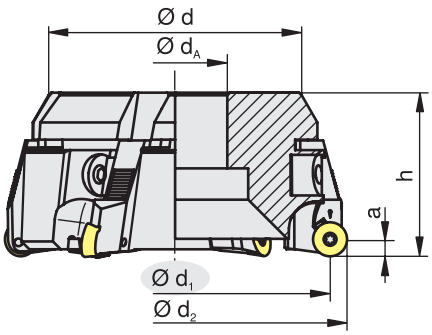
B276 | B226 | B121-B122 | B206-B208

# System MaxiMill 260

A260-052/-053





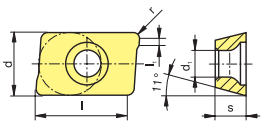


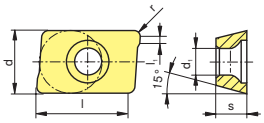

| $d_1$ [mm] | Type, Bezeichnung | $d_2$ [mm] | h [mm] | d [mm] | $d_A$ [mm] | a [mm] | z | [kg] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 80 | A260.08.R.05/052 | 92 | 52 | 66 | 27 | 6 | 5 | 1,33 | 3,2 | RP.. 1204.. | E01 |
| 100 | A260.10.R.06/052 | 112 | 52 | 86 | 32 | 6 | 6 | 1,94 | 3,2 | RP.. 1204.. | E01 |
| 123 | A260.12.R.07/052 | 134 | 63 | 95 | 40 | 6 | 7 | 3,49 | 3,2 | RP.. 1204.. | E01 |
| 158 | A260.16.R.10/052 | 170 | 63 | 130 | 40 | 6 | 10 | 6,04 | 3,2 | RP.. 1204.. | E01 |
| 198 | A260.20.R.12/052 | 210 | 63 | 172 | 60 | 6 | 12 | 9,91 | 3,2 | RP.. 1204.. | E01 |
| 248 | A260.25.R.14/052 | 260 | 63 | 222 | 60 | 6 | 14 | 16,74 | 3,2 | RP.. 1204.. | E01 |
| 313 | A260.31.R.18/052 | 325 | 80 | 280 | 60 | 6 | 18 | 31,51 | 3,2 | RP.. 1204.. | E01 |
| 398 | A260.40.R.22/052 | 410 | 80 | 365 | 60 | 6 | 22 | 67,56 | 3,2 | RP.. 1204.. | E01 |
| 80 | A260.08.R.05/053 | 96 | 52 | 66 | 27 | 8 | 5 | 1,30 | 5 | RP.. 1605.. | E02 |
| 100 | A260.10.R.06/053 | 116 | 52 | 86 | 32 | 8 | 6 | 1,92 | 5 | RP.. 1605.. | E02 |
| 123 | A260.12.R.07/053 | 139 | 63 | 95 | 40 | 8 | 7 | 3,46 | 5 | RP.. 1605.. | E02 |
| 158 | A260.16.R.10/053 | 174 | 63 | 130 | 40 | 8 | 10 | 6,00 | 5 | RP.. 1605.. | E02 |
| 198 | A260.20.R.12/053 | 214 | 63 | 172 | 60 | 8 | 12 | 9,86 | 5 | RP.. 1605.. | E02 |
| 248 | A260.25.R.14/053 | 264 | 63 | 222 | 60 | 8 | 14 | 16,68 | 5 | RP.. 1605.. | E02 |
| 313 | A260.31.R.18/053 | 329 | 80 | 280 | 60 | 8 | 18 | 31,43 | 5 | RP.. 1605.. | E02 |
| 398 | A260.40.R.22/053 | 414 | 80 | 365 | 60 | 8 | 22 | 67,47 | 5 | RP.. 1605.. | E02 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E01 | 106607 | 165795 | 106934 | 112188 | 11149570 | 8095010500 | 4425 |
| E02 | 106607 | 106022 | 106934 | 112188 | 11149571 | 8095010600 | 4425 |

B276 B226 B182-B183 B206-B208

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | d [mm] | l [mm] | s [mm] | $l_1$ [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -27P |  | APHT 100302FR-27P | | | | | | | | | | | | | | | ● | ● | | | | | | | 6,65 | 9,80 | 3,50 | 1,7 | 0,20 | 2,80 |
| | | APHT 100304FR-27P | | | | | | | | | | | | | | | ● | ● | | | | | | | 6,65 | 9,80 | 3,50 | 1,7 | 0,40 | 2,80 |
| | | APHT 100308FR-27P | | | | | | | | | | | | | | | ● | ● | | | | | | | 6,65 | 9,80 | 3,50 | 1,7 | 0,80 | 2,80 |
| -29 |  | ADKT 1505PDSR-29 | | | | | ● | ● | | | ● | | | | | | | | | | | | | | 9,57 | 15,20 | 5,65 | 1,2 | 0,80 | 4,40 |
| | | APKT 1003PDSR-29 | | | | | ● | ● | | | | | | | | | | | | ● | | | | | 6,65 | 9,80 | 3,50 | 1,0 | 0,50 | 2,80 |
| -29M |  | APKT 1003PDSR-29M | | | | | ● | ● | | | | | | | | | | | | | | | | | 6,65 | 9,94 | 3,80 | 1,6 | 0,50 | 2,80 |
| | | APKT 100308SR-29M | | | | | ● | | | | | | | | | | | | | | | | | | 6,65 | 9,80 | 3,80 | 0,8 | 0,80 | 2,80 |
| -31 |  | APKT 1003PDSR-31 | | | | | | | | | | | | ● | ● | | | | | | | | | | 6,65 | 9,80 | 3,50 | 1,0 | 0,50 | 2,80 |
| -33 |  | APHT 100308SR-33 | | | | | | | | | ● | | | | | | | | | | | | | | 6,65 | 9,80 | 3,50 | 1,7 | 0,80 | 2,80 |
| | | APHT 100308SR-33P | | | | | | | | | ● | | | | | | | | | | | | | | 6,65 | 9,80 | 3,50 | 1,7 | 0,80 | 2,80 |
| | | APHT 100312SR-33 | | | | | | | | | ● | | | | | | | | | | | | | | 6,65 | 9,80 | 3,50 | 2,0 | 1,20 | 2,80 |
| | | APHT 100320SR-33 | | | | | | | | | ● | | | | | | | | | | | | | | 6,65 | 9,80 | 3,50 | 1,3 | 2,00 | 2,80 |
| | | APHT 100332SR-33 | | | | | | | | | ● | | | | | | | | | | | | | | 6,65 | 9,80 | 3,50 | | 3,20 | 2,80 |
| APHW |  | APHW 100308SR | | ● | | | | | | | | | | | | | | | | | | | | | 6,65 | 10,10 | 3,50 | 1,4 | 0,80 | 2,80 |





B12-B18

B21

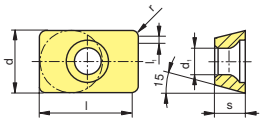
B257-B266

# System MaxiMill 260

LD.. (051)

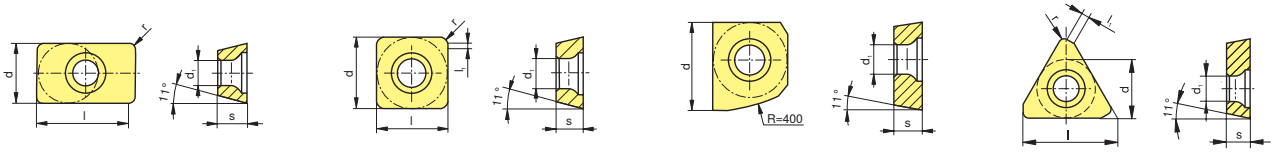
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d | l | s | $l_1$ | r | $d_1$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | | | | | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |
| -27P |  | LDFT 150405FR-27P | | | | | | | | | | | | | | | ● | | | | | | | | | 9,52 | 15,00 | 4,76 | 1,2 | 0,50 | 4,40 |
| | | LDFT 150408FR-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 15,00 | 4,76 | 1,2 | 0,80 | 4,40 |
| -29 |  | LDFT 1504PDSR-29 | | | | | ● | ● | | | | | | | | | | | | | | | | | | 9,52 | 15,00 | 4,76 | 1,2 | 0,80 | 4,40 |
| | | LDMT 1504PDSR-29 | | | | | ● | ● | | | | | | | | | | | | | | | | | | 9,52 | 15,00 | 4,76 | 1,2 | 0,80 | 4,40 |
| -33 |  | LDFT 1504PDSR-33 | | | | | | | | | ● | | | | | | | | | | | | | | | 9,52 | 15,00 | 4,76 | 0,8 | 1,20 | 4,40 |
| | | LDFT 150416SR-33 | | | | | | | | | ● | | | | | | | | | | | | | | | 9,52 | 15,00 | 4,76 | 0,9 | 1,60 | 4,40 |
| | | LDFT 150420SR-33 | | | | | | | | | ● | | | | | | | | | | | | | | | 9,52 | 15,00 | 4,76 | 0,9 | 2,00 | 4,40 |
| | | LDFT 150432SR-33 | | | | | | | | | ● | | | | | | | | | | | | | | | 9,52 | 15,00 | 4,76 | 1,0 | 3,20 | 4,40 |
| | | LDFT 150440SR-33 | | | | | | | | | ● | | | | | | | | | | | | | | | 9,52 | 15,00 | 4,76 | | 4,00 | 4,40 |
| LDFT |  | LDFT 150408ER | | | | | | | | | | | | | | | | | | | ● | | | | | 9,52 | 15,00 | 4,76 | | 0,80 | 4,40 |
| LDFT-P |  | LDFT 150408FR-P | | | | | | | | | | | | | | | | ● | | | | | | | | 9,52 | 15,00 | 4,76 | 1,2 | 0,80 | 4,40 |
| LDFW |  | LDFW 1504PDSR | | | | | ● | | | | | | | ● | | | | | | | | | | | | 9,52 | 15,00 | 4,76 | 1,2 | 0,80 | 4,40 |

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d | l | s | $l_1$ | r | $d_1$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|




B12-B18
B21
B257-B266

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | | ○ | | | ○ | | | | | | | | | |
| | | M | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | | ● | | | | | | | | | |
| | | K | | ○ | ● | ● | ● | | | | | ● | ● | ● | ● | | ○ | ● | ● | ○ | | ● | | | | | | | | |
| | | N | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | | | |
| | | S | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | |
| | | H | | | | | | | | | | | ○ | | | | | | | | | ● | | | | | | | | |
| -29 | | LPHT 200408ER-29 | | | | | | ● | | | | | | | | | | | | | | | | | | 12,70 | 20,00 | 4,76 | 0,80 | 5,50 |
| LPHW | | LPHW 200408ER | | | | | | | | | | | | | | | | ● | | | | | | | | 12,70 | 20,00 | 4,76 | 0,80 | 5,50 |
| | | LPHW 200408SR | | | | | | ● | | | | | | | | | | | | | | | | | | 12,70 | 20,00 | 4,76 | 0,80 | 5,50 |
| -29 | | SPKT 1204EDSR-29 | | | | | ● | | | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 0,25 | 5,50 |
| SPEX | | SPEX 1204EETR | | | | | | | | | | | | | | | | ● | | | | | | | | 12,70 | 12,00 | 4,76 | | 5,50 |
| SP..W | | SPKW 1204EDER | | | | | | | | | | | | ● | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 0,25 | 5,50 |
| | | SPKW 1204EDSR | | | | | | ● | | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 0,25 | 5,50 |
| TPKW | | TPKW 2204PDER | | | | | | | | | | | | | | | | ● | | | | | | | | 12,70 | 20,80 | 4,76 | 1,20 | 5,50 |
| | | TPKW 2204PDSR | | | | | | ● | | | | | | | | | | | | | | | | | | 12,70 | 20,80 | 4,76 | 1,20 | 5,50 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d | l | s | r | $d_1$ |





B12-B18

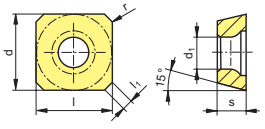
B21

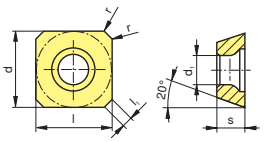
B257-B266

# System MaxiMill 260

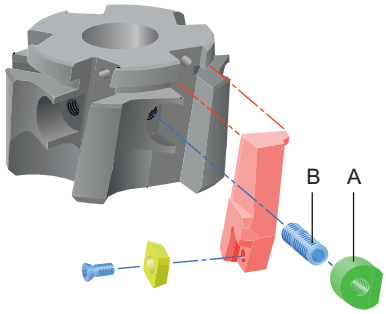
SD.. (029) / SE.. (032)

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d [mm] | l [mm] | s [mm] | $l_1$ [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | ○ | | | ○ | | | | | | | | | | | |
| M | | | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | ● | | | | | | | | | | | |
| K | | | | ○ | ● | ● | ● | | | | | ● | ● | ● | ● | | ○ | ● | ● | ○ | | ● | | | | | | | | | |
| N | | | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | | | | |
| S | | | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| H | | | | | | | | | | | | | ○ | | | | | | | | | ● | | | | | | | | | |
| -27P | | SDHT 1504AEFN-27 | | | | | | ● | | | | | | | | | | ● | | | | | | | | 15,88 | 15,88 | 4,76 | 1,74 | 0,20 | 5,50 |
| | | SEHT 1204AEFN-27 | | | | | | | | | | | | | | | | ● | | | | | | | | 12,70 | 12,70 | 4,76 | 1,60 | 0,20 | 5,50 |
| | | SEHT 1204AEFN-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 12,70 | 12,70 | 4,76 | 1,60 | 0,20 | 5,50 |
| -33 | | SEHT 1204AFSN-33 | | | | | | | | | ● | | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 1,63 | 1,20 | 5,50 |
| SD..T | | SDHT 1504AESN | | | | | | ● | | | | | | | | | | | | | | | | | | 15,88 | 15,88 | 4,76 | 1,74 | 0,20 | 5,50 |
| SD..W | | SDHW 1504AEEN | | | | | | | | | | | | | | | | ● | | | | | | | | 15,88 | 15,88 | 4,76 | 1,74 | 0,20 | 5,50 |
| | | SDHW 1504AESN | | | | | ● | ● | | | | | | | | | | | | | | | | | | 15,88 | 15,88 | 4,76 | 1,74 | 0,20 | 5,50 |
| SE..T | | SEHT 1204AFSN | | | | | | ● | | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 2,40 | 0,20 | 5,50 |
| SE..W | | SEHW 1204AFSN | | | | | | ● | | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 2,30 | 0,30 | 5,50 |
| | | SEKW 1204AFSN | | | | | ● | ● | | | | | | ● | | | | | | | | | | | | 12,70 | 12,70 | 4,76 | 2,20 | 2,40 | 5,50 |



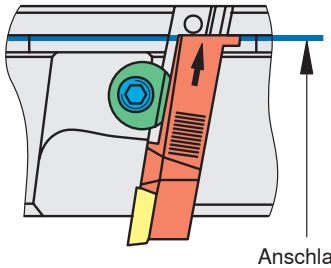

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Aufgrund der Konstruktionsmerkmale der Rundkeilverbindung tritt während des Spannvorganges kein axiales Verschieben der Kassette auf.

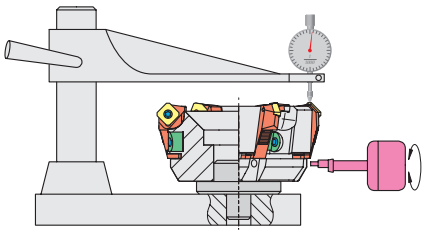
## Richtiger Ein- und Ausbau der Kassetten

1 Reinigung des Fräswerkzeuges.
2 Lösen des Spannkeiles (A) durch Drehen der Spannschraube (B) gegen den Uhrzeigersinn bis die Kassette radial entfernt werden kann. Schraube und Keil verbleiben am Grundkörper.
3 Reinigung sämtlicher Anlageflächen von Kassette und Grundkörper.
4 Kassette einbauen und entlang der Nut in die gewünschte Position bringen (z.B.: Ringnutanschlag).
5 Kassette mittels Spannkeil klemmen.
Schraubenanzugsmoment: 12 Nm.
Richtige Montage des Spannkeiles: Die Spannschraube wird mit dem Linksgewindeteil eine Umdrehung in den Spannkeil geschraubt. Mit Hilfe des Spannschlüssels S4 wird nun der Spannkeil in den Grundkörper eingeschraubt. Spannkeil solange am Verdrehen hindern, bis dieser in den Grundkörper eingreift.




## Planlaufeinstellungen zum Schruppen

Die Kassette einfach beim Einbau an die geschliffene Anschlagfläche der Radialnut drücken. Der Planlauf beträgt 0,03 mm auf die Meisterplatte gemessen.



## Planlaufeinstellung mit Exzenterschlüssel und Messuhr bzw. auf optischem Voreinstellgerät

**Exakte Planlaufeinstellung bis 0,002 mm**
1 Reinigung des Fräswerkzeugs.
2 Aufspannen des Fräskörpers auf ein dazu geeignetes Einstellgerät.
3 Lösen des Spannkeiles, anschlagen der Kassette an die Anschlagfläche und den Spannkeil leicht festziehen.
4 Exzenterschlüssel in die Bohrung stecken und durch Verdrehen die Kassette in die gewünschte Position bringen.
5 Exzenterschlüssel ständig in Kontakt mit der Kassette halten, damit sie die richtige Position behält, und Spannkeil festziehen (Anzugsmoment 12 Nm).

**Sonstige Wendeplatten**


| | | |
|---|---|---|
|  | A.. C.. L.. | B229 |
|  | O.. S.. T.. W.. | B231 |

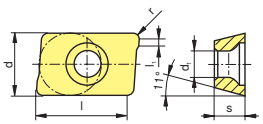
# Andere Systeme

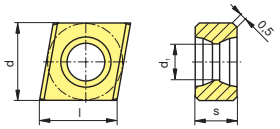
A.. C.. L..

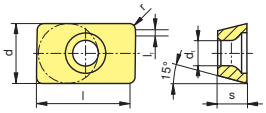
| | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTP1625 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | ○ | | | ○ | | | | | | | | | | | | |
| M | | ● | | | ● | ○ | ○ | ● | ● | ● | | | | | | | | | ● | | | | | | | | | | | | |
| K | | ○ | ● | ● | ○ | ● | | | | | ● | ● | ● | ● | | ○ | ● | ● | ○ | | ● | | | | | | | | | | |
| N | | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | | | | | |
| S | | | | | ○ | | | | | | | | | | | | | | ● | ● | | | | | | | | | | | |
| H | | | | | | | | | | | ○ | | | | | | | | | | ● | | | | | | | | | | |

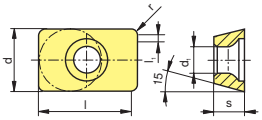
| | | | d [mm] | l [mm] | s [mm] | $l_1$ [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|
| APFT..-29 |  | APFT 1604PDSR-29 | 9,52 | 16,39 | 4,76 | 1,2 | 0,80 | 4,40 |
| APKT..-29 |  | APKT 1604PDSR-29 | 9,52 | 16,39 | 5,26 | 1,2 | 0,80 | 4,40 |
| CNHT |  | CNHT 1005 | 10,00 | 10,15 | 5,40 | | 0,50 | 4,70 |
| | | CNHT 1205 | 10,00 | 12,90 | 5,40 | | 0,50 | 4,70 |
| CNHW |  | CNHW 1005 | 10,00 | 10,15 | 5,40 | | 0,50 | 4,70 |
| | | CNHW 1205 | 10,00 | 12,90 | 5,40 | | 0,50 | 4,70 |
| -29 |  | LDHT 100204ER-29 | 6,35 | 10,00 | 2,58 | | 0,40 | 2,80 |
| LDHT..-29 |  | LDHT 15T3PDSR-29 | 9,52 | 15,00 | 3,97 | 1,2 | 0,80 | 4,40 |
| | | LDHT 15T308FR-29 | 9,52 | 15,00 | 3,97 | | 0,80 | 4,40 |

| | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTP1625 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | d | l | s | $l_1$ | r | $d_1$ |



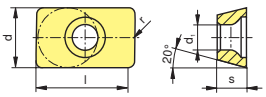



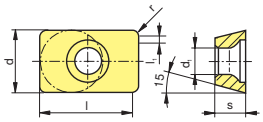




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| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTP1625 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | d [mm] | l [mm] | s [mm] | $l_1$ [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | | | | ○ | | | ○ | | | | | | | | | | |
| M | | ● | | | ● | ○ | ○ | ● | ● | ● | | | | | | | | | | | ● | | | | | | | | | | |
| K | | ○ | ● | ● | ○ | ● | | | | | ● | ● | ● | ● | | | ○ | ● | ● | ○ | | ● | | | | | | | | |
| N | | | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | | | |
| S | | | | | ○ | | | | | | | | | | | | | | | ● | ● | | | | | | | | | |
| H | | | | | | | | | | | | | ○ | | | | | | | | | ● | | | | | | | | |
| LE..-29 | | LEHT 08T104ER-29 | | | | | | | ● | | | | | | | | | | | | | | | | | 5,56 | 8,00 | 1,98 | | 0,40 | 2,50 |
| LDHT | | LDHT 15T308FR | | | | | | | | | | | | | | | | | ● | | | | | | | 9,52 | 15,00 | 3,97 | | 0,80 | 4,40 |
| LDHW | | LDHW 15T308ER | | | | | | | | | | | | | ● | | | | ● | | | | | | | 9,52 | 15,00 | 3,97 | | 0,80 | 4,40 |
| | | LDHW 15T308SR | | ● | | | | ● | ● | | | | | | | | | | | | | | | | | 9,52 | 15,00 | 3,97 | | 0,80 | 4,40 |
| LEHW | | LEHW 08T104ER | | | | | | | ● | | | | | | | | | | | | | | | | | 5,56 | 8,00 | 1,98 | | 0,40 | 2,50 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTP1625 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | d | l | s | $l_1$ | r | $d_1$ |



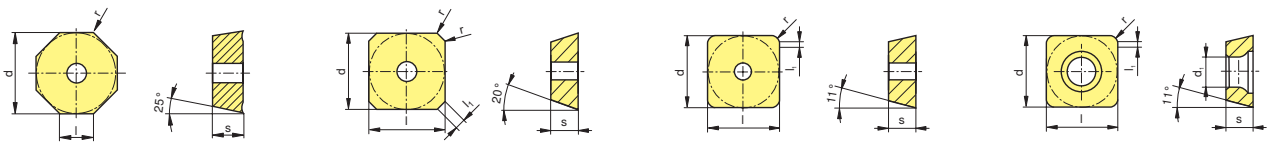




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# Andere Systeme

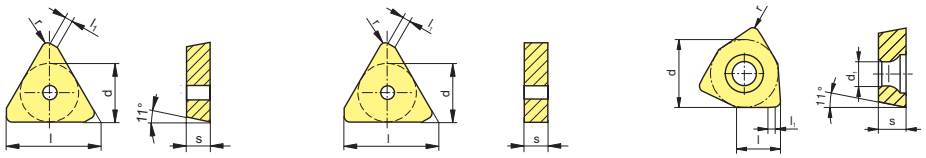
O.. S.. T.. W..

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d [mm] | l [mm] | s [mm] | $l_1$ [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | ○ | | | ○ | | | | | | | | | | | |
| | | M | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | ● | | | | | | | | | | | |
| | | K | | ○ | ● | ● | ● | | | | | ● | ● | ● | ● | | ○ | ● | ● | ○ | | ● | | | | | | | | | |
| | | N | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | | | | |
| | | S | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| | | H | | | | | | | | | | | ○ | | | | | | | | | ● | | | | | | | | | |
| OFHR..-27P |  | OFHR 070410FN-27P | | | | | | | | | | | | | | | | ● | | | | | | | | 18,18 | 7,00 | 4,97 | 1,5 | 1,00 | |
| OFHR..-33 |  | OFHR 070410SN-33 | | | | | | | | | ● | | | | | | | | | | | | | | | 18,18 | 7,00 | 4,97 | 1,5 | 1,00 | |
| SEKR..-29 |  | SEKR 1203AFSN-29 | | | | | | ● | | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 3,18 | | 2,40 | |
| SPKR..-29 |  | SPKR 1203EDSR-29 | | | | | | ● | | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 3,18 | | 0,30 | |
| SEHR..-33 |  | SEHR 1203AFSN-33 | | | | | | | | | ● | | | | | | | | | | | | | | | 12,70 | 12,70 | 3,18 | | 1,20 | |
| SPMT..-33 |  | SPMT 070308SN-33 | | | | | | | | | ● | | | | | | | | | | | | | | | 7,94 | 7,94 | 3,18 | | 0,80 | 2,80 |
| SEKN |  | SEKN 1203AFEN | | | | | | | | | ● | | | | | | | | | | | | | | | 12,70 | 12,70 | 3,18 | | 2,40 | |
| | | SEKN 1203AFSN | | ● | | | ● | ● | | | | | | ● | | | | | | | | | | | | 12,70 | 12,70 | 3,18 | | 2,40 | |
| | | SEKN 1504AFSN | | | | | | ● | | | ● | | | | | | | | | | | | | | | 15,88 | 15,88 | 4,76 | | 2,40 | |
| SPKN |  | SPKN 1203EDER | | | | | | | | | | | | ● | | | | ● | | | | | | | | 12,70 | 12,70 | 3,18 | | | |
| | | SPKN 1203EDSR | | | | | ● | ● | | | | | | | | | | | | | | | | | | 12,70 | 12,70 | 3,18 | | | |
| | | SPKN 1504EDSR | | | | | | ● | | | | | | | | | | | | | | | | | | 15,88 | 15,88 | 4,76 | | | |
| SPKR |  | SPKR 1203EDFR | | | | | | | | | | | | | | | | ● | | | | | | | | 12,70 | 12,70 | 3,18 | | | |
| SPMT |  | SPMT 090308SN | | | | | | ● | | | | | | | | | | | | | | | | | | 9,52 | 9,52 | 3,18 | | 0,80 | 3,40 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | | d | l | s | $l_1$ | r | $d_1$ |



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| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | d [mm] | l [mm] | s [mm] | $l_1$ [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TPKR..-29 |  | TPKR 1603PPSR-29 | | | | | | ● | | | | | | | | | | | | | | | | | 9,52 | 15,50 | 3,18 | 1,2 | | |
| | | TPKR 2204PDSR-29 | | | | | ● | ● | | | | | | | | | | | | | | | | | 12,70 | 20,70 | 4,76 | 1,4 | | |
| TNHF..-31 |  | TNHF 1204ANSN-31Q | | | | | | | | | | | | ● | | | | | | | | | | | 12,70 | 18,90 | 4,76 | 2,6 | | |
| TPKN |  | TPKN 1603PPSR | | | | | | ● | | | | | | | | | | | | | | | | | 9,52 | 15,50 | 3,18 | 1,4 | | |
| | | TPKN 2204PDER | | | | | | | | | | | | ● | | | | | | | | | | | 12,70 | 22,00 | 4,76 | 1,4 | | |
| | | TPKN 2204PDSR | | | | | ● | ● | | | | | | | | | | | | | | | | | 12,70 | 22,00 | 4,76 | 1,4 | | |
| TPKW |  | TPKW 16T3PPSR | | | | | | ● | | | | | | | | | | | | | | | | | 9,52 | 15,50 | 3,97 | 1,4 | 1,10 | 4,40 |
| -29 |  | WPHT 0603PDSR-29 | | ● | | | ● | ● | | | | | | | | | | | | | | | | | 9,52 | 6,00 | 3,18 | 1,2 | 0,80 | 3,40 |
| | | WPMT 0603PDSR-29 | | | | | ● | | | | | | | | | | | | | | | | | | 9,52 | 6,00 | 3,18 | 1,2 | 0,80 | 3,40 |
| -31 |  | WPHT 0603PDSR-31 | | | | | | | | | | | | ● | | | | | | | | | | | 9,52 | 6,00 | 3,18 | 1,2 | 0,80 | 3,40 |
| -33 |  | WPHT 0603PDSR-33 | | | | | | | | | ● | | | | | | | | | | | | | | 9,52 | 6,00 | 3,18 | 1,2 | 0,80 | 3,40 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | | | d | l | s | $l_1$ | r | $d_1$ |




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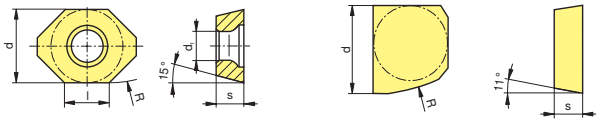
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# Andere Systeme

OD.. SP..

| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | d [mm] | l [mm] | s [mm] | $d_1$ [mm] | R [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | | | | | | ○ | | | ○ | | | | | | | | |
| M | | | | ● | | | ○ | ○ | ● | ● | ● | | | | | | | | | ● | | | | | | | | |
| K | | | | ○ | ● | ● | ● | | | | | ● | ● | ● | ● | | ○ | ● | ● | ○ | | ● | | | | | | |
| N | | | | | | | | | | | | | | | | ● | ● | ● | ● | | | | | | | | | |
| S | | | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | |
| H | | | | | | | | | | | | | ○ | | | | | | | | | ● | | | | | | |
| ODGX | | ODGX 1204ADSN | | | | | ● | | | | | | | | | | | | | | | | 12,70 | 7,17 | 4,76 | 5,50 | 400 |
| SPEX-1 | | SPEX 1203EDER-1 | | | | | | | | | | | | ● | | | | | | | | | 12,70 | 12,00 | 3,18 | | 500 |
| | | | CTEP210 | TCM10 | CTCP220 | CTPP225 | CTCP230 | CTPP235 | CTPM225 | CTCM235 | CTPM240 | CTN3105 | CTL3215 | CTCK215 | CTPK220 | CTD4205 | AMZ | H216T | CTW4615 | CTC5235 | CTC5240 | CTP6215 | d | l | s | $d_1$ | R |




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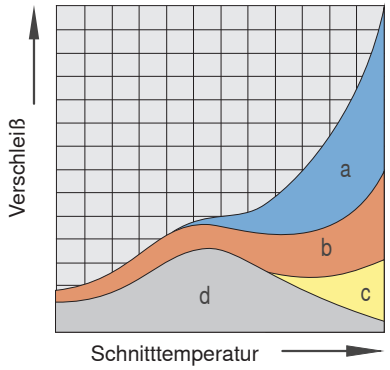
# Notizen



# Verschleißursachen

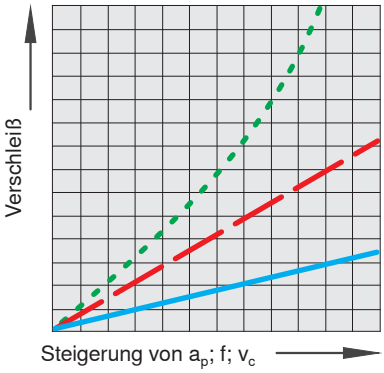
Verschleiß wird durch gleichzeitige mechanische und thermische Beanspruchung des Schneidkeils hervorgerufen. Die wichtigsten Ursachen sind

- Mechanischer Abrieb
- Abscheren von Pressschweißstellen
- Oxidationsvorgänge
- Diffusion




Mit zunehmender Schnitttemperatur überwiegen die thermisch bedingten Verschleißursachen Oxidation und Diffusion.

a = Diffusion
b = mechanischer Abrieb
c = Verzunderung/Oxidation
d = Aufbauschneidenbildung




Die Schnitttemperatur bzw. der Verschleiß hängen entscheidend von den Zerspanungsbedingungen ab.

Schnittgeschwindigkeit
Vorschub
Schnitttiefe



## Wirkungsweise einer Hartstoffschicht

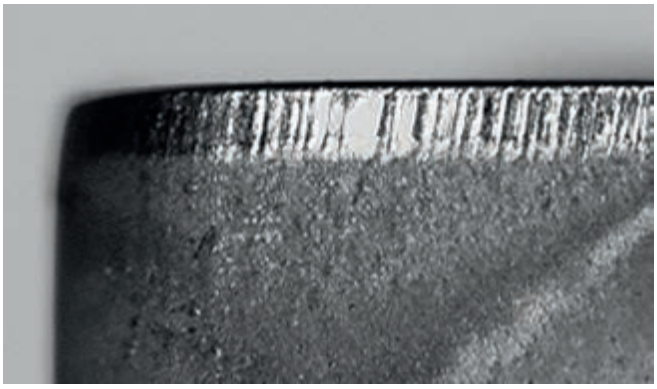
Durch die Aufbringung von Hartstoffschichten auf Hartmetallwerkzeugen wird die Verschleißbildung reduziert.

Die Vorteile einer Hartstoffschicht sind eine Verminderung von

- Reibung
- Erwärmung
- Oxidation
- Diffusion

# Verschleißarten



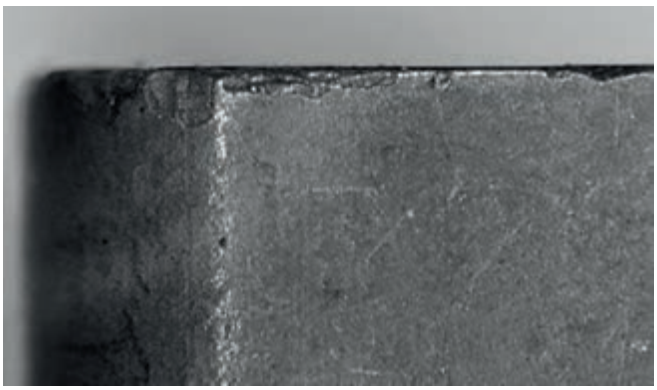


Abrieb an der Freifläche, normaler Verschleiß nach einer gewissen Eingriffszeit.

## Freiflächenverschleiß

**Ursache**
- Zu hohe Schnittgeschwindigkeit
- Hartmetallsorte mit zu geringer Verschleißfestigkeit
- Nicht angepasster Vorschub

**Abhilfe**
- Schnittgeschwindigkeit senken
- Verschleißfestere Hartmetallsorte wählen
- Vorschub in richtiges Verhältnis zu Schnittgeschwindigkeit und Schnitttiefe setzen (Vorschub erhöhen)

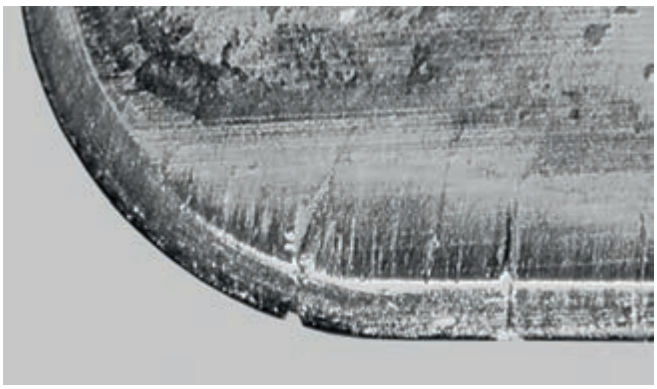


Durch überhöhte mechanische Beanspruchung der Schneidkante können HM-Partikel ausbrechen.

## Ausbröckelung

**Ursache**
- Zu verschleißfeste Sorte
- Vibrationen
- Zu hoher Vorschub bzw. Schnitttiefe
- Unterbrochener Schnitt
- Spanschlag

**Abhilfe**
- Zähere Sorte verwenden
- Negative Schneidengeometrie mit Spanleitstufe verwenden
- Stabilität verbessern (Werkzeug, Werkstück)

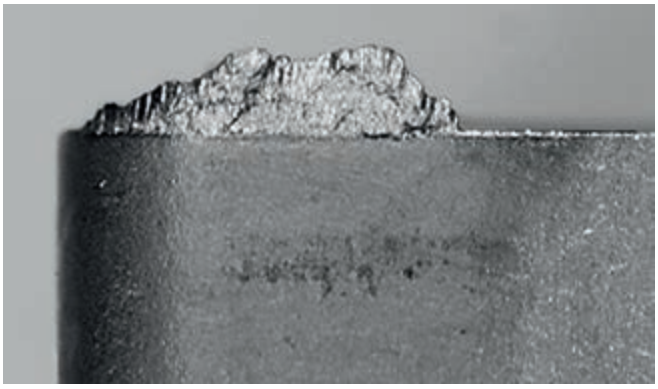


Kleine Risse 90° zur Schneidkante.

## Kammriss

**Ursache**
- wechselnde Schneidentemperatur, thermischer Schock
- falsche Kühlung
- hochfeste Werkstoffe
- zu hohe Schnittgeschwindigkeit

**Abhilfe**
- Kammrissbeständige Sorte verwenden
- Kühlschmierstoff reichlich einsetzen bzw. trocken fräsen
- Schnittgeschwindigkeit senken
- Vorschub senken

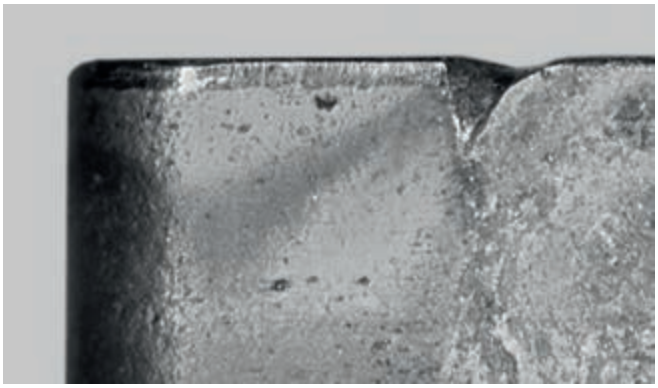


Materialaufschweißung an der Schneidkante treten auf, wenn der Span infolge zu niedriger Schnitttemperatur nicht richtig abfließt.

## Aufbauschneidenbildung

**Ursache**
- Zu geringe Schnittgeschwindigkeit
- Zu kleiner Spanwinkel
- Falscher Schneidstoff
- Fehlende Kühlung / Schmierung

**Abhilfe**
- Schnittgeschwindigkeit erhöhen
- Spanwinkel erhöhen
- TiN-Beschichtung einsetzen
- Fettere Emulsionen verwenden

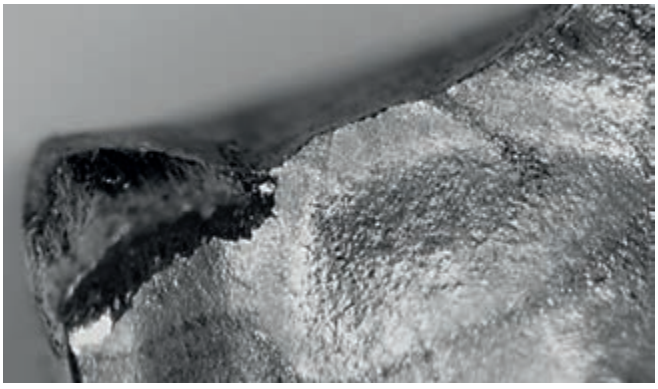


Einschnürung am Spantiefenmaximum.

## Kerbverschleiß

**Ursache**
- Kaltverfestigende Werkstoffe (z.B. Superlegierungen)
- Guss- und Schmiedehaut
- Gratbildung

**Abhilfe**
- Schnittgeschwindigkeit herabsetzen
- Gleichlauffräsen
- Arbeitsposition des Fräsers ändern
- Anstellwinkel reduzieren



Bei einer Überlastung der Schneidplatte kann es zum Plattenbruch kommen.

## Plattenbruch

**Ursache**
- Überlastung des Hartmetallsorte
- Stabilitätsmängel
- Keilwinkel zu klein
- übermäßiger Kerbverschleiß
- stoßartige Schnittkräfteänderungen

**Abhilfe**
- zäheren Schneidstoff verwenden
- Kantenschutzfase verwenden
- Schneidkantenverrundung vergrößern
- stabilere Geometrie einsetzen
- Vorschub reduzieren

# Verschleißarten

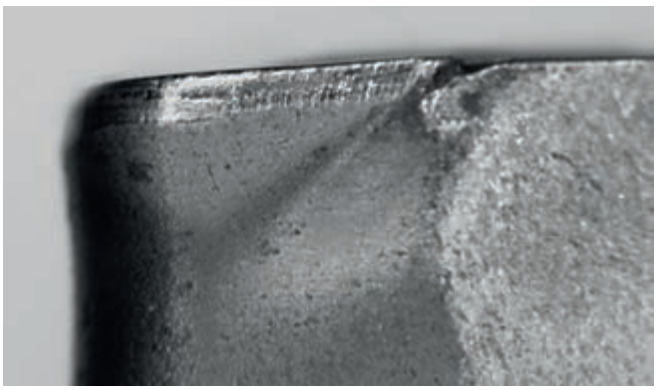


Der ablaufende heiße Span verursacht eine Auskolkung der Schneidplatte an der Spanfläche.

## Kolkverschleiß

**Ursache**
- Zu hohe Schnittgeschwindigkeit, Vorschub oder beides
- Zu geringer Spanwinkel
- Sorte mit zu geringer Verschleißfestigkeit
- Falsch zugeführte Kühlung

**Abhilfe**
- Schnittgeschwindigkeit und/oder Vorschub herabsetzen
- Kühlmittelmenge und/oder Druck erhöhen, Zuführung kontrollieren
- Kolkfestere Sorte verwenden



Hohe Zerspanungstemperatur bei gleichzeitiger mechanischer Beanspruchung kann zu plastischer Verformung führen.

## Plastische Verformung

**Ursache**
- Zu hohe Arbeitstemperatur, daher Erweichung des Grundmaterials
- Beschädigung der Beschichtung
- Zu enge Spanleitstufe

**Abhilfe**
- Schnittgeschwindigkeit senken
- Verschleißfestere Hartmetallsorte wählen
- Kühlung vorsehen

# Maßnahmen bei Fräsproblemen

| Problemstellung | | | | | | | | | | | | Abhilfe, Maßnahmen |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Freiflächenverschleiß | Schneidkantenausbröckelung | Kammrisse | Aufbauschneiden | Kerbverschleiß | Plattenbruch Schneidkantenausbrüche | Kolkverschleiß | Schneidkantendeformation | Schlechte Werkstückoberfläche | Rattern, Vibrationen | Spanbildung, Spänestau | Kantenausbrüche am Werkstück | Maschinenüberlastung | |
| ⇩ | ⇧ | ⇩ | ⇧ | ⇩ | | ⇩ | ⇩ | ⇧ | ≈ | | | ⇩ | Schnittgeschwindigkeit |
| ⇧ | ⇩ | ⇩ | ⇧ | ⇩ | ⇩ | ⇩ | ⇩ | ⇩ | ≈ | | ⇩ | ⇩ | Vorschub je Zahn |
| | ⇧ | ≈ | | ⇧ | ⇧ | | | | | | | | Schneidstoff-Zähigkeit |
| ⇧ | | | | ≈ | | ⇧ | ⇧ | | | | | | Schneidstoff-Verschleißfestigkeit |
| | | ⇩ | ≈ | ⇩ | | | | | ⇩ | ≈ | ⇩ | ⇩ | Einstellwinkel |
| | ≈ | | ⇧ | ≈ | ≈ | | ⇧ | | ⇧ | ≈ | | | Spanwinkel |
| | ⇧ | | ≈ | ⇧ | | | | ⇩ | | | ⇩ | | Schneidkantenfase |
| | ⇧ | | | | ⇧ | | | ⇧ | ⇧ | | | | Stabilität |
| | | | | | | | | ⇧ | ⇧ | | ≈ | | Plan-, Rundlaufgenauigkeit |
| ≈ | ≈ | | | | ≈ | | ≈ | ≈ | | | ≈ | | Schneidkantenverschleiß |
| | | | | | ≈ | | | ≈ | ≈ | | ≈ | | Positionierung des Fräswerkzeuges |
| | | ⇧ | ⇧ | ⇧ | | ⇧ | ≈ | ≈ | | ≈ | | | Kühlung, Späneabfuhr |
| | | | | | ≈ | | | ≈ | ≈ | | | | WSP, Kassettenklemmung |
| | ≈ | | | ≈ | ≈ | | | ≈ | ≈ | | ⇩ | ⇩ | Schnitttiefe |

⇧ erhöhen, vergrößern ⇩ vermindern, verkleinern ≈ kontrollieren, optimieren

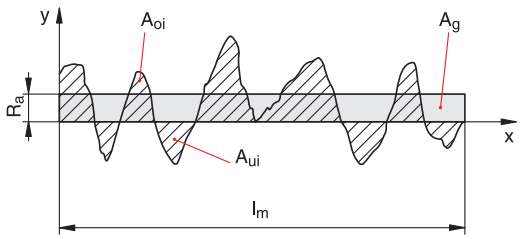
# Oberflächengüte

## Definition von Messgrößen für die Oberflächengüte

**Oberflächen** gefräster Werkstücke werden beeinflusst durch
- die Werkzeugmaschine (Zustand, Stabilität)
- das Fräswerkzeug (Schneidgeometrie, Konstruktion)
- die Einsatzdaten ($v_f$, $v_c$, $f_z$)
- das Werkstück (Geometrie, Werkstoff, Aufspannung)

Mittelrauwert $R_a$ ist der arithmetische Mittelwert des Rauheitsprofils innerhalb der Messstrecke $l_m$

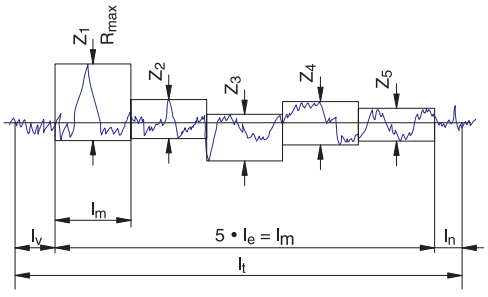
$$R_a = \frac{1}{l_m} \int_{x=0}^{x=l_m} |y| \, dx$$




Mittenrauwert $R_a$

Gemittelte Rautiefe $R_z$, ist das arithmetische Mittel aus den Einzelrautiefen $Z_i$ fünf aufeinanderfolgender Einzelmessstrecken.

$$R_z = \frac{\sum_{i=1}^{5} Z_i}{5}$$




Bilden der gemittelten Rautiefe $R_z$ aus dem Rauheitsprofil

Maximale Rautiefe $R_{max}$ ist die größte Einzelrautiefe $Z_i$ auf der Messstrecke $l_m$.

Zur Erzeugung von exzellenten Oberflächen werden Wendeplatten mit Planfasen eingesetzt.

## Maximale Profiltiefe $P_t$

| f [mm] | $l_1$ [mm] | | | | |
|---|---|---|---|---|---|
| | 1,0 | 1,4 | 1,6 | 2,5 | 9,0 |
| **0,3** | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 |
| **0,45** | 0,8 | 0,8 | 0,8 | 0,8 | 0,8 |
| **0,6** | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 |
| **0,75** | 1,3 | 1,3 | 1,3 | 1,3 | 1,3 |
| **1,0** | 1,7 | 1,7 | 1,7 | 1,7 | 1,7 |
| **1,5** | 20,0 | 5,0 | 2,7 | 2,7 | 2,7 |
| **2,0** | 30,0 | 19,0 | 13,0 | 4,0 | 4,0 |
| **2,5** | 37,0 | 27,0 | 23,0 | 6,4 | 4,4 |
| **3,0** | 40,0 | 33,0 | 29,0 | 12,0 | 5,0 |

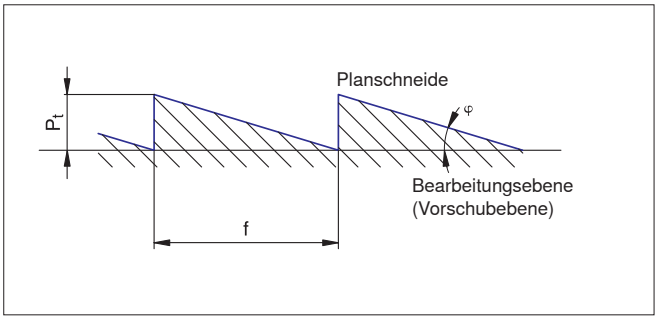
| f [mm] | $l_1$ [mm] | | | | |
|---|---|---|---|---|---|
| | 1,0 | 1,4 | 1,6 | 2,5 | 9,0 |
| **3,5** | 44,0 | 37,0 | 34,0 | 19,0 | 6,0 |
| **5,0** | 49,0 | 44,0 | 42,0 | 32,0 | 8,7 |
| **7,5** | 53,0 | 50,0 | 48,0 | 42,0 | 13,0 |
| **12,0** | 56,0 | 54,0 | 53,0 | 50,0 | 23,0 |
| **20,0** | 58,0 | 57,0 | 56,0 | 55,0 | 41,0 |
| **30,0** | 59,0 | 58,0 | 58,0 | 57,0 | 50,0 |
| **40,0** | 59,0 | 59,0 | 59,0 | 58,0 | 54,0 |
| **50,0** | 59,0 | 59,0 | 59,0 | 59,0 | 57,0 |
| **60,0** | 60,0 | 60,0 | 60,0 | 59,0 | 60,0 |

## Berechnungsbeispiel:

Fräsertyp: A260.12.R.07/018
Wendeplatte: SPKW 1504AE
Fräserdurchmesser $d_1$: 125 mm
Zähnezahl z: 7
Vorschub pro Zahn $f_z$: 0,125 mm
Vorschub pro Umdrehung f: 0,875 mm
Planfasenlänge $l_1$: ≈ 2,5 mm

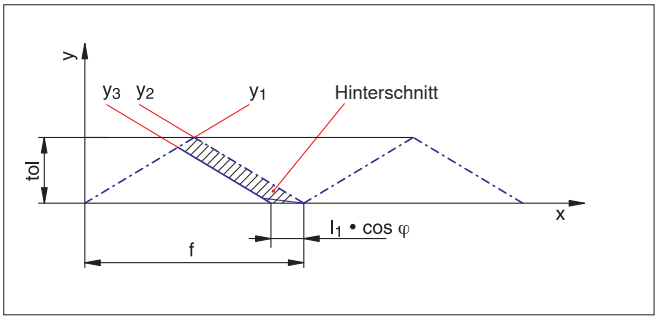
**$f = f_z \cdot z = 0{,}125 \cdot 7 = 0{,}875$ mm**

Maximale Profiltiefe Pt ≈ 1,6 $\mu$m




$f < l_1$:
Profil wird von der axial tiefsten Schneide erzeugt

$$P_t = f \cdot \tan(\varphi)$$




$f > l_1$:
mehrere Planschneiden erzeugen die Oberfläche

$$P_t = tol + l_1\left(\frac{\sin\varphi}{z} - \frac{\cos\varphi \cdot tol}{f}\right)$$

Z.B.:
tol ≈ Fräserplanlauf (0,04 mm) + Aufnahmenschlag (0,02 mm) = 0,06 mm (φ ≈ 6‘ oder 0,1°)

z.B.:
$P_t$ [$\mu$m] tol* = 0,04 mm + 0,02 mm
Werkzeugaufspannung
Werkzeug

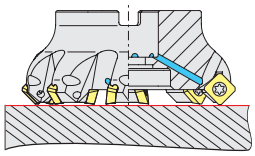
*) In den meisten Fällen werden sich wesentlich genauere Planlaufwerte ergeben. Mit 0,06 mm wird eine ungünstige Toleranzausschöpfung angenommen. Bei exakt eingestellten Messerköpfen wird die werkzeugseitig einzurechnende Planlaufungenauigkeit vernachlässigbar klein.

# Schlichten

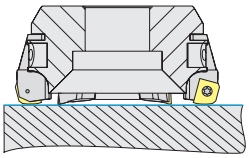
Masterfinish MaxiMill 273/270/260



## Konventionell

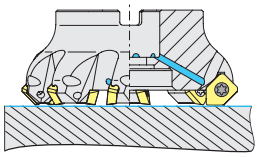


1) Schruppen



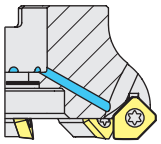
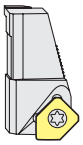
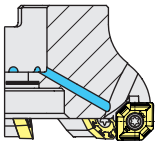
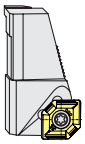
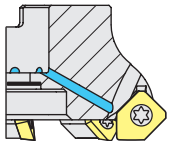
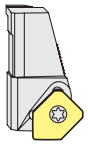
2) Schlichten

## CERATIZIT Masterfinish

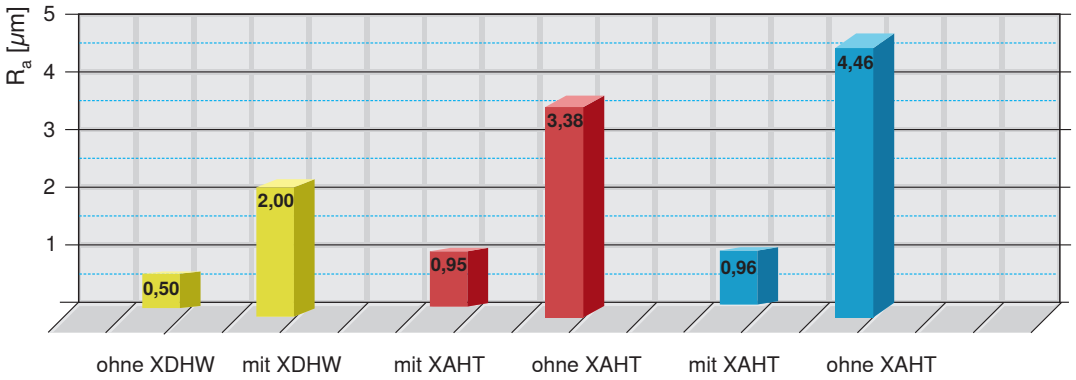


**Schruppen und Schlichten** in einem Arbeitsgang

## Einsatz in folgenden CERATIZIT-Frässystemen

| 270-09 | 260-41 | 273-06 | 260-57 | 270-12 | 260-31 |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| Ø 32 160 | Ø 80 - 400 | Ø 40 - 315 | Ø 80 - 398 | Ø 32 - 160 | Ø 80 - 400 |
| **B57** | **B211** | **B66** | **B213** | **B58** | **B211** |

## Beispiele für wirtschaftlichen Einsatz (Schlichtfräsen mit XDHW)




A273.125.R.17-06
OAKU 060508SR-M50 CTP2235
XAHT 060508SR-F50 CTP2235
1.4571 (nichtrostender, vergüteter Stahl)
X6CrNiMoTi 17 12 2

$a_e$ = 80 mm
$a_p$ = 0,5 mm
$f_z$ = 0,25 mm
$v_c$ = 200 m/min

A270.125.R.12-12
SDHT 1204AESN-R SR226+
XDHW 1204AESN SR226+
1.7225 (unlegierter, vergüteter Stahl)
42CrMo4

$a_e$ = 96 mm
$a_p$ = 0,5 mm
$f_z$ = 0,25 mm
$v_c$ = 350 m/min

A270.125.R.12-12
SDHT 1204AESN-R SR226+
XDHW 1204AESN SR226+
1.7225 (unlegierter, vergüteter Stahl)
42CrMo4

$a_e$ = 96 mm
$a_p$ = 0,5 mm
$f_z$ = 0,25 mm
$v_c$ = 400 m/min

**Schnittgeschwindigkeit [m/min]**

$$v_c = \frac{d_1 \bullet \pi \bullet n}{1000}$$

**Spindeldrehzahl [min$^{-1}$]**

$$n = \frac{v_c \bullet 1000}{d_1 \bullet \pi}$$

**Vorschub pro Zahn [mm]**

$$f_z = \frac{v_f}{n \bullet z}$$

**Vorschubgeschwindigkeit [mm/min]**

$$v_f = f_z \bullet n \bullet z$$

**Vorschub pro Umdrehung [mm]**

$$f = f_z \bullet z$$

**Zeitspanvolumen [cm$^3$/min]**

$$Q = \frac{a_p \bullet a_e \bullet v_f}{1000}$$

**mittlere Spandicke [mm]**

$$h_m = \frac{\sin(\kappa) \bullet 180 \bullet a_e \bullet f_z}{\pi \bullet d_1 \bullet \arcsin\left(\frac{a_e}{d_1}\right)}$$

**spezifische Schnittkraft:**

$$k_c = h_m^{-mc} \bullet k_{c1.1}$$

**Antriebsleistung (Leistungsbedarf) [kW]**

$$P_{mot} = \frac{a_p \bullet a_e \bullet v_f}{60 \bullet 10^6 \bullet \eta_m} \bullet k_c$$

## Kurzzeichen & Dimensionen

$a_e$ Eingriffsbreite [mm]

$a_p$ Schnitttiefe [mm]

$d_1$ Fräserdurchmesser [mm]

$D_w$ Werkstückdurchmesser [mm]

$f_z$ Vorschub pro Zahn [mm]

$h_m$ mittlere Spandicke [mm]

$k$ Anzahl der Zahnreihen

$k_c$ spezifische Schnittkraft [N/mm$^2$]

$k_{c1.1}$ spezifische Schnittkraft für 1 mm$^2$ Spanquerschnitt [N/mm$^2$]

$l_1$ Länge der Planfase [mm]

$m_c$ Anstiegswert spezifische Schnittkraft

$n$ Spindeldrehzahl [min$^{-1}$]

$P_{mot}$ Antriebsleistung (Leistungsbedarf) [kW]

$Q$ Zeitspanvolumen [cm$^3$]

$v_c$ Schnittgeschwindigkeit [m/min]

$v_f$ Vorschubgeschwindigkeit [mm/min]

$z$ effektive Zähnezahl [Stk.]

$\eta_m$ mechanischer Wirkungsgrad [%]

$\gamma_0$ Orthogonaler Spanwinkel (effektiver Spanwinkel) [°]

$\gamma_f$ Seitenspanwinkel (Radialspanwinkel) [°]

$\gamma_p$ Rückspanwinkel (Axialspanwinkel) [°]

$\gamma_w$ Spanwinkel der Wendeplatte [°]

$\kappa$ Einstellwinkel (Anstellwinkel) [°]

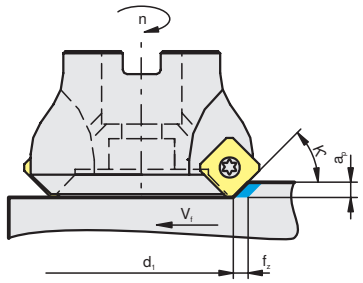
$\lambda_s$ Neigungswinkel [°]

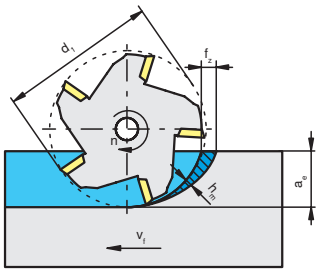
$\alpha$ Freiwinkel [°]

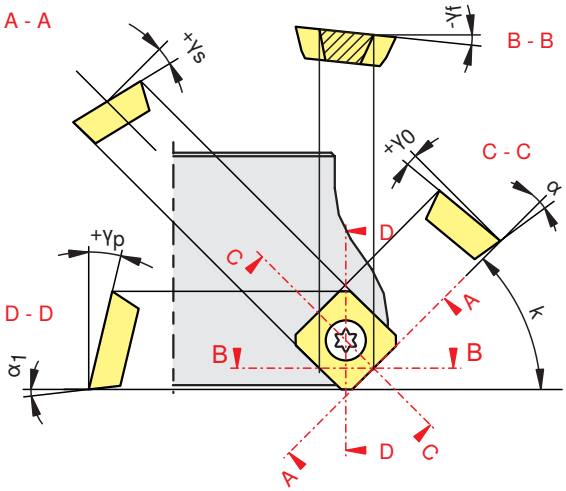
$\alpha_1$ Freiwinkel der Planfase [°]

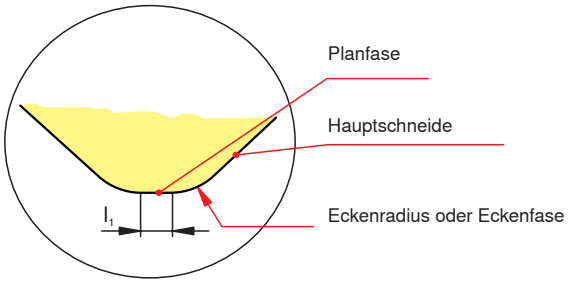
# Formeln

Formeln / Beispiele




## Berechnungsbeispiel:

Fräsertyp: ... A270.40.R.04
Wendeplatte: ... SDMT 1204AESN-29R
Fräserdurchmesser: ... 40 mm
effektive Zähnezahl: ... 4
Schnitttiefe $a_p$: ... 2 mm
Eingriffsbreite $a_e$: ... 28 mm
Anstellwinkel κ: ... 45°
Axialspanwinkel $\gamma_p$: ... +13°
Radialspanwinkel $\gamma_f$: ... -6°

gewählte Schnittgeschwindigkeit
$v_c$: ... 225 m/min

**Drehzahl:**

$$n = \frac{225 \cdot 1000}{40 \cdot \pi} = 1790\ \text{min}^{-1}$$

gewählter Vorschub / Zahn ... 0,15 mm

**Vorschubgeschwindigkeit:**

$$v_f = 0{,}15 \cdot 1790 \cdot 4 = 1074\ \text{mm/min}$$

**Zeitspanvolumen:**

$$Q = \frac{2 \cdot 28 \cdot 1074}{1000} = 60\ \text{cm}^3/\text{min}$$

**orthogonale Spanwinkel:**

$$\gamma_0 = \arctan \begin{bmatrix} \cos(90°) \cdot \tan(13°) \\ + \sin(90°) \cdot \tan(-6°) \end{bmatrix} = -6°$$

**mittlere Spandicke [mm]**

$$h_m = \frac{\sin(90°) \cdot 180 \cdot 28 \cdot 0{,}15}{\pi \cdot 40 \cdot \arcsin\left(\frac{28}{40}\right)} = 0{,}13\ \text{mm}$$

**spezifische Schnittkraft:**

$$k_c = 0{,}13^{-0{,}24} \cdot 1700 = 2774\ \text{N/mm}^2$$

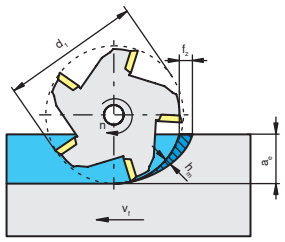
**Antriebsleistung (Leistungsbedarf) [kW]**

$$P_{mot} = \frac{2 \cdot 28 \cdot 1074}{60 \cdot 10^6 \cdot 0{,}80} \cdot 1700 = 2{,}13\ \text{kW}$$

Nachstehende Formeln sind Näherungsgleichungen deren Genauigkeit vom Verhältnis $a_e/d_1$ ($a_p/d_1$) abhängt!

$$f_z \approx h_m \bullet \sqrt{\frac{d_1}{a_e}}$$

$$h_m \approx f_z \bullet \sqrt{\frac{a_e}{d_1}}$$



## Umfangfräser und Scheibenfräser

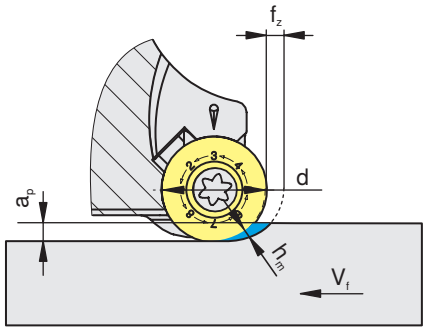
## Berechnungsbeispiel:

Fräsertyp: ... C244.25.R.02
Fräserdurchmesser $d_1$: ... 25 mm
Eingriffsbreite $a_e$: ... 10 mm
gewünschte mittlere Spandicke $h_m$ ... 0,15 mm

$$f_z \approx 0{,}15 \bullet \sqrt{\frac{25}{10}} \approx 0{,}24 \text{ mm}$$

$$f_z \approx h_m \bullet \sqrt{\frac{d}{a_p}}$$

$$h_m \approx f_z \bullet \sqrt{\frac{a_p}{d}}$$




## Rundplattenfräser

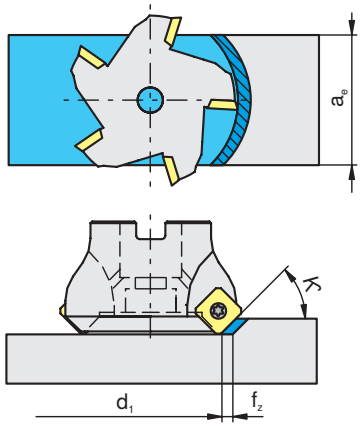
## Berechnungsbeispiel:

Fräsertyp: ... A251.63.R.06
Wendeplatte: ... RPHX 1204M0SN CTP1235
Plattendurchmesser d: ... 12 mm
Schnitttiefe $a_p$: ... 2 mm
gewünschte mittlere Spandicke $h_m$ ... 0,15 mm

$$f_z \approx 0{,}15 \bullet \sqrt{\frac{12}{2}} \approx 0{,}37 \text{ mm}$$

$$h_m = \frac{\sin(\kappa) \bullet 180 \bullet a_e \bullet f_z}{\pi \bullet d_1 \bullet \arcsin\left(\frac{a_e}{d_1}\right)}$$

$$f_z = \frac{h_m \bullet \pi \bullet d_1 \cdot \arcsin\left(\frac{a_e}{d_1}\right)}{\sin(\kappa) \bullet 180 \bullet a_e}$$




## Planfräser - mittig über Werkstück

## Berechnungsbeispiel:

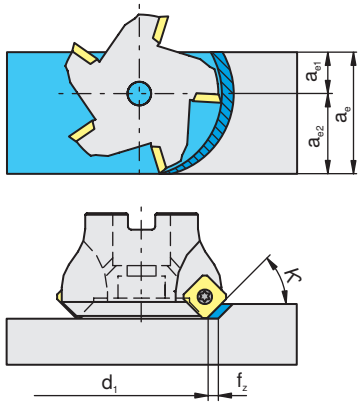
Fräsertyp: ... A260.08.R.05/018
Fräserdurchmesser $d_1$: ... 82 mm
Anstellwinkel κ: ... 75°
Eingriffsbreite $a_e$: ... 70 mm
gewünschte mittlere Spandicke $h_m$ ... 0,2 mm

$$f_z = \frac{0{,}2 \bullet \pi \bullet 82 \bullet \arcsin\left(\frac{70}{82}\right)}{\sin(75) \cdot 180 \cdot 70}$$

$f_z = 0{,}25$ mm

$$h_m = \frac{\sin(\kappa) \bullet 360 \bullet a_e \bullet f_z}{\pi \bullet d_1 \bullet \left[\arcsin\left(\frac{2 \bullet a_{e1}}{d_1}\right) + \arcsin\left(\frac{2 \bullet a_{e2}}{d_1}\right)\right]}$$

$$f_z = \frac{h_m \bullet \pi \bullet d_1 \bullet \left[\arcsin\left(\frac{2 \bullet a_{e1}}{d_1}\right) + \arcsin\left(\frac{2 \bullet a_{e2}}{d_1}\right)\right]}{\sin(\kappa) \bullet 360 \bullet a_e}$$




## Planfräser - außermittig über Werkstück

## Berechnungsbeispiel:

Fräsertyp: ... A270.10.R.06/018
Fräserdurchmesser $d_1$: ... 102 mm
Anstellwinkel κ: ... 75°
Eingriffsbreite $a_e$: ... 70 mm
Eingriffsbreite $a_{e1}$: ... 20 mm
Eingriffsbreite $a_{e2}$: ... 50 mm
gewünschte mittlere Spandicke $h_m$ ... 0,2 mm

$$f_z = \frac{0{,}2 \bullet \pi \bullet 102 \bullet \left[\arcsin\left(\frac{2 \bullet 20}{102}\right) + \arcsin\left(\frac{2 \bullet 50}{102}\right)\right]}{\sin(75°) \cdot 360 \cdot 70}$$

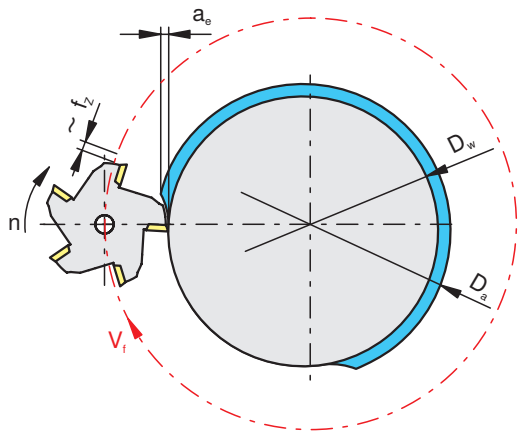
$f_z = 0{,}27$ mm

**Vorschubgeschwindigkeit (Bahngeschwindigkeit Fräsermittelpunkt)**

$$v_f = (1+\frac{d_1}{D_w})\, n \cdot f_z \cdot z$$

**Tatsächliche Schnitttiefe**

$$a_e = \frac{D_a^2 - D_w^2}{4 \bullet (D_w + d_1)}$$




## zirkulares Außenfräsen

## Berechnungsbeispiel:

Fräsertyp: ... C210.25.R.04
Fräserdurchmesser $d_1$: ... 25 mm
Zähnezahl z: ... 4
Werkstückdurchmesser $D_w$: ... 45 mm
Ausgangsdurchmesser $D_a$: ... 50 mm
Spindeldrehzahl n: ... 2500 1/min
Vorschub / Zahn $f_z$: ... 0,05 mm

**Vorschubgeschwindigkeit:**

$$v_f = (1+\frac{25}{45})\, 2500 \bullet 0{,}05 \bullet 4 = 777 \text{ mm/min}$$

**Radiale Schnitttiefe:**
(50 - 45)/2 = 2,5 mm

**Effektive radiale Schnitttiefe:**

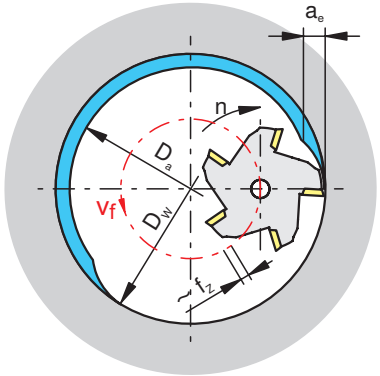
$$a_e = \frac{50^2 - 45^2}{4 \bullet (45 + 25)} = 1{,}7 \text{ mm}$$

**Vorschubgeschwindigkeit (Bahngeschwindigkeit Fräsermittelpunkt)**

$$v_f = (1-\frac{d_1}{D_w})\, n \cdot f_z \cdot z$$

**Tatsächliche Schnitttiefe**

$$a_e = \frac{D_w^2 - D_a^2}{4 \bullet (D_w + d_1)}$$




## zirkulares Innenfräsen

## Berechnungsbeispiel:

Fräsertyp: ... C210.25.R.04
Fräserdurchmesser $d_1$: ... 25 mm
Zähnezahl z: ... 4
Werkstückdurchmesser $D_w$: ... 50 mm
Ausgangsdurchmesser $D_a$: ... 45 mm
Spindeldrehzahl n: ... 2500 1/min
Vorschub / Zahn $f_z$: ... 0,05 mm

**Vorschubgeschwindigkeit:**

$$v_f = (1-\frac{25}{50})\, 2500 \bullet 0{,}05 \bullet 4 = 250 \text{ mm/min}$$

**Radiale Schnitttiefe:**
(50 - 45)/2 = 2,5 mm

**Effektive radiale Schnitttiefe:**

$$a_e = \frac{50^2 - 45^2}{4 \bullet (50 - 25)} = 4{,}75 \text{ mm}$$

# Härtewerte

Vergleichstabelle

| Zugfestigkeit N/mm² | Vickers HV | Brinell HB | Rockwell HRC | Shore C |
|---|---|---|---|---|
| 575 | 180 | 171 | | |
| 595 | 185 | 176 | | |
| 610 | 190 | 181 | | |
| 625 | 195 | 185 | | |
| 640 | 200 | 190 | 12 | |
| 660 | 205 | 195 | 13 | |
| 675 | 210 | 199 | 14 | |
| 690 | 215 | 204 | 15 | |
| 705 | 220 | 209 | 15 | 28 |
| 720 | 225 | 214 | 16 | |
| 740 | 230 | 219 | 17 | 29 |
| 755 | 235 | 223 | 18 | |
| 770 | 240 | 228 | 20.3 | 30 |
| 785 | 245 | 233 | 21.3 | |
| 800 | 250 | 238 | 22.2 | 31 |
| 820 | 255 | 242 | 23.1 | 32 |
| 835 | 260 | 247 | 24 | 33 |
| 850 | 265 | 252 | 24.8 | |
| 865 | 270 | 257 | 25.6 | |
| 880 | 275 | 261 | 26.4 | 34 |
| 900 | 280 | 268 | 27.1 | |
| 915 | 285 | 271 | 27.8 | 35 |
| 930 | 290 | 276 | 28.5 | |
| 950 | 295 | 280 | 29.2 | 36 |
| 965 | 300 | 285 | 29.8 | 37 |
| 995 | 310 | 295 | 31 | 38 |
| 1030 | 320 | 304 | 32.2 | 39 |
| 1060 | 330 | 314 | 33.3 | 40 |
| 1095 | 340 | 323 | 34.3 | 41 |
| 1125 | 350 | 333 | 35.5 | 42 |
| 1155 | 360 | 342 | 36.6 | 43 |
| 1190 | 370 | 352 | 37.7 | 44 |
| 1220 | 380 | 361 | 38.8 | 45 |
| 1255 | 390 | 371 | 39.8 | 46 |
| 1290 | 400 | 380 | 40.8 | 47 |
| 1320 | 410 | 390 | 41.8 | 48 |
| 1350 | 420 | 399 | 42.7 | |
| 1385 | 430 | 409 | 43.6 | 49 |
| 1420 | 440 | 418 | 44.5 | |
| 1455 | 450 | 428 | 45.3 | 51 |
| 1485 | 460 | 437 | 46.1 | 52 |
| 1520 | 470 | 447 | 46.9 | 53 |
| 1555 | 480 | 465 | 47.7 | 54 |
| 1595 | 490 | 466 | 48.4 | |
| 1630 | 500 | 475 | 49.1 | 57 |
| 1665 | 510 | 485 | 49.8 | 58 |
| 1700 | 520 | 494 | 50.5 | 59 |
| 1740 | 530 | 504 | 51.1 | 60 |
| 1775 | 540 | 513 | 51.7 | 61 |
| 1810 | 550 | 523 | 52.3 | 62 |

| Zugfestigkeit N/mm² | Vickers HV | Brinell HB | Rockwell HRC | Shore C |
|---|---|---|---|---|
| 1845 | 560 | 532 | 53 | 63 |
| 1880 | 570 | 542 | 53.6 | 64 |
| 1920 | 580 | 551 | 54.1 | 65 |
| 1955 | 590 | 561 | 54.7 | 66 |
| 1995 | 600 | 570 | 55.2 | 67 |
| 2030 | 610 | 580 | 55.7 | 68 |
| 2070 | 620 | 589 | 56.3 | 69 |
| 2105 | 630 | 599 | 56.8 | 70 |
| 2145 | 640 | 608 | 57.3 | 71 |
| 2180 | 650 | 618 | 57.8 | 72 |
| 2210 | 660 | 628 | 58.3 | 73 |
| 2240 | 665 | 633 | 58.8 | 74 |
| 2280 | 670 | 638 | 59.3 | |
| 2310 | 675 | 643 | 59.8 | 75 |
| 2350 | 680 | 648 | 60.3 | 76 |
| 2380 | 685 | 653 | 61.1 | 77 |
| 2410 | 690 | 658 | 61.3 | 78 |
| 2450 | 695 | 663 | 61.7 | 79 |
| 2480 | 710 | 668 | 62.2 | 80 |
| 2520 | 720 | 678 | 62.6 | 81 |
| 2550 | 730 | 683 | 63.1 | 82 |
| 2590 | 740 | 693 | 63.5 | |
| 2630 | 750 | 703 | 63.9 | 83 |
| 2660 | 760 | 708 | 64.3 | 84 |
| 2700 | 770 | 718 | 64.7 | 85 |
| 2730 | 780 | 723 | 65.1 | |
| 2770 | 790 | 733 | 65.5 | 86 |
| 2800 | 800 | 738 | 65.9 | |
| 2840 | 810 | 748 | 66.3 | 87 |
| 2870 | 820 | 753 | 66.7 | 88 |
| 2910 | 830 | 763 | 67 | |
| 2940 | 840 | 768 | 67.4 | 89 |
| 2980 | 850 | | 67.7 | |
| 3010 | 860 | | 68.1 | 90 |
| 3050 | 870 | | 68.4 | |
| 3080 | 880 | | 68.7 | 91 |
| 3120 | 890 | | 69 | |
| 3150 | 900 | | 69.3 | 92 |
| 3190 | 910 | | 69.6 | |
| 3220 | 920 | | 69.9 | |
| 3260 | 930 | | 70.1 | |

Umrechnungswerte sind angenähert nach DIN EN ISO18265 (02-2004)

# Werkstoffvergleichstabelle

| DIN | Wks Nr. | BS | AFNOR | SS | AISI | Japan JIS | Kc1.1 N/mm² | mc | VDI 3323 Gruppe |
|---|---|---|---|---|---|---|---|---|---|
| 10 SPb 20 | 1.0722 | | 10 PbF 2 | | 11 L 08 | | 1350 | 0,20 | **1** |
| 100 Cr 6 | 1.2067 | BL 3 | Y 100 C 6 | | L 3 | SUJ2 | 1775 | 0,24 | **6/9** |
| 105 WCr 6 | 1.2419 | | 105 WC 13 | | | SKS31 | 1775 | 0,24 | **6/9** |
| 12 CrMo 9 10 | 1.7380 | 1501-622 Gr. 31; 45 | 10 CD 9.10 | 2218 | A 182-F22 | SPVA,SCMV4 | 1675 | 0,24 | **6/7** |
| 12 Ni 19 | 1.5680 | | Z 18 N 5 | | 2515 | | 2450 | 0,23 | **10/11** |
| 13 CrMo 4 4 | 1.7335 | 1501-620 Gr. 27 | 15 CD 3.5 | 2216 | A 182-F11; F12 | SPVAF12 | 1675 | 0,24 | **6/7** |
| 14 MoV 6 3 | 1.7715 | 1503-660-440 | | | | | 1675 | 0,24 | **6/7** |
| 14 Ni 6 | 1.5622 | | 16 N 6 | | A 350-LF 5 | | 1675 | 0,24 | **6/7** |
| 14 NiCr 10 | 1.5732 | | 14 NC 11 | | 3415 | SNC415(H) | 1675 | 0,24 | **6/7** |
| 14 NiCr 14 | 1.5752 | 655 M 13 | 12 NC 15 | | 3310; 9314 | SNC815(H) | 1675 | 0,24 | **6/7** |
| 14 NiCrMo 13 4 | 1.6657 | | | | | | 1675 | 0,24 | **6/7** |
| 15 Cr 3 | 1.7015 | 523 M 15 | 12 C 3 | | 5015 | | 1675 | 0,24 | **6/7** |
| 15 CrMo 5 | 1.7262 | | 12 CD 4 | | | SCM415(H) | 1675 | 0,24 | **6/7** |
| 15 Mo 3 | 1.5415 | 1501-240 | 15 D 3 | 2912 | A 204 Gr. A | | 1675 | 0,24 | **6/7** |
| 16 MnCr 5 | 1.7131 | 527 M 17 | 16 MC 5 | 2511 | 5115 | SCR415 | 1675 | 0,24 | **6/7** |
| 16 Mo 5 | 1.5423 | 1503-245-420 | | | 4520 | SB450M | 1675 | 0,24 | **6/7** |
| 17 CrNiMo 6 | 1.6587 | 820 A 16 | 18 NCD 6 | | | | 1675 | 0,24 | **6/7** |
| 21 NiCrMo 2 | 1.6523 | 805 M 20 | 20 NCD 2 | 2506 | 8620 | SNCM220(H) | 1725 | 0,24 | **6/8** |
| 25 CrMo 4 | 1.7218 | 1717 CDS 110 | 25 CD 4 S | 2225 | 4130 | SM420;SCM430 | 1725 | 0,24 | **6/8** |
| 28 Mn 6 | 1.1170 | 150 M 28 | 20 M 5 | | 1330 | | 1500 | 0,22 | **2** |
| 32 CrMo 12 | 1.7361 | 722 M 24 | 30 CD 12 | 2240 | | | 1775 | 0,24 | **6/9** |
| 34 Cr 4 | 1.7033 | 530 A 32 | 32 C 4 | | 5132 | SCR430(H) | 1725 | 0,24 | **6/8** |
| 34 CrMo 4 | 1.7220 | 708 A 37 | 35 CD 4 | 2234 | 4135; 4137 | SCM432;SCCRM3 | 1775 | 0,24 | **6/9** |
| 34 CrNiMo 6 | 1.6582 | 817 M 40 | 35 NCD 6 | 2541 | 4340 | SNCM447 | 1775 | 0,24 | **6/9** |
| 35 S 20 | 1.0726 | 212 M 36 | 35 MF 4 | 1957 | 1140 | | 1525 | 0,22 | **2/3** |
| 36 CrNiMo 4 | 1.6511 | 816 M 40 | 40 NCD 3 | | 9840 | SNCM447 | 1775 | 0,24 | **6/9** |
| 36 Mn 5 | 1.1167 | | | | | | 1525 | 0,22 | **2/3** |
| 36 NiCr 6 | 1.5710 | 640 A 35 | 35 NC 6 | | 3135 | SNC236 | 1800 | 0,24 | **3/9** |
| 38 MnSi 4 | 1.5120 | | | | | | 1800 | 0,24 | **3/9** |
| 39 CrMoV 13 9 | 1.8523 | 897 M 39 | | | | | 1775 | 0,24 | **6/9** |
| 40 Mn 4 | 1.1157 | 150 M 36 | 35 M 5 | | 1039 | | 1525 | 0,22 | **2/3** |
| 40 NiCrMo 2 2 | 1.6546 | 311-Type 7 | 40 NCD 2 | | 8740 | SNCM240 | 1775 | 0,24 | **6/9** |
| 41 Cr 4 | 1.7035 | 530 M 40 | 42 C 4 | | 5140 | SCR440(H) | 1775 | 0,24 | **6/9** |
| 41 CrAlMo 7 | 1.8509 | 905 M 39 | 40 CAD 6.12 | 2940 | A 355 Cl. A | SACM645 | 1775 | 0,24 | **6/9** |
| 41 CrMo 4 | 1.7223 | 708 M 40 | 42 CD 4 TS | 2244 | 4142; 4140 | SCM440 | 1775 | 0,24 | **6/9** |
| 42 Cr 4 | 1.7045 | 530 A 40 | 42 C 4 TS | 2245 | 5140 | SCr440 | 1775 | 0,24 | **6/9** |
| 42 CrMo 4 | 1.7225 | 708 M 40 | 42 CD 4 | 2244 | 4142; 4140 | SCM440(H) | 1775 | 0,24 | **6/9** |
| 45 WCrV 7 | 1.2542 | BS 1 | | 2710 | S 1 | | 1775 | 0,24 | **6/9** |
| 50 CrV 4 | 1.8159 | 735 A 50 | 50 CV 4 | 2230 | 6150 | SUP10 | 1775 | 0,24 | **6/9** |
| 55 Cr 3 | 1.7176 | 527 A 60 | 55 C 3 | 2253 | 5155 | SUP9(A) | 1775 | 0,24 | **6/9** |
| 55 NiCrMoV 6 | 1.2713 | | 55 NCDV 7 | | L 6 | SKH1;SKT4 | 1775 | 0,24 | **6/9** |
| 55 Si 7 | 1.0904 | 250 A 53 | 55 S 7 | 2085; 2090 | 9255 | | 1775 | 0,24 | **6/9** |
| 58 CrV 4 | 1.8161 | | | | | | 1775 | 0,24 | **6/9** |
| 60 SiCr 7 | 1.0961 | | 60 SC 7 | | 9262 | | 1775 | 0,24 | **6/9** |
| 9 SMn 28 | 1.0715 | 230 M 07 | S 250 | 1912 | 1213 | SUM22 | 1350 | 0,21 | **1** |
| 9 SMn 36 | 1.0736 | 240 M 07 | S 300 | | 1215 | | 1350 | 0,21 | **1** |
| 9 SMnPb 28 | 1.0718 | | S 250 Pb | 1914 | 12 L 13 | SUM22L | 1350 | 0,21 | **1** |
| 9 SMnPb 36 | 1.0737 | | S 300 Pb | 1926 | 12 L 14 | | 1350 | 0,21 | **1** |
| Al99 | 3.0205 | | | | | | 700 | 0,25 | **21** |
| AlCuMg1 | 3.1325 | | | | | | 700 | 0,25 | **22** |
| AlMg1 | 3.3315 | | | | | | 700 | 0,25 | **21** |

# Werkstoffvergleichstabelle



| DIN | Wks Nr. | BS | AFNOR | SS | AISI | Japan JIS | Kc1.1 N/mm² | mc | VDI 3323 Gruppe |
|---|---|---|---|---|---|---|---|---|---|
| AlMgSi1 | 3.2315 | | | | | | 700 | 0,25 | **22** |
| C 105 W1 | 1.1545 | | Y1 105 | 1880 | W 110 | SK3 | 1675 | 0,24 | **3** |
| C 125 W | 1.1663 | | Y2 120 | | W 112 | | 1675 | 0,24 | **3** |
| C 15 | 1.0401 | 080 M 15 | AF3 7 C 12; XC 18 | 1350 | 1015 | S15C | 1350 | 0,21 | **1** |
| C 22 | 1.0402 | 050 A 20 | AF 42 C 20 | 1450 | 1020 | S20C, S22C | 1350 | 0,21 | **1** |
| C 35 | 1.0501 | 060 A 35 | AF 55 C 35 | 1550 | 1035 | S35C | 1525 | 0,22 | **2/3** |
| C 45 | 1.0503 | 080 M 46 | AF 65 C 45 | 1650 | 1045 | S45C | 1525 | 0,22 | **2/3** |
| C 55 | 1.0535 | 070 M 55 | | 1655 | 1055 | S55C | 1675 | 0,24 | **3** |
| C 60 | 1.0601 | 080 A 62 | CC 55 | | 1060 | S60C | 1675 | 0,24 | **3** |
| Cf 35 | 1.1183 | | | | | S35C | 1525 | 0,22 | **2/3** |
| Cf 53 | 1.1213 | | | | | S50C | 1525 | 0,22 | **2/3** |
| Ck 101 | 1.1274 | 060 A 96 | | 1870 | 1095 | | 1675 | 0,24 | **3** |
| Ck 15 | 1.1141 | 080 M 15 | XC 15; XC 18 | 1370 | 1015 | S15C | 1350 | 0,21 | **1** |
| Ck 55 | 1.1203 | 070 M 55 | XC 55 | | 1055 | S55C | 1675 | 0,24 | **3** |
| Ck 60 | 1.1221 | 080 A 62 | XC 60 | 1665; 1678 | 1060 | S58C | 1675 | 0,24 | **3** |
| CoCr20W15Ni | 2.4764 | | | | | | 3300 | 0,24 | **35** |
| CuZn15 | 2.0240 | | | | | | 700 | 0,27 | **27** |
| CuZn36Pb3 | 2.0375 | | | | | | 700 | 0,27 | **26** |
| E-Cu57 | 2.0060 | | | | | | 700 | 0,27 | **28** |
| G-AlSi10Mg | 3.2381 | | | | | | 700 | 0,25 | **24** |
| G-AlSi12 | 3.2581 | | | | | | 700 | 0,25 | **23** |
| G-AlSi9Cu3 | 3.2163 | | | | | | 700 | 0,25 | **23** |
| G-CuSn5ZnPb | 2.1096 | | | | | | 700 | 0,27 | **26** |
| G-CuZn40Fe | 2.0590 | | | | | | 700 | 0,27 | **28** |
| G-X 120 Mn 12 | 1.3401 | Z 120 M 12 | Z 120 M 12 | | A 128 (A) | | 3300 | 0,24 | **35** |
| G-X 20 Cr 14 | 1.4027 | 420 C 29 | Z 20 C 13 M | | | SCS2 | 1875 | 0,21 | **12/13** |
| G-X 40 NiCrSi 38 18 | 1.4865 | 330 C 40 | | | | | 2600 | 0,24 | **31** |
| G-X 45 CrSi 9 3 | 1.4718 | 401 S 45 | Z 45 CS 9 | | HNV 3 | | 2450 | .23 | **10/11** |
| G-X 5 CrNi 13 4 | 1.4313 | 425 C 11 | Z 5 CN 13.4 | 2385 | CA 6-NM | | 1875 | 0,21 | **12/13** |
| G-X 5 CrNiMoNb 18 10 | 1.4581 | 318 C 17 | Z 4 CNDNb 18.12 M | | | | 2150 | .0,2 | **14** |
| G-X 6 CrNi 18 9 | 1.4308 | 304 C 15 | Z 6 CN 18.10 M | 2333 | CF-8 | | 2150 | .0,2 | **14** |
| G-X 6 CrNiMo 18 10 | 1.4408 | | | | | | 2150 | .0,2 | **14** |
| G-X 7 Cr 13 | 1.4001 | | | | | | 1875 | 0,21 | **12/13** |
| GG-10 | .6010 | | Ft 10 D | 01 10-00 | A48-20 B | FC100 | 1150 | .0,2 | **15** |
| GG-15 | .6015 | Grade 150 | Ft 15 D | 01 15-00 | A48-25 B | FC150 | 1150 | .0,2 | **15** |
| GG-20 | .6020 | Grade 220 | Ft 20 D | 01 20-00 | A48-30 B | FC200 | 1150 | .0,2 | **15** |
| GG-25 | .6025 | Grade 260 | Ft 25 D | 01 25-00 | A48-40 B | FC250 | 1250 | 0,24 | **15/16** |
| GG-30 | .6030 | Grade 300 | Ft 30 D | 01 30-00 | A48-45 B | FC300 | 1350 | 0,28 | **16** |
| GG-35 | .6035 | Grade 350 | Ft 35 D | 01 35-00 | A48-50 B | FC350 | 1350 | 0,28 | **16** |
| GG-40 | .6040 | Grade 400 | Ft 40 D | 01 40-00 | A48-60 B | FC400 | 1350 | 0,28 | **16** |
| GGG-35.3 | .7033 | | | | | FCD350 | 1225 | 0,25 | **17** |
| GGG-40 | .7040 | SNG 420/12 | FGS 400-12 | 0717-02 | 60-40-18 | FCD400 | 1225 | 0,25 | **17** |
| GGG-40.3 | .7043 | SNG 370/17 | FGS 370-17 | 0717-15 | | FCD400 | 1225 | 0,25 | **17** |
| GGG-50 | .7050 | SNG 500/7 | FGS 500-7 | 0727-02 | 65-45-12 | FCD500 | 1350 | 0,28 | **18** |
| GGG-60 | .7060 | SNG 600/3 | FGS 600-3 | 0732-03 | 80-55-06 | FCD600 | 1350 | 0,28 | **18** |
| GGG-70 | .7070 | SNG 700/2 | FGS 700-2 | 0737-01 | 100-70-03 | FCD700 | 1350 | 0,28 | **18** |
| GGG-NiCr 20 2 | .7660 | S-NiCr 20 2 | S-NC 20 2 | | A 439 Type D-2 | | 1350 | 0,28 | **18** |
| GGG-NiMn 13 7 | .7652 | S-NiMn 13 7 | S-NM 13 7 | | | | 1350 | 0,28 | **18** |
| GS-Ck 45 | 1.1191 | 080 M 46 | XC 42 | 1672 | 1045 | S45C | 1525 | 0,22 | **2/3** |
| GTS-35-10 | .8135 | B 340/12 | MN 35-10 | | | | 1225 | 0,25 | **19** |
| GTS-45-06 | .8145 | P 440/7 | | | | | 1420 | 0,3 | **20** |

| DIN | Wks Nr. | BS | AFNOR | SS | AISI | Japan JIS | Kc1.1 N/mm² | mc | VDI 3323 Gruppe |
|---|---|---|---|---|---|---|---|---|---|
| GTS-55-04 | .8155 | P 510/4 | MP 50-5 | | | | 1420 | 0,3 | **20** |
| GTS-65-02 | .8165 | P 570/3 | MP 60-3 | | | | 1420 | 0,3 | **20** |
| GTS-70-02 | .8170 | P 690/2 | IP 70-2 | | | | 1420 | 0,3 | **20** |
| NiCr20TiAl | 2.4631 | HR 401; 601 | Nimonic 80 A | | | | 3300 | 0,24 | **33** |
| NiCr22Mo9Nb | 2.4856 | | Inconel 625 | | | | 3300 | 0,24 | **33** |
| NiCu30Al | 2.4375 | | Monel K 500 | | | | 3300 | 0,24 | **34** |
| NiFe25Cr20NbTi | 2.4955 | | | | | | 3300 | 0,24 | **34** |
| S 18-0-1 | 1.3355 | BT 1 | Z 80 WCV 18-04-01 | | T 1 | | 2450 | 0,23 | **10/11** |
| S 18-1-2-5 | 1.3255 | BT 4 | Z 80 WKCV 18-05-04-0 | | T 4 | | 2450 | 0,23 | **10/11** |
| S 2-9-2 | 1.3348 | | Z 100 DCWV 09-04-02- | 2782 | M 7 | | 2450 | 0,23 | **10/11** |
| S 6-5-2 | 1.3343 | BM 2 | Z 85 WDCV 06-05-04-0 | 2722 | M 2 | SKH9; SKH51 | 2450 | 0,23 | **10/11** |
| S 6-5-2-5 | 1.3243 | | Z 85 WDKCV 06-05-05- | 2723 | | SKH55 | 2450 | 0,23 | **10/11** |
| TiAl6V4 | 3.7165 | TA 10 bis TA 13 | T-A 6 V | | | | 2110 | 0,22 | **37** |
| X 10 Cr 13 | 1.4006 | 410 S 21 | Z 12 C 13 | 2302 | 410; CA-15 | SUS410 | 1875 | 0,21 | **12/13** |
| X 10 CrNiMoNb 18 12 | 1.4583 | | | | 318 | | 2150 | 0,2 | **14** |
| X 10 CrNiS 18 9 | 1.4305 | 303 S 21 | Z 10 CNF 18.09 | 2346 | 303 | | 2150 | 0,2 | **14** |
| X 100 CrMoV 5 1 | 1.2363 | BA 2 | Z 100 CDV 5 | 2260 | A 2 | | 2450 | 0,23 | **10/11** |
| X 12 CrMoS 17 | 1.4104 | | Z 10 CF 17 | 2383 | 430 F | SUS430F | 1875 | 0,21 | **12/13** |
| X 12 CrNi 17 7 | 1.4310 | 301 S 21 | Z 12 CN 17.07 | | 301 | | 2150 | 0,2 | **14** |
| X 12 CrNi 22 12 | 1.4829 | | | | | SUS301 | 1350 | 0,28 | **16** |
| X 12 CrNi 25 21 | 1.4845 | 310 S24 | Z 12 CN 25.20 | 2361 | 310 S | SUH310; SUS310S | 2150 | 0,2 | **14** |
| X 12 CrNiTi 18 9 | 1.4878 | 321 S 20 | Z 6 CNT 18.12 (B) | 2337 | 321 | | 2150 | 0,2 | **14** |
| X 12 NiCrSi 36 16 | 1.4864 | NA 17 | Z 12 NCS 37.18 | | 330 | SUH330 | 2600 | 0,24 | **31** |
| X 15 CrNiSi 20 12 | 1.4828 | 309 S 24 | Z 15 CNS 20.12 | | 309 | SUH309 | 1350 | 0,28 | **16** |
| X 165 CrMoV 12 | 1.2601 | | | 2310 | | | 2450 | 0,23 | **10/11** |
| X 2 CrNiMo 18 13 | 1.4440 | | | | | | 2150 | 0,2 | **14** |
| X 2 CrNiMoN 17 13 3 | 1.4429 | 316 S 62 | Z 2 CND 17.13 Az | 2375 | 316 LN | SUS316LN | 2150 | 0,2 | **14** |
| X 2 CrNiN 18 10 | 1.4311 | 304 S 62 | Z 2 CN 18 .10 | 2371 | 304 LN | SUS304LN | 2150 | 0,2 | **14** |
| X 20 CrNi 17 2 | 1.4057 | 431 S 29 | Z 15 CN 16.02 | 2321 | 431 | SUS431 | 1875 | 0,21 | **12/13** |
| X 210 Cr 12 | 1.2080 | BD 3 | Z 200 C 12 | | D 3 | | 2450 | 0,23 | **10/11** |
| X 210 CrW 12 | 1.2436 | | | 2312 | | | 2450 | 0,23 | **10/11** |
| X 30 WCrV 9 3 | 1.2581 | BH 21 | Z 30 WCV 9 | | H 21 | SKD5 | 2450 | 0,23 | **10/11** |
| X 40 CrMoV 5 1 | 1.2344 | BH 13 | Z 40 CDV 5 | 2242 | H 13 | SKD61 | 2450 | 0,23 | **10/11** |
| X 46 Cr 13 | 1.4034 | 420 S 45 | Z 40 C 14 | | | | 1875 | 0,21 | **12/13** |
| X 5 CrNi 18 9 | 1.4301 | 304 S 15 | Z 6 CN 18.09 | 2332; 2333 | 304; 304 H | SUS304 | 2150 | 0,2 | **14** |
| X 5 CrNiMo 17 13 3 | 1.4436 | 316 S 16 | Z 6 CND 17.12 | 2343 | 316 | SUS316 | 2150 | 0,2 | **14** |
| X 5 CrNiMo 18 10 | 1.4401 | 316 S 16 | Z 6 CND 17.11 | 2347 | 316 | SUS316 | 2150 | 0,2 | **14** |
| X 53 CrMnNiN 21 9 | 1.4871 | 349 S 54 | Z 52 CMN 21.09 | | EV 8 | | 1875 | 0,21 | **12/13** |
| X 6 Cr 13 | 1.4000 | 403 S 17 | Z 6 C 13 | 2301 | 403 | SUS403 | 1875 | 0,21 | **12/13** |
| X 6 Cr 17 | 1.4016 | 430 S 15 | Z 8 C 17 | 2320 | 430 | SUS430 | 1875 | 0,21 | **12/13** |
| X 6 CrMo 17 | 1.4113 | 434 S 17 | Z 8 CD 17.01 | 2325 | 434 | SUS434 | 1875 | 0,21 | **12/13** |
| X 6 CrNiMoTi 17 12 2 | 1.4571 | 320 S 31 | Z 6 CNT 17.12 | 2350 | 316 Ti | | 2150 | 0,2 | **14** |
| X 6 CrNiNb 18 10 | 1.4550 | 347 S 17 | Z 6 CNNb 18.10 | 2338 | 347 | | 2150 | 0,2 | **14** |
| X 6 CrNiTi 18 10 | 1.4541 | 321 S 12 | Z 6 CNT 18.10 | 2337 | 321 | | 2150 | 0,2 | **14** |
| X2 CrNi 18-8 | 1.4317 | | | | | | 2150 | 0,2 | **14** |

# Aluminium Normwerkstoffe

Gusslegierungen

| Legierungsgruppe | DIN 1725-2 | | DIN EN 1706 | |
|---|---|---|---|---|
| | Werkstoff- | | Legierungsbezeichnung | |
| | Kurzzeichen | Nummer | Numerisch | Chem. Symbol |
| **AlCu** | G-AlCu4TiMg | 3.1371 | EN AC-21000 | EN AC-Al Cu4MgTi |
| | G-AlCu4Ti | 3.1841 | EN AC-21100 | EN AC-Al Cu4Ti |
| **AlSiMgTi** | – | – | EN AC-4100 | EN AC-Al Si2MgTi |
| **AlSi7Mg** | – | – | EN AC-42000 | EN AC-Al Si7Mg |
| | G-AlSi7Mg | 3.2371 | EN AC-42100 | EN AC-Al Si7Mg0,3 |
| | – | – | EN AC-42200 | EN AC-Al Si7Mg0,6 |
| **AlSi10Mg** | G-AlSi10Mg | 3.2381 | EN AC-43000 | EN AC-Al Si10Mg/a) |
| | – | – | EN AC-43100 | EN AC-Al Si10Mg(b) |
| | G-AlSi10Mg(Cu) | 3.2383 | EN AC-43200 | EN AC-Al Si10Mg(Cu) |
| | G-AlSi9Mg | 3.2373 | EN AC-43300 | EN AC-Al Si9Mg |
| | GD-AlSi10Mg | 3.2382 | EN AC-43400 | EN AC-Al Si10Mg(Fe) |
| **AlSi** | G-AlSi11 | 3.2211 | EN AC-44000 | EN AC-Al Si11 |
| | – | – | EN AC-44100 | EN AC-Al Si12(b) |
| | G-AlSi12 | 3.2581 | EN AC-44200 | EN AC-Al Si12(a) |
| | GD-AlSi12 | 3.2582 | EN AC-44300 | EN AC-Al Si12(Fe) |
| | – | – | EN AC-44400 | EN AC-Al Si9 |
| **AlSi5Cu** | G-AlSi6Cu4 | 3.2151 | EN AC-45000 | EN AC-Al Si6Cu4 |
| | – | – | EN AC-45100 | EN AC-Al Si5Cu3Mg |
| | – | – | EN AC-45200 | EN AC-Al Si5Cu3Mn |
| | – | – | EN AC-45300 | EN AC-Al Si5Cu1Mg |
| | – | – | EN AC-45400 | EN AC-Al Si5Cu3 |
| **AlSi9Cu** | GD-AlSi9Cu3 | 3.2163 | EN AC-46000 | EN AC-Al Si9Cu3(Fe) |
| | – | – | EN AC-46100 | EN AC-Al Si11Cu2(Fe) |
| | G-AlSi9Cu3 | 3.2163 | EN AC-46200 | EN AC-Al Si8Cu3 |
| | – | – | EN AC-46300 | EN AC-Al Si7Cu3Mg |
| | – | – | EN AC-46400 | EN AC-Al Si9Cu1Mg |
| | – | – | EN AC-46500 | EN AC-Al Si9Cu3(Fe)(Zn) |
| | – | – | EN AC-46600 | EN AC-Al Si7Cu2 |
| **AlSi(Cu)** | G-AlSi12(Cu) | 3.2583 | EN AC-47000 | EN AC-Al Si12(Cu) |
| | GD-AlSi12(Cu) | 3.2982 | EN AC-47100 | EN AC-AlSi12Cu1(Fe) |
| **AlSiCuNiMg** | – | – | EN AC-48000 | EN AC-Al Si12CuNiMg |
| **AlMg** | – | – | EN AC-51000 | EN AC-Al Mg3(b) |
| | G-AlMg3 | 3.3541 | EN AC-51100 | EN AC-AlMg3(a) |
| | GD-AlMg9 | 3.3292 | EN AC-51200 | EN AC-Al Mg9 |
| | G-AlMg5 | 3.3561 | EN AC-51300 | EN AC-Al Mg5 |
| | G-AlMg5Si | 3.3261 | EN AC-51400 | EN AC-Al Mg5 (Si) |
| **AlZnMg** | – | – | EN AC-7100 | EN AC-Al Zn5Mg |

## AL-Knetlegierungen - Stangen

| DIN 1725-1/DIN 1712-3 | | DIN EN 573-3 | |
|---|---|---|---|
| Werkstoff- | | Legierungsbezeichnung | |
| Kurzzeichen | Nummer | Numerisch | Chem. Symbol |
| AlCuMgPb | 3.1645 | EN AW-2007 | EN AW-Al Cu4PbMgM |
| AlCuBiPb | 3.1655 | EN AW-2011 | EN AW-Al Cu6BiPb |
| – | – | EN AW-2030 | EN AW-Al Cu4PbMg |
| AlMgSiPb | 3.0615 | EN AW-6012 | EN AW-Al MgSiPb |
| – | – | EN AW-6262 | EN AW-Al Mg1SiPb |
| AlMgSi0,5 | 3.3206 | EN AW-6060 | EN AW-Al MgSi |
| – | – | EN AW-6063 | EN AW-Al Mg0,7Si |
| AlMgSi1 | 3.2315 | EN AW-6082 | EN AW-Al Si1MgMn |
| AlCuSiMn | 3.1255 | EN AW-2014 | EN AW-Al Cu4SiMg |
| AlCuMg1 | 3.1325 | EN AW-2017A | EN AW-Al Cu4MgSi(A) |
| AlCuMg2 | 3.1355 | EN AW-2024 | EN AW-Al Cu4Mg1 |
| AlZn4,5Mg1 | 3.4335 | EN AW-7020 | EN AW-Al Zn4,5Mg1 |
| AlZnMgCu0,5 | 3.4345 | EN AW-7022 | EN AW-Al Zn5Mg3Cu |
| AlZnMgCu1,5 | 3.4365 | EN AW-7075 | EN AW-Al Zn5,5MgCu |
| Al99,5 | 3.0255 | EN AW-1050A | EN AW-Al 99,5 |
| E-Al | 3.0257 | EN AW-1350 | EN AW-Eal 99,5 |
| AlMg3 | 3.3535 | EN AW-5754 | EN AW-Al Mg3 |
| AlMg5 | 3.3555 | EN AW-5019 | EN AW-Al Mg5 |
| AlMg4,5Mn | 3.3547 | EN AW-5083 | EN AW-Al Mg4,5Mn0,7 |

## AL-Knetlegierungen - Platten

| DIN 1725-1/DIN 1712-3 | | DIN EN 573-3 | |
|---|---|---|---|
| Werkstoff- | | Legierungsbezeichnung | |
| Kurzzeichen | Nummer | Numerisch | Chem. Symbol |
| Al99,5 | 3.0255 | EN AW-1050A | EN AW-Al 99,5 |
| AlMg3 | 3.3535 | EN AW-5754 | EN AW-Al Mg3 |
| AlMg4,5Mn | 3.3547 | EN AW-5083 | EN AW-Al Mg4,5Mn0,7 |
| AlMg1SiCu | 3.3211 | EN AW-6061 | EN AW-Al Mg1SiCu |
| AlMgSi1 | 3.2315 | EN AW-6082 | EN AW-Al Si1MgMn |
| AlCuMg1 | 3.1325 | EN AW-2017A | EN AW-Al Cu4MgSi(A) |
| AlCuMg2 | 3.1355 | EN AW-2024 | EN AW-Al Cu4Mg1 |
| AlZn4,5Mg1 | 3.4335 | EN AW-7020 | EN AW-Al Zn4,5Mg1 |
| AlZnMgCu0,5 | 3.4345 | EN AW-7022 | EN AW-Al Zn5Mg3Cu |
| AlZnMgCu1,5 | 3.4365 | EN AW-7075 | EN AW-Al Zn5,5MgCu |

= aushärtbare Werkstoffe

= naturharte Werkstoffe

# Aluminium/Spanbarkeit



Abhängig vom Legierungstyp sind Aluminium-Werkstoffe mehr oder weniger gut spanbar.
Von ausgezeichnet bearbeitbaren Automatenlegierungen bis zum - in Hinsicht Zerspanbarkeit - problematischen Rein-Aluminium sind alle Schwierigkeitsgrade anzutreffen.

| Gruppe | | Legierungstyp | relative Spanbarkeit |
|---|---|---|---|
| **Reines Al** | | Al 99,9 | 5 |
| **Knetlegierungen** | **nicht aushärtbar** | Al Mn | 4 - 5 |
| | | Al Mg | 3 - 5 |
| | | Al Mg Mn | 3 - 4 |
| | **aushärtbar** | Al Mg Si | 3 - 4 |
| | | Automatenlegierungen | 1 - 2 |
| | | Al Cu Mg | 2 - 3 |
| | | Al Cu Si Mg | 3 |
| | | Al Zn Mg Cu | 2 |
| **Gusslegierungen** | | G - Al Si | 3 |
| | | G - Al Si Mg | 2 - 3 |
| | | G - Al Si Cu | 2 |
| | | G - Al Mg | 2 |
| | | G - Al Mg Si | 2 |
| | | G - Al Cu Ti | 2 |
| | | G - Al Si Cu Mg Ni | 2 - 3 |

1 = sehr gut spanbar

5 = schlecht spanbar

Die Spanbarkeit kann als jene Schwierigkeit definiert werden, die ein Werkstoff bei der spanenden Bearbeitung macht.
Für die Bewertung sind im wesentlichen vier Kenngrößen heranzuziehen

- Schnittkraft
- Standzeit
- Oberflächengüte
- Spanbildung


B.R.02-09
03840/80

# Schnittdatenrichtwerte

Sorten/Werkstoff



| Werkstück-werkstoff | | Behandlungsart / Legierung | | VDI 3323 Gruppe | Härte HB |
|---|---|---|---|---|---|
| P | unlegierter Stahl | geglüht | ≤ 0,15 % C | 1 | 125 |
| | | geglüht | 0,15 % - 0,45 % C | 2 | 150 - 250 |
| | | vergütet | ≥ 0,45 % C | 3 | 300 |
| | niedriglegierter Stahl | geglüht | | 6 | 180 |
| | | vergütet | | 7 / 8 | 250 - 300 |
| | | vergütet | | 9 | 350 |
| | hochlegierter Stahl | geglüht | | 10 | 200 |
| | | vergütet | | 11 | 350 |
| | rostfreier Stahl | geglüht | ferritisch / martensitisch | 12 | 200 |
| | | vergütet | martensitisch | 13 | 325 |
| | | wärmebehandelt | ferritisch / martensitisch | 13 | 200 |
| M | rostfreier Stahl | abgeschreckt | austenitisch | 14 | 180 |
| | | abgeschreckt | ferritisch / austenitisch (Duplex) | 14 | 230 - 260 |
| | | ausgehärtet | austenitisch ausscheidungsgehärtet (PH) | 14 | 330 |
| K | Grauguss | | perlitisch / ferritisch | 15 | 180 |
| | | | perlitisch / martensitisch | 16 | 260 |
| | Grauguss mit Kugelgraphit | | ferritisch | 17 | 160 |
| | | | perlitisch | 18 | 250 |
| | Temperguss | | ferritisch | 19 | 130 |
| | | | perlitisch | 20 | 230 |
| N | Aluminium Knetlegierung | nicht aushärtbar | | 21 | 60 |
| | | aushärtbar | | 22 | 100 |
| | Aluminium Gusslegierung | nicht aushärtbar | < 12 % Si | 23 | 75 |
| | | aushärtbar | < 12 % Si | 24 | 90 |
| | | nicht aushärtbar | > 12 % Si | 25 | 130 |
| | Kupfer und Kupferlegierungen (Bronze, Messing) | | Automatenlegierung (1% Pb) | 26 | (110) |
| | | | Messing, Rotguss | 27 | 90 |
| | | | Bronze | 28 | 100 |
| | | | bleifreies Kupfer und Elektrolytkupfer | 28 | 100 |
| | nichtmetallische Werkstoffe | | Duroplast | 29 | – |
| | | | faserverstärkter Kunststoff | 29 | – |
| | | | Hartgummi | 30 | – |
| S | warmfeste Legierungen | geglüht | Fe-Basis | 31 | 200 |
| | | ausgehärtet | Fe-Basis | 32 | 280 |
| | | geglüht | Ni- oder Co-Basis | 33 | 250 |
| | | ausgehärtet | Ni- oder Co-Basis 30 - 58 HRC | 34 | (350) |
| | | gegossen | Ni- oder Co-Basis 1500 - 2200 N/mm² | 35 | (320) |
| | Titanlegierungen | | Reintitan | 36 | $R_m$ 440* |
| | | | Alpha- + Beta-Legierung | 37 | $R_m$ 1050* |
| H | gehärteter Stahl | gehärtet u. angelassen | | 38 | 55 HRC |
| | | gehärtet u. angelassen | | 39 | 60 HRC |
| | Hartguss | gegossen | | 40 | 400 |
| | gehärtetes Gusseisen | gehärtet u. angelassen | | 41 | 55 HRC |

* $R_m$ = maximale Festigkeit, gemessen in MPa

| CTEP210 | | TCM10 | | CTCP220 | | CTPP225 | |
|---|---|---|---|---|---|---|---|
| $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] |
| 350 | | 280 | | 340 | 170 | 270 | 135 |
| 300 | | 240 | | 310 | 155 | 230 | 115 |
| 280 | | 220 | | 270 | 135 | 200 | 100 |
| 300 | | 240 | | 310 | 155 | 230 | 115 |
| 250 | | 200 | | 270 | 135 | 200 | 100 |
| 180 | | 140 | | 240 | 120 | 170 | 85 |
| | | | | 140 | 70 | 130 | 65 |
| | | | | 95 | 50 | 100 | 50 |
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| | | | | | | | |
| 300 | | 240 | | | | | |
| 350 | | 280 | | | | | |
| 300 | | 240 | | | | | |
| 300 | | 240 | | | | | |
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# Schnittdatenrichtwerte

Sorten/Werkstoff



| Werkstück-werkstoff | | Behandlungsart / Legierung | | VDI 3323 Gruppe | Härte HB |
|---|---|---|---|---|---|
| P | unlegierter Stahl | geglüht | ≤ 0,15 % C | 1 | 125 |
| | | geglüht | 0,15 % - 0,45 % C | 2 | 150 - 250 |
| | | vergütet | ≥ 0,45 % C | 3 | 300 |
| | niedriglegierter Stahl | geglüht | | 6 | 180 |
| | | vergütet | | 7 / 8 | 250 - 300 |
| | | vergütet | | 9 | 350 |
| | hochlegierter Stahl | geglüht | | 10 | 200 |
| | | vergütet | | 11 | 350 |
| | rostfreier Stahl | geglüht | ferritisch / martensitisch | 12 | 200 |
| | | vergütet | martensitisch | 13 | 325 |
| | | wärmebehandelt | ferritisch / martensitisch | 13 | 200 |
| M | rostfreier Stahl | abgeschreckt | austenitisch | 14 | 180 |
| | | abgeschreckt | ferritisch / austenitisch (Duplex) | 14 | 230 - 260 |
| | | ausgehärtet | austenitisch ausscheidungsgehärtet (PH) | 14 | 330 |
| K | Grauguss | | perlitisch / ferritisch | 15 | 180 |
| | | | perlitisch / martensitisch | 16 | 260 |
| | Grauguss mit Kugelgraphit | | ferritisch | 17 | 160 |
| | | | perlitisch | 18 | 250 |
| | Temperguss | | ferritisch | 19 | 130 |
| | | | perlitisch | 20 | 230 |
| N | Aluminium Knetlegierung | nicht aushärtbar | | 21 | 60 |
| | | aushärtbar | | 22 | 100 |
| | Aluminium Gusslegierung | nicht aushärtbar | < 12 % Si | 23 | 75 |
| | | aushärtbar | < 12 % Si | 24 | 90 |
| | | nicht aushärtbar | > 12 % Si | 25 | 130 |
| | Kupfer und Kupferlegierungen (Bronze, Messing) | | Automatenlegierung (1% Pb) | 26 | (110) |
| | | | Messing, Rotguss | 27 | 90 |
| | | | Bronze | 28 | 100 |
| | | | bleifreies Kupfer und Elektrolytkupfer | 28 | 100 |
| | nichtmetallische Werkstoffe | | Duroplast | 29 | – |
| | | | faserverstärkter Kunststoff | 29 | – |
| | | | Hartgummi | 30 | – |
| S | warmfeste Legierungen | geglüht | Fe-Basis | 31 | 200 |
| | | ausgehärtet | Fe-Basis | 32 | 280 |
| | | geglüht | Ni- oder Co-Basis | 33 | 250 |
| | | ausgehärtet | Ni- oder Co-Basis 30 - 58 HRC | 34 | (350) |
| | | gegossen | Ni- oder Co-Basis 1500 - 2200 N/mm² | 35 | (320) |
| | Titanlegierungen | | Reintitan | 36 | $R_m$ 440* |
| | | | Alpha- + Beta-Legierung | 37 | $R_m$ 1050* |
| H | gehärteter Stahl | gehärtet u. angelassen | | 38 | 55 HRC |
| | | gehärtet u. angelassen | | 39 | 60 HRC |
| | Hartguss | gegossen | | 40 | 400 |
| | gehärtetes Gusseisen | gehärtet u. angelassen | | 41 | 55 HRC |

* $R_m$ = maximale Festigkeit, gemessen in MPa

| CTCP230 | | CTPP235 | | CTPM225 | | CTCM235 | |
|---|---|---|---|---|---|---|---|
| $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] |
| 280 | 150 | 240 | 140 | 270 | 190 | 240 | 170 |
| 250 | 135 | 210 | 120 | 230 | 160 | 210 | 150 |
| 190 | 110 | 160 | 100 | 180 | 130 | 150 | 105 |
| 250 | 135 | 220 | 120 | 240 | 170 | 210 | 150 |
| 190 | 110 | 160 | 100 | 180 | 130 | 150 | 105 |
| 140 | 100 | 120 | 90 | 140 | 100 | 100 | 70 |
| 130 | 90 | 110 | 80 | 130 | 90 | 120 | 90 |
| 80 | 60 | 80 | 60 | 80 | 60 | 100 | 80 |
| 130 | 90 | 110 | 80 | 110 | 80 | 120 | 90 |
| 90 | 60 | 80 | 60 | 80 | 60 | 100 | 70 |
| 130 | 90 | 110 | 80 | 110 | 80 | 120 | 90 |
| | | 150 | 110 | 160 | 150 | 180 | 140 |
| | | 150 | 110 | 140 | 120 | 170 | 130 |
| | | 130 | 90 | 120 | 100 | 140 | 110 |
| 310 | 190 | | | | | | |
| 160 | 100 | | | | | | |
| 200 | 120 | | | | | | |
| 130 | 80 | | | | | | |
| 190 | 115 | | | | | | |
| 160 | 100 | | | | | | |

Die Schnittdaten sind unverbindliche Angaben für den Anwender. Eine Anpassung an die aktuellen Gegebenheiten ist zu empfehlen!

# Schnittdatenrichtwerte

Sorten/Werkstoff



| Werkstück-werkstoff | | Behandlungsart / Legierung | | VDI 3323 Gruppe | Härte HB |
|---|---|---|---|---|---|
| P | unlegierter Stahl | geglüht | ≤ 0,15 % C | 1 | 125 |
| | | geglüht | 0,15 % - 0,45 % C | 2 | 150 - 250 |
| | | vergütet | ≥ 0,45 % C | 3 | 300 |
| | niedriglegierter Stahl | geglüht | | 6 | 180 |
| | | vergütet | | 7 / 8 | 250 - 300 |
| | | vergütet | | 9 | 350 |
| | hochlegierter Stahl | geglüht | | 10 | 200 |
| | | vergütet | | 11 | 350 |
| | rostfreier Stahl | geglüht | ferritisch / martensitisch | 12 | 200 |
| | | vergütet | martensitisch | 13 | 325 |
| | | wärmebehandelt | ferritisch / martensitisch | 13 | 200 |
| M | rostfreier Stahl | abgeschreckt | austenitisch | 14 | 180 |
| | | abgeschreckt | ferritisch / austenitisch (Duplex) | 14 | 230 - 260 |
| | | ausgehärtet | austenitisch ausscheidungsgehärtet (PH) | 14 | 330 |
| K | Grauguss | | perlitisch / ferritisch | 15 | 180 |
| | | | perlitisch / martensitisch | 16 | 260 |
| | Grauguss mit Kugelgraphit | | ferritisch | 17 | 160 |
| | | | perlitisch | 18 | 250 |
| | Temperguss | | ferritisch | 19 | 130 |
| | | | perlitisch | 20 | 230 |
| N | Aluminium Knetlegierung | nicht aushärtbar | | 21 | 60 |
| | | aushärtbar | | 22 | 100 |
| | Aluminium Gusslegierung | nicht aushärtbar | < 12 % Si | 23 | 75 |
| | | aushärtbar | < 12 % Si | 24 | 90 |
| | | nicht aushärtbar | > 12 % Si | 25 | 130 |
| | Kupfer und Kupferlegierungen (Bronze, Messing) | | Automatenlegierung (1% Pb) | 26 | (110) |
| | | | Messing, Rotguss | 27 | 90 |
| | | | Bronze | 28 | 100 |
| | | | bleifreies Kupfer und Elektrolytkupfer | 28 | 100 |
| | nichtmetallische Werkstoffe | | Duroplast | 29 | – |
| | | | faserverstärkter Kunststoff | 29 | – |
| | | | Hartgummi | 30 | – |
| S | warmfeste Legierungen | geglüht | Fe-Basis | 31 | 200 |
| | | ausgehärtet | Fe-Basis | 32 | 280 |
| | | geglüht | Ni- oder Co-Basis | 33 | 250 |
| | | ausgehärtet | Ni- oder Co-Basis 30 - 58 HRC | 34 | (350) |
| | | gegossen | Ni- oder Co-Basis 1500 - 2200 N/mm² | 35 | (320) |
| | Titanlegierungen | | Reintitan | 36 | $R_m$ 440* |
| | | | Alpha- + Beta-Legierung | 37 | $R_m$ 1050* |
| H | gehärteter Stahl | gehärtet u. angelassen | | 38 | 55 HRC |
| | | gehärtet u. angelassen | | 39 | 60 HRC |
| | Hartguss | gegossen | | 40 | 400 |
| | gehärtetes Gusseisen | gehärtet u. angelassen | | 41 | 55 HRC |

* $R_m$ = maximale Festigkeit, gemessen in MPa

| CTPM240 | | CTN3105 | | CTL3215 | | CTCK215 | |
|---|---|---|---|---|---|---|---|
| $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] |
| 220 | 120 | | | | | | |
| 190 | 110 | | | | | | |
| 140 | 90 | | | | | | |
| 200 | 110 | | | | | | |
| 140 | 90 | | | | | | |
| 100 | 70 | | | | | | |
| 110 | 80 | | | | | | |
| 80 | 60 | | | | | | |
| 110 | 80 | | | | | | |
| 80 | 60 | | | | | | |
| 110 | 80 | | | | | | |
| 170 | 110 | | | | | | |
| 160 | 110 | | | | | | |
| 130 | 90 | | | | | | |
| | | 800 | | 800 | | 360 | 210 |
| | | 600 | | 600 | | 220 | 130 |
| | | | | | | 230 | 140 |
| | | | | 450 | | 160 | 100 |
| | | | | | | 250 | 150 |
| | | | | | | 210 | 130 |
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# Schnittdatenrichtwerte

Sorten/Werkstoff



| Werkstück-werkstoff | | Behandlungsart / Legierung | | VDI 3323 Gruppe | Härte HB |
|---|---|---|---|---|---|
| P | unlegierter Stahl | geglüht | ≤ 0,15 % C | 1 | 125 |
| | | geglüht | 0,15 % - 0,45 % C | 2 | 150 - 250 |
| | | vergütet | ≥ 0,45 % C | 3 | 300 |
| | niedriglegierter Stahl | geglüht | | 6 | 180 |
| | | vergütet | | 7 / 8 | 250 - 300 |
| | | vergütet | | 9 | 350 |
| | hochlegierter Stahl | geglüht | | 10 | 200 |
| | | vergütet | | 11 | 350 |
| | rostfreier Stahl | geglüht | ferritisch / martensitisch | 12 | 200 |
| | | vergütet | martensitisch | 13 | 325 |
| | | wärmebehandelt | ferritisch / martensitisch | 13 | 200 |
| M | rostfreier Stahl | abgeschreckt | austenitisch | 14 | 180 |
| | | abgeschreckt | ferritisch / austenitisch (Duplex) | 14 | 230 - 260 |
| | | ausgehärtet | austenitisch ausscheidungsgehärtet (PH) | 14 | 330 |
| K | Grauguss | | perlitisch / ferritisch | 15 | 180 |
| | | | perlitisch / martensitisch | 16 | 260 |
| | Grauguss mit Kugelgraphit | | ferritisch | 17 | 160 |
| | | | perlitisch | 18 | 250 |
| | Temperguss | | ferritisch | 19 | 130 |
| | | | perlitisch | 20 | 230 |
| N | Aluminium Knetlegierung | nicht aushärtbar | | 21 | 60 |
| | | aushärtbar | | 22 | 100 |
| | Aluminium Gusslegierung | nicht aushärtbar | < 12 % Si | 23 | 75 |
| | | aushärtbar | < 12 % Si | 24 | 90 |
| | | nicht aushärtbar | > 12 % Si | 25 | 130 |
| | Kupfer und Kupferlegierungen (Bronze, Messing) | | Automatenlegierung (1% Pb) | 26 | (110) |
| | | | Messing, Rotguss | 27 | 90 |
| | | | Bronze | 28 | 100 |
| | | | bleifreies Kupfer und Elektrolytkupfer | 28 | 100 |
| | nichtmetallische Werkstoffe | | Duroplast | 29 | – |
| | | | faserverstärkter Kunststoff | 29 | – |
| | | | Hartgummi | 30 | – |
| S | warmfeste Legierungen | geglüht | Fe-Basis | 31 | 200 |
| | | ausgehärtet | Fe-Basis | 32 | 280 |
| | | geglüht | Ni- oder Co-Basis | 33 | 250 |
| | | ausgehärtet | Ni- oder Co-Basis 30 - 58 HRC | 34 | (350) |
| | | gegossen | Ni- oder Co-Basis 1500 - 2200 N/mm² | 35 | (320) |
| | Titanlegierungen | | Reintitan | 36 | $R_m$ 440* |
| | | | Alpha- + Beta-Legierung | 37 | $R_m$ 1050* |
| H | gehärteter Stahl | gehärtet u. angelassen | | 38 | 55 HRC |
| | | gehärtet u. angelassen | | 39 | 60 HRC |
| | Hartguss | gegossen | | 40 | 400 |
| | gehärtetes Gusseisen | gehärtet u. angelassen | | 41 | 55 HRC |

* $R_m$ = maximale Festigkeit, gemessen in MPa

| CTPK220 | | CTD4205 | | AMZ | | H216T | |
|---|---|---|---|---|---|---|---|
| $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] |
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| 320 | 190 | | | 200 | | 130 | 130 |
| 170 | 100 | | | 160 | | 110 | 110 |
| 210 | 130 | | | 185 | | 130 | 130 |
| 140 | 90 | | | 150 | | 120 | 120 |
| 200 | 120 | | | 200 | | 130 | 130 |
| 170 | 100 | | | 175 | | 110 | 110 |
| | | | 3500 | | 1500 | | 1500 |
| | | | 2500 | | 1000 | | 1000 |
| | | | 2500 | | 1200 | | 1100 |
| | | | 2000 | | 1200 | | 1000 |
| | | | 1000 | | 300 | | 280 |
| | | | | | 350 | | 350 |
| | | | 800 | | 350 | | 350 |
| | | | 800 | | 320 | | 320 |
| | | | 800 | | 320 | | 320 |
| | | | 1000 | | 160 | 160 | 160 |
| | | | 350 | | 180 | 240 | 240 |
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Die Schnittdaten sind unverbindliche Angaben für den Anwender. Eine Anpassung an die aktuellen Gegebenheiten ist zu empfehlen!

# Schnittdatenrichtwerte

Sorten/Werkstoff



| Werkstück-werkstoff | | Behandlungsart / Legierung | | VDI 3323 Gruppe | Härte HB |
|---|---|---|---|---|---|
| P | unlegierter Stahl | geglüht | ≤ 0,15 % C | 1 | 125 |
| | | geglüht | 0,15 % - 0,45 % C | 2 | 150 - 250 |
| | | vergütet | ≥ 0,45 % C | 3 | 300 |
| | niedriglegierter Stahl | geglüht | | 6 | 180 |
| | | vergütet | | 7 / 8 | 250 - 300 |
| | | vergütet | | 9 | 350 |
| | hochlegierter Stahl | geglüht | | 10 | 200 |
| | | vergütet | | 11 | 350 |
| | rostfreier Stahl | geglüht | ferritisch / martensitisch | 12 | 200 |
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| | | wärmebehandelt | ferritisch / martensitisch | 13 | 200 |
| M | rostfreier Stahl | abgeschreckt | austenitisch | 14 | 180 |
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| | Grauguss mit Kugelgraphit | | ferritisch | 17 | 160 |
| | | | perlitisch | 18 | 250 |
| | Temperguss | | ferritisch | 19 | 130 |
| | | | perlitisch | 20 | 230 |
| N | Aluminium Knetlegierung | nicht aushärtbar | | 21 | 60 |
| | | aushärtbar | | 22 | 100 |
| | Aluminium Gusslegierung | nicht aushärtbar | < 12 % Si | 23 | 75 |
| | | aushärtbar | < 12 % Si | 24 | 90 |
| | | nicht aushärtbar | > 12 % Si | 25 | 130 |
| | Kupfer und Kupferlegierungen (Bronze, Messing) | | Automatenlegierung (1% Pb) | 26 | (110) |
| | | | Messing, Rotguss | 27 | 90 |
| | | | Bronze | 28 | 100 |
| | | | bleifreies Kupfer und Elektrolytkupfer | 28 | 100 |
| | nichtmetallische Werkstoffe | | Duroplast | 29 | – |
| | | | faserverstärkter Kunststoff | 29 | – |
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| S | warmfeste Legierungen | geglüht | Fe-Basis | 31 | 200 |
| | | ausgehärtet | Fe-Basis | 32 | 280 |
| | | geglüht | Ni- oder Co-Basis | 33 | 250 |
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| | | | Alpha- + Beta-Legierung | 37 | $R_m$ 1050* |
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| | gehärtetes Gusseisen | gehärtet u. angelassen | | 41 | 55 HRC |

* $R_m$ = maximale Festigkeit, gemessen in MPa

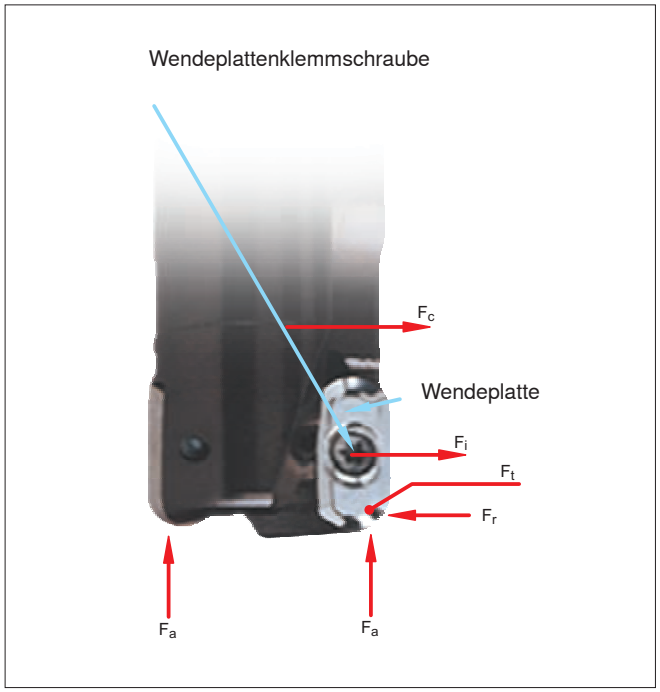
| CTW4615 | | CTC5235 | | CTC5240 | |
|---|---|---|---|---|---|
| $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] |
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| 130 | 130 | | | | |
| 110 | 110 | | | | |
| 130 | 130 | | | | |
| 120 | 120 | | | | |
| 130 | 130 | | | | |
| 120 | 120 | | | | |
| 1500 | 1500 | | | | |
| 1000 | 1000 | | | | |
| 1100 | 1100 | | | | |
| 1000 | 1000 | | | | |
| 280 | 280 | | | | |
| 350 | 350 | | | | |
| 350 | 350 | | | | |
| 320 | 320 | | | | |
| 320 | 320 | | | | |
| 160 | 160 | | | | |
| 240 | 240 | | | | |
| | | | | | |
| | | | 80 | | 80 |
| | | | 70 | | 70 |
| | | | 35 | | 35 |
| | | | 25 | | 25 |
| | | | 30 | | 30 |
| | | | | | 80 |
| | | | | | 50 |
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Die Schnittdaten sind unverbindliche Angaben für den Anwender. Eine Anpassung an die aktuellen Gegebenheiten ist zu empfehlen!

# Wuchten

HSC/HPC






## Kräfte am Werkzeugsystem

$F_a$ = Axialkraft

$F_r$ = Radialkraft

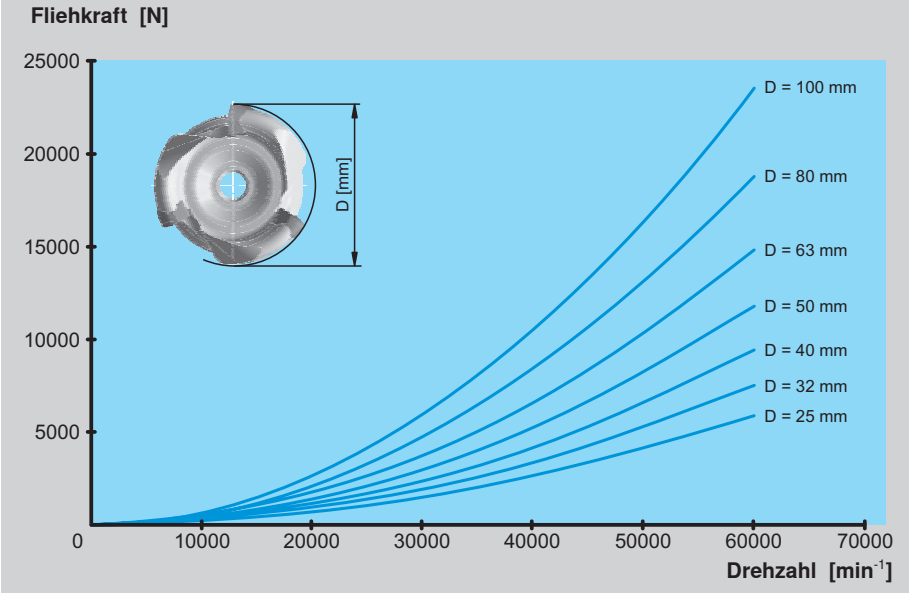
$F_t$ = Tangentialkraft

$F_c$ = Zentrifugalkraft für Werkzeugkörper

$F_i$ = Zentrifugalkraft für Wendeplatte

Auftretende Kräfte am HSC-Fräser während der Zerspanung. Bei der HSC-Bearbeitung erzeugen die Fliehkräfte eine deutlich höhere Belastung für das Werkzeug als die Schnittkräfte.

s.a. zul. Restunwucht: DIN 1940

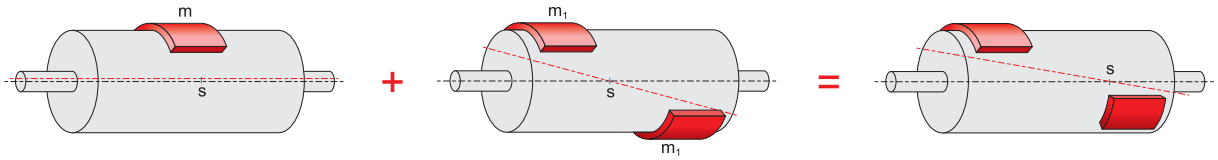



Beachten Sie die Sicherheitsvorschriften, die dem Werkzeug beiligen.

Fliehkraftentwicklung in Abhängigkeit vom Werkzeugduchmesser und der Rotationsgeschwindigkeit für eine 12 g schwere Wendeschneidplatte.

Drehzahl x 2 = Fliehkraft x 4

## Wuchtarten



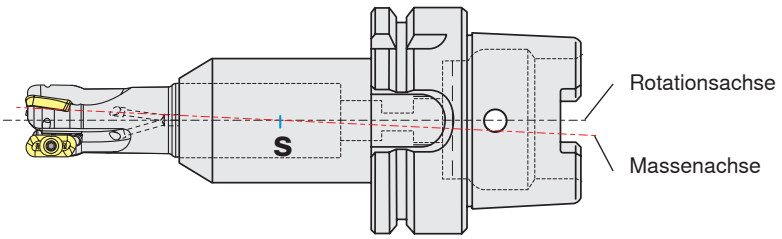

**Statische Unwucht**

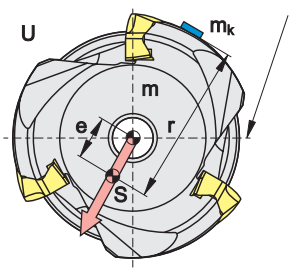
**Kräftepaar-Unwucht**

**Dynamische Unwucht** ist die Summe aus statischer Unwucht und Kräftepaar-Unwucht.

Unwucht ist der Zustand eines Rotors, bei dem die Massenachse nicht mit der Rotationsachse zusammenfällt.

$$U = m \cdot e \; [gmm]$$




Unwucht erzeugt eine mit dem Rotor umlaufende Fliehkraft F

$$F = u \cdot \omega^2 = m \cdot e \cdot \omega^2 = \frac{m \cdot e \, (2 \cdot x \cdot n)^2}{60^2} \; [N]$$

$$m_k = \frac{m \cdot e}{r} \; [g]$$

m = Masse [g]
e = Schwerpunktradius [mm]
S = Massenachse
$m_k$ = Korrekturmasse
U = Unwucht
ω = Winkelgeschwindigkeit [$s^{-1}$]

## Ursachen für unsymmetrische Masseverteilung bezüglich der Rotationsachse

- Fertigungstoleranz (Werkzeug und Aufnahme)
- Mitnehmernuten am SK- /BT-Flansch
- „Deutsches Eck“ am HSK
- Mitnehmernuten bei HSK A, B, C, D
- Position der radialen Spannschraube (Weldon, Whistle Notch)
- Spannzangenfutter (radiale Position der Schlitze)
- Spannzange und Mutter
- Schaftabfräsung bei Weldon und Whistle Notch
- Differentialteilung am Fräser

# Wuchten

HSC/HPC

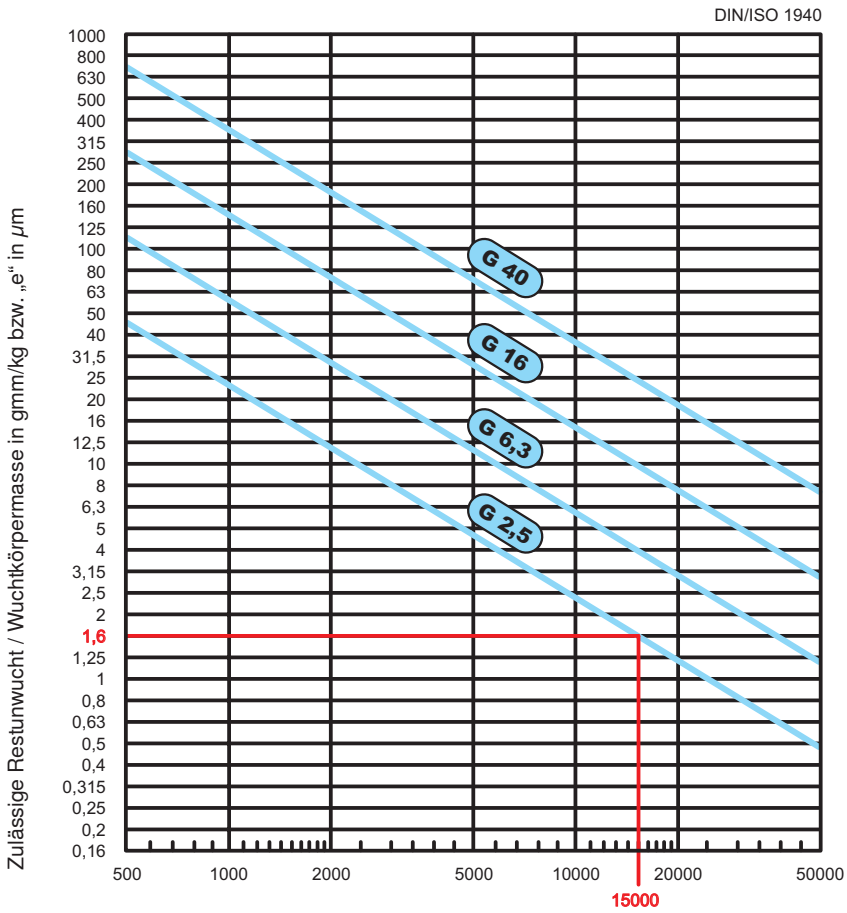


## Was ist Güteklasse? - zulässige Restunwucht

Güteklasse ist die zulässige Schwerpunktgeschwindigkeit

G = Schwerpunktgeschwindigkeit [mm/s]
e = Schwerpunktradius [mm]
ω = Winkelgeschwindigkeit [$s^{-1}$]

$$G = e \cdot \omega \ [mm/s]$$




Aus Betriebsdrehzahl und gewünschter Gütestufe ergibt sich die zulässig spezifische Restunwucht „e“ in µm

Monowerkzeuge mit HSK-Anbindung sind standardmäßig vorgewuchtet.

z.B.:
m = 2 kg
n = 15000 $min^{-1}$
G = 2,5 ergibt
e = 1,6 µm
$U_{tol}$ = 1,6 µm · 2 kg = 3,2 g/mm

Alle Monoblockwerkzeuge mit HSK-Direktanbindung werden mit einem Prüfprotokoll ausgeliefert.

# *Qualitätszertifikat*
## *Quality certificate*

CUTTING SOLUTIONS BY CERATIZIT

### Werkzeuge und Aufnahmen – gewuchtet nach DIN/ISO 1940
### Tools and adapters – balanced according to DIN/ISO 1940

Bezeichnung:
Designation:

Auftrags-Nr.:
Order No.:

Protokoll-Nr.:
Report No.:

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### Werkzeugdaten
### Tool data

Werkzeugmasse m [g]:
Tool mass m [g]:

Maximale Betriebsdrehzahl $n_{max}$ [$min^{-1}$]:
Maximum operating speed $n_{max}$ [$min^{-1}$]:

**Wuchtangaben:**
**Balancing data:**

| Bezugsdrehzahl n [$min^{-1}$]<br>Reference speed n [$min^{-1}$] | Wuchtgüte G [mm/s]<br>Balancing quality G [mm/s] | Unwucht zulässig $U_{zul}$ [g mm]<br>Permissible unbalance $U_{zul}$ [g mm] | OK |
|---|---|---|---|
| | ☐ G 2,5 | | ☐ |
| | ☐ G 6,3 | | |
| | ☐ G | | |

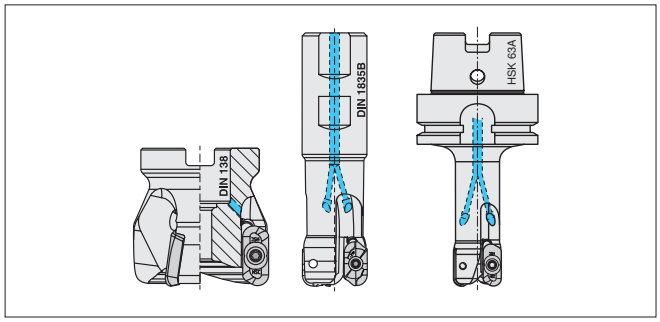
Datum:
Date:

Prüfer:
Checked by:

Formeln:
Formula:

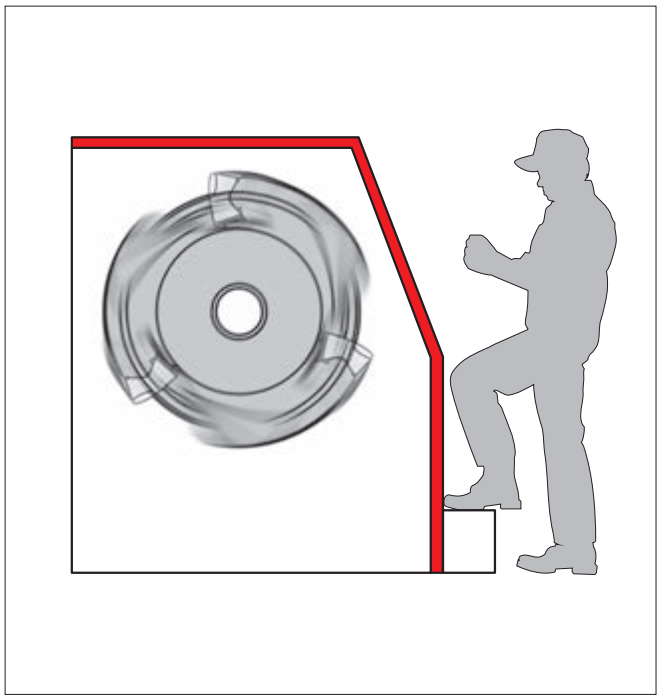
$$U_{zul} = \frac{m \cdot G \cdot 60}{n \cdot \pi \cdot 2} \qquad n = \frac{m \cdot G \cdot 60}{U_{zul} \cdot \pi \cdot 2} \qquad G = \frac{U_{zul} \cdot \pi \cdot 2 \cdot n}{m \cdot 60}$$

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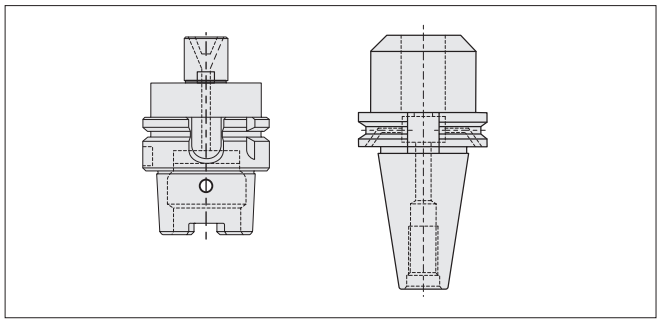

## Eignung des Werkzeuges für die HSC-Bearbeitung

HSC-Werkzeuge von CERATIZIT wurden speziell für die Bearbeitungsstrategie entwickelt und garantieren maximale Betriebssicherheit. Sie sind deutlich als HSC- bzw. HPC-Werkzeuge gekennzeichnet.



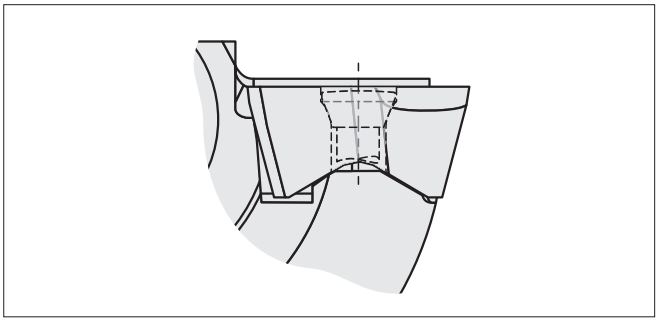
## Beachtung der Sicherheitsvorschriften des Maschinenherstellers

Stellen Sie sicher, dass sämtliche Sicherheitsvorschriften des Maschinenherstellers beachtet werden (z.B.: gekapselte Bearbeitungseinheiten).



## Eignung der Werkzeugaufnahmen für die HSC-Bearbeitung

Für schnelldrehende Fräsanwendungen ist es notwendig, dass Werkzeug und Werkzeugaufnahme gemeinsam gewuchtet werden (entsprechende Richtlinien ISO 1940).



## Befestigung der Wendeschneidplatte mit Fliehkraftsicherung

Wendeplattenklemmung: EURO-Patent EP 1083017A1
Beachten Sie, dass der Plattensitz gereinigt und die Gewindebohrung für die Spannschraube in einwandfreiem Zustand ist.
Überprüfen Sie die axiale und radiale Anlage der Wendeplatte im Plattensitz.

**Anzugsmomente und Schraubendreher**
**B276**



## Maximal zulässige Einsatzdrehzahl

Beachten Sie die auf dem Werkzeug angegebene maximal zulässige Einsatzdrehzahl. Diese gilt ausschließlich für das vorliegende Werkzeug und muss entsprechend der ausgewählten Werkzeugaufnahme, Auskraglänge und der jeweiligen Bearbeitungssituation angepasst werden.

Grenzdrehzahlen im Schleudertest ermittelt!

## Optimaler Einsatzbereich des Werkzeuges ($a_e$, $a_p$, $f_z$, n)

Damit produktives Fräsen gewährleistet ist, halten Sie bitte die Empfehlungen hinsichtlich der Schnittparameter ein.

**Drehzahlen**
**MaxiMill 211**
**B130**

**Drehzahlen**
**MaxiMill HSC/HPC**
**B161**



**Jedem HSC/HPC-Werkzeug liegt ein Informationsblatt „Sicherheitsvorschriften“ bei. Eine Nichteinhaltung dieser Sicherheitsvorschriften bewirkt automatisch den Haftungsausschluss des Werkzeugherstellers CERATIZIT.**

# Montage

HSC-Wendeplatten



Fräswerkzeug in Voreinstellgerät oder Montageplatz einspannen. Spannschraube der Wendeschneidplatte lösen.



Reinigen des Plattensitzes und Überprüfung auf Beschädigungen.



Reinigen von Auf- und Anlageflächen der WSP.

**HSC-Betrieb:** Beim Einbau einer neuen Wendeplatte die Spannschraube durch eine neue Spannschraube ersetzen!



Wendeschneidplatten in gereinigten Plattensitz setzen und mit zwei Fingern an die Anlageflächen andrücken.



Die Spannschraube bei angedrückter Wendeschneidplatte eindrehen.

Spannen der Wendeschneidplatte mit voreingestelltem Drehmomentschlüssel.

## MaxiMill 274 – Spannen der Wendeplatte




Die Fläche am Werkzeug und die Wendeplatten-freifläche müssen übereinstimmen.




Wendeplatte mit Schraube in den Sitz legen. Die Schraube leicht andrehen.




Die Flucht der Fläche am Werkzeug und der Wendeplattenfreifläche müssen übereinstimmen.



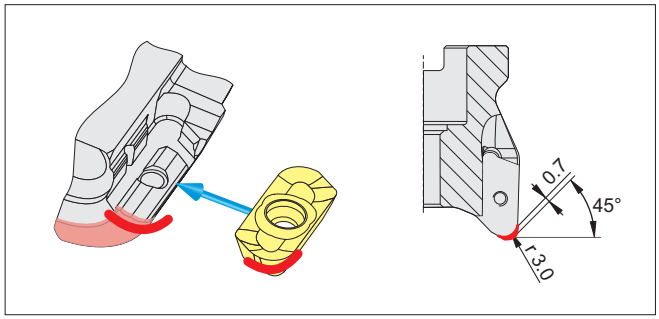

Schraube festdrehen. Den Schraubendreher entsprechend der Schraubenachse ansetzen.




Verwenden Sie einen Drehmoment-Schrauben-dreher mit 1,6 Nm/14,2 in.lbs.:
DMSD 1,6Nm/SORT 08IP

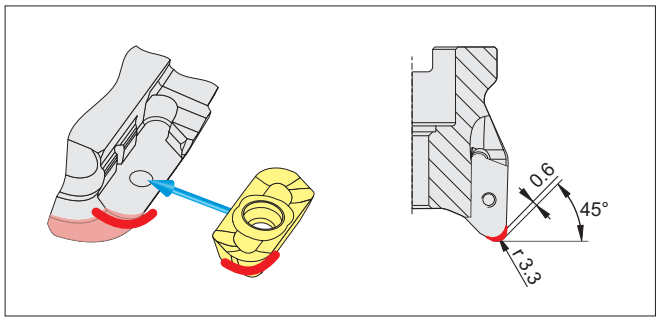
# Montage MaxiMill

Nachbearbeitung Werkzeuggrundkörper




## HSC-11

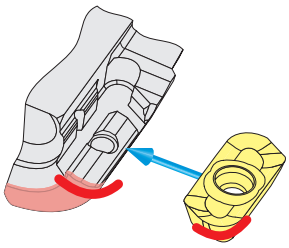
ab Wendeplattenradius r > 3,2 mm



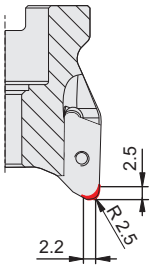

## HSC/HPC-19

ab Wendeplattenradius r > 4,0 mm

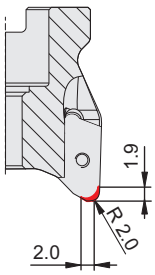
## 211-11 / 15



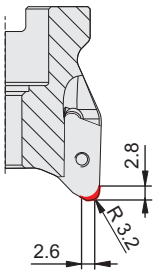
211-11
> r 1.6



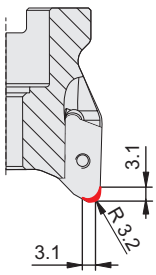

211-15
> r 2.5




211-15
> r 4.0




211-15
> r 5.0




Ab der zweiten Zahnreihe muss der Eckenradius der Wendeplatte ≤ 0,8 mm sein, um Kollisionen zwischen Werkstück und Werkzeug zu vermeiden (ausreichende Schneidenüberdekung).

| | Material | Type, Bezeichnung |
|---|---|---|
|  | 11417922 | CA HDM-22-R |
|  | 106934 | 7818043/K |
| | 11529276 | K-10007861/11,8X12,5 |
|  | 11167992 | 10002113-0/AW-RH |
|  | 11645528 | 10006791/KMR22 |
| | 11645529 | 10006792/KMR27 |
| | 11645530 | 10006793/KMR32 |
| | 11645531 | 10006794/KMR40 |
|  | 106607 | 7818044/M8X21/R-L |
| | 11036880 | 7818267/M8,0x30,0 |
| | 11040298 | 7818268/M10,0X31,0 |
| | 11529282 | S-10007860/M6,0X21,0/T15 |
|  | 11210129 | 10002611/M20X30/12.9 |
|  | 11528772 | S-10007790/M16,0X6,0/SW06 |
| | 11528781 | S-10007791/M20,0X7,0/SW08 |
| | 11528790 | S-10007821/M24,0X9,0/SW10 |
| | 11528792 | S-10007822/M30,0X9,0/SW14 |

| | Material | Type, Bezeichnung | Schlüsselgröße | Drehmoment [Nm] | Drehmoment [in.lbs] |
|---|---|---|---|---|---|
|  | 11149517 | DMSD 0,7Nm/SORT T06 | T06 | 0,7 | 6,2 |
| | 11149541 | DMSD 1,2Nm/SORT T08 | T08 | 1,2 | 10,6 |
| | 11149547 | DMSD 1,8Nm/SORT 08IP | 08IP | 1,8 | 15,9 |
| | 11149570 | DMSD 3,2Nm/SORT T15 | T15 | 3,2 | 28,3 |
| | 11149571 | DMSD 4,0Nm/SORT T20 | T20 | 4,0 | 35,4 |
| | 11149572 | DMSD 6,0Nm/SORT T15 | T15 | 6,0 | 53,1 |
| | 11186812 | DMSD 5,0Nm/SORT T15 | T15 | 5,0 | 44,3 |
| | 11210474 | DMSD 1,0Nm/SORT T15 | T15 | 1,0 | 8,9 |
| | 11210490 | DMSD 5,0Nm/SORT T20 | T20 | 5,0 | 44,3 |
| | 11254598 | DMSD 1,6Nm/SORT 08IP | 08IP | 1,6 | 14,2 |
| | 11450867 | DMSD 3,2Nm/SORT 15IP | IP15 | 3,2 | 28,3 |
| | 11450898 | DMSD 1,0Nm/SORT 07IP | IP07 | 1,0 | 8,9 |
| | 11464183 | DMSD 2,0Nm/SORT T10 | T10 | 2,0 | 17,7 |
| | 11534870 | DMSD 4,0Nm/SORT T15 | T15 | 4,0 | 35,4 |
| | 11696194 | DMSD 2,0Nm/SORT 10IP | 10IP | 2,0 | 17,7 |
| | 11802576 | DMSD 5,0Nm/SORT T20-70 | T20 | 5,0 | 44,3 |

# Ersatzteile

| | Material | Type, Bezeichnung | Schlüsselgröße |
|---|---|---|---|
|  | 112188 | 7818048/EXZS | |
|  | 4496 | 7812301/SW 5 | SW5 |
| | 8095018900 | WS-L-T15-136mm | T15 |
|  | 8095003900 | SD-T08IP-60mm | T08IP |
| | 8095010000 | SD-T06-60mm | T06 |
| | 8095010200 | SD-T08-60mm | T08 |
| | 8095010400 | SD-T10-80mm | T10 |
| | 8095010500 | SD-T15-80mm | T15 |
| | 8095010600 | SD-T20-100mm | T20 |
| | 8095011700 | SD-T07IP-60mm | T07IP |
| | 8095012000 | SD-T15IP-80mm | T15IP |
|  | 4425 | S4/SW4 | SW4 |

| | Material | Type, Bezeichnung | Länge [mm] | Gewindegröße | Schlüsselgröße |
|---|---|---|---|---|---|
|  | 106022 | 7822114/M4,5X10,5/T20 | 10,5 | M4,5 | T20 |
| | 11037484 | 7818428/M4,0X8,5/T15 | 8,5 | M4 | T15 |
| | 11042274 | 7818429/M4,0X11/T15 | 11 | M4 | T15 |
| | 11042275 | 7818430/M4,0X7,0/T15 | 7 | M4 | T15 |
| | 11077874 | 7801175/M2,0X3,3/T06 | 3,3 | M2 | T06 |
| | 11107792 | 10000155/M5,0X14/T20 | 14 | M5 | T20 |
| | 11114238 | 10000126/M2,5X5,6/08TP | 5,5 | M2,5 | T08 |
| | 11114242 | 10000125/M2,5X7,3/08TP | 7,3 | M2,5 | T08 |
| | 11368132 | 10005892/M2,5X5,0/08TP | 5 | M2,5 | TP08 |
| | 11423964 | 10006216/M5,0X18/T15 | 18 | M5 | T15 |
| | 11450028 | 10006888/M2,2X4,2/07IP | 4,2 | M2,2 | 07IP |
| | 11450042 | 10006887/M3,5X8,6/15IP | 8,6 | M3,5 | 15IP |
| | 11464141 | 10007085/M3,0X7,3/T10 | 7,3 | M3 | T10 |
| | 11513168 | 10007562/M2,5X7,6/08TP | 7,6 | M2,5 | 08TP |
| | 11610311 | M3,5X8,6-15IP/10008749 | 8,6 | M3,5 | T15IP |
| | 11684526 | 10009283/M3,5X14,0/T15 | 14 | M3,5 | T15 |
| | 11689894 | 10009229/M3X7,5/10IP | 7,5 | M3 | 10IP |
| | 11803957 | M3,5x9,0-15TP/10012145 | 9 | M3,5 | 15TP |
| | 157823 | 7883212/M2,5X4,2/T08 | 4,2 | M2,5 | T08 |
| | 165795 | 7883209/M3,5X8,6/T15 | 8,6 | M3,5 | T15 |
| | 169856 | 7883213/M3,0X5,0/T08 | 5 | M3 | T08 |
| | 169857 | 7883214/M3,0X5,7/T08 | 5,7 | M3 | T08 |
| | 228879 | 7801177/M3,5X6,7/T15 | 6,7 | M3,5 | T15 |
| | 24645 | 7815101/M2,5X6,0/T08 | 6 | M2,5 | T08 |
| | 24647 | 7815102/M3,5X11,0/T15 | 11 | M3,5 | T15 |
| | 54976 | 7722111/M3,5X7,2/T15 | 7,2 | M3,5 | T15 |
| | 76913 | 7883204/M2,5X5/T08 | 5 | M2,5 | T08 |
| | 77613 | 7883203/M3,0X7,3/T08 | 7,3 | M3 | T08 |

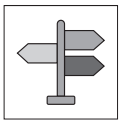
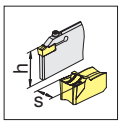
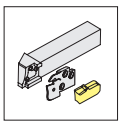
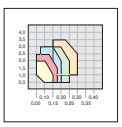
| | Material | Type, Bezeichnung |
|---|---|---|
|  | 170382 | 7730102/GREASE |
|  | 8375806300 | KRS04.HSK63 |
|  | 8376006300 | KMS.HSK63 |
|  | 225422 | 896707/DMS 8-60Nm 3/8" |
|  | 8395024300 | 7896708/SE3/8-SW5 |
| | 225424 | 7896709/SE3/8-SW6 |
| | 225425 | 7896710/SE3/8-SW10 |
|  | 183348 | 7722130/SSR D=80 |
| | 183349 | 7722131/SSR D=100 |
| | 183350 | 7722132/SSR D=125 |
| | 183351 | 7722133/SSR D=160 |
| | 183344 | 7722139/SSR D=32 |
| | 183345 | 7722140/SSR D=40 |
| | 183346 | 7722141/SSR D=50 |
| | 183347 | 7722142/SSR D=63 |

| | Material | Type, Bezeichnung | Ø $d_1$ | Ø $d_A$ | Anzugsmoment Nm | Anzugsmoment ft.lbs. | Einsatzdrehzahl [1000 $min^{-1}$] |
|---|---|---|---|---|---|---|---|
|  | 333935 | 7818123/M8X25/DIN912-12.9 | 32 | 16 | 30 | 22,1 | 16,0 |
| | 333935 | 7818123/M8X25/DIN912-12.9 | 35 | 16 | 30 | 22,1 | 16,0 |
| | 333935 | 7818123/M8X25/DIN912-12.9 | 40 | 16 | 30 | 22,1 | 16,0 |
| | 333935 | 7818123/M8X25/DIN912-12.9 | 42 | 16 | 30 | 22,1 | 16,0 |
| | 333937 | 7818124/M10X25/DIN912-12.9 | 50 | 22 | 50 | 36,9 | 12,5 |
| | 333937 | 7818124/M10X25/DIN912-12.9 | 52 | 22 | 50 | 36,9 | 12,5 |
| | 333937 | 7818124/M10X25/DIN912-12.9 | 63 | 22 | 50 | 36,9 | 10,0 |
| | 333937 | 7818124/M10X25/DIN912-12.9 | 66 | 22 | 50 | 36,9 | 9,0 |
| | 333940 | 7818125/M12X30/DIN912-12.9 | 80 | 27 | 80 | 59,0 | 8,0 |
| | 11128929 | 10001632/M16X30/DIN912-12.9 | 100 | 32 | 110 | 81,1 | 6,5 |

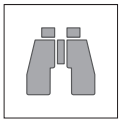
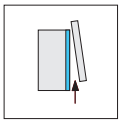
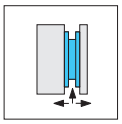
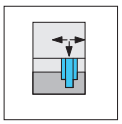
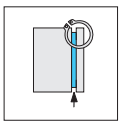
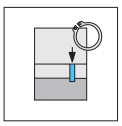
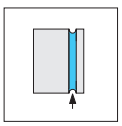
# Inhaltsverzeichnis



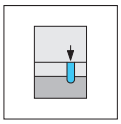
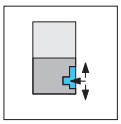
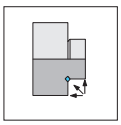
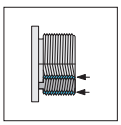
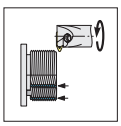
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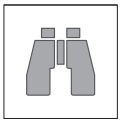
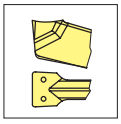
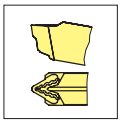

## Anwendung


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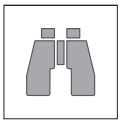
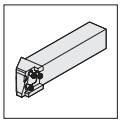
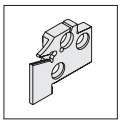
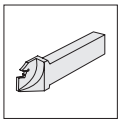

## Anwendung


| | | |
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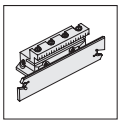
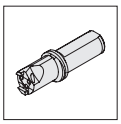
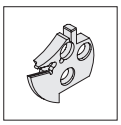
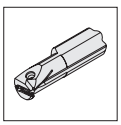
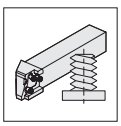
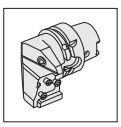
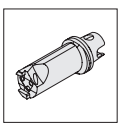

| | | |
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## Werkzeuge

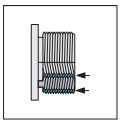
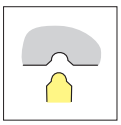
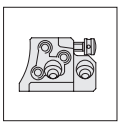

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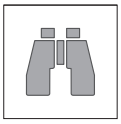
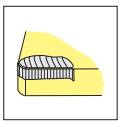
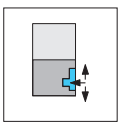

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# Der Leitfaden durch den Katalog

## In wenigen Schritten die richtige Auswahl treffen

1

### Werkzeugauswahl mit dem Kapitel Anwendung

1 In der Übersicht die gewünschte Anwendung wählen

2 Das gewünschte Werkzeugsystem auswählen




2

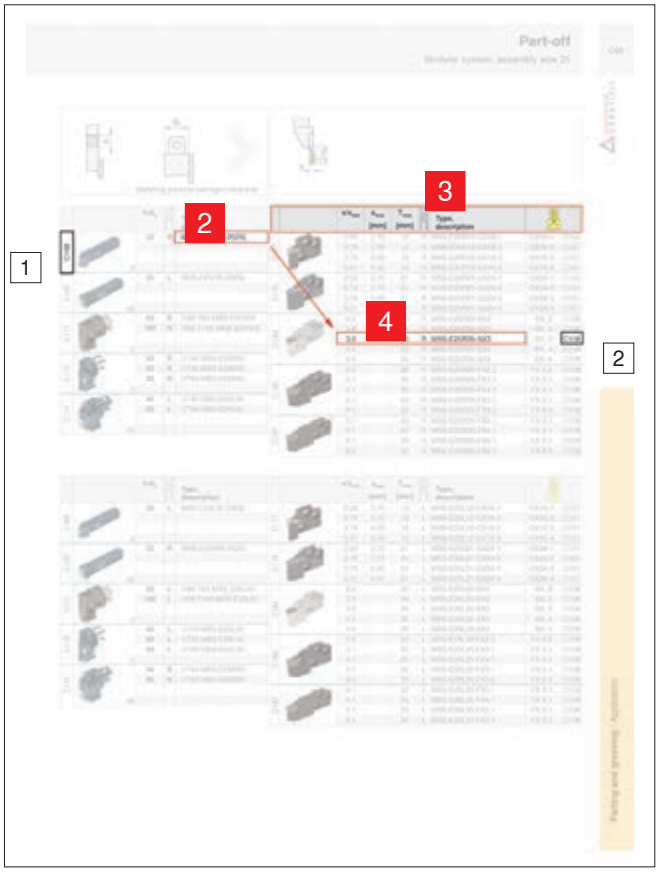
### Den passenden Aufnahmetyp und die Aufnahmegröße wählen

3

### Alle passenden Module sind rechts davon abgebildet

4

### Entsprechend der erforderlichen Stechtiefe/Stechbreite kann das Werkzeug/Modul gewählt werden




1 Detailinformationen zum gewünschten Werkzeug

2 Absprung zu den passenden Wendeplatten

5

## Auswahl der Wendeplatte

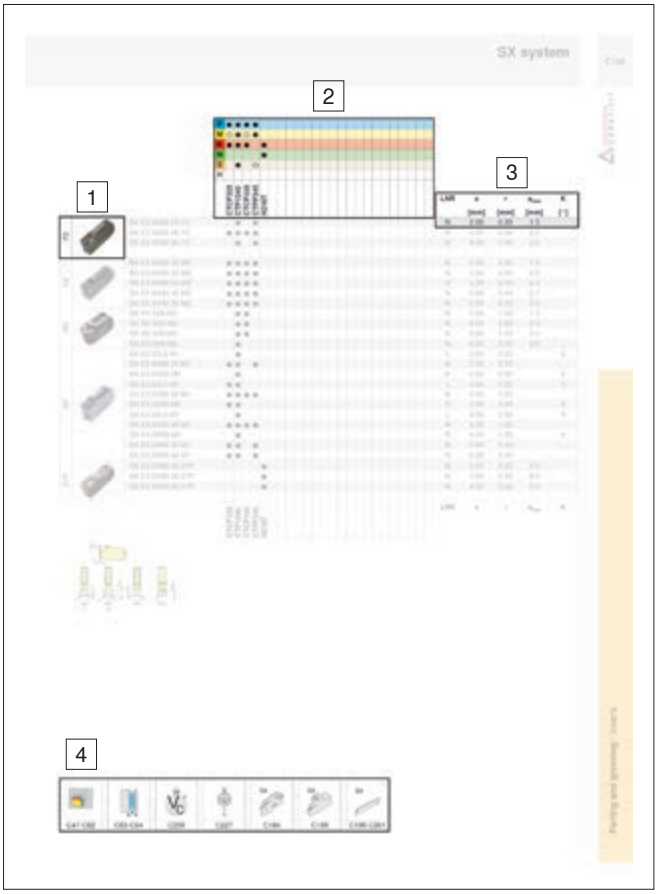
Nach der Festlegung des Werkzeugsystems erfolgt die Auswahl der Wendeplatte inklusive Spanleitstufe und Schneidstoff

1 Spanleitstufen

2 Mögliche Schneidstoffe

3 Die Hauptabmessungen

4 Verweis zu weiterführenden Informationen




6

## Auswahl des Werkzeuges

Die Produktseite zeigt das Programm der Werkzeuge/Module mit den Hauptabmessungen sowie einen Hinweis auf die Wendeplattentypen

1 Mögliche Anwendungen

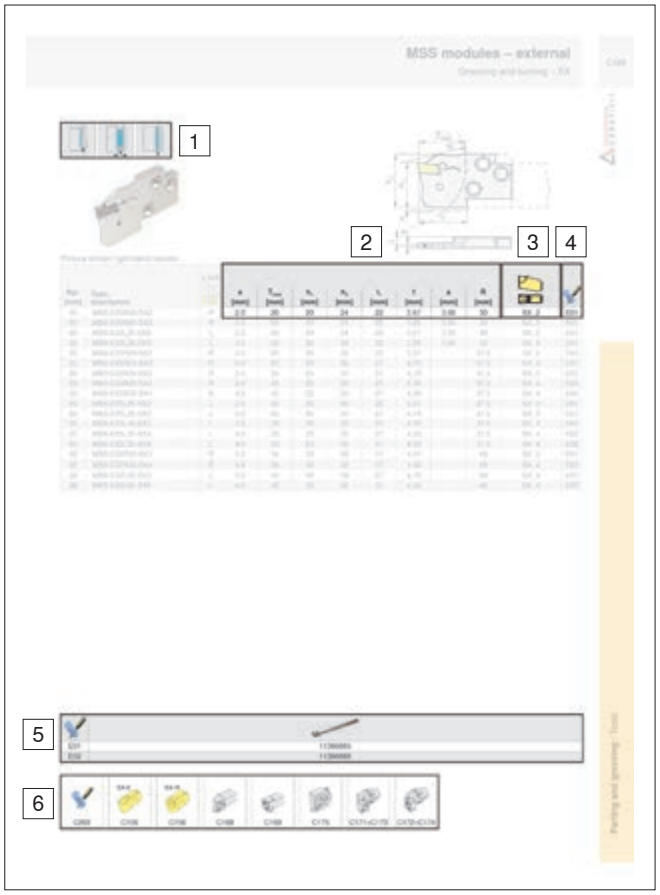
2 Die Hauptabmessungen

3 Verweis zu den Wendeplatten

4 Ersatzteile

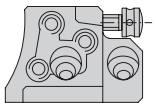
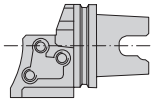
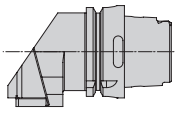
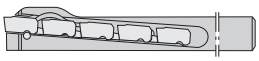
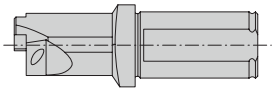
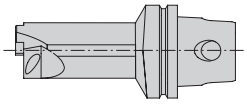
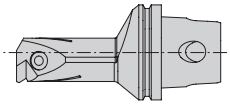
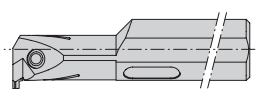
5 Ersatzteilübersicht

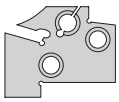
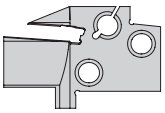
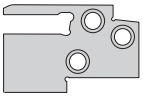
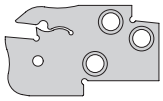
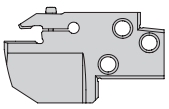
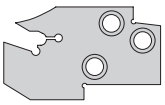
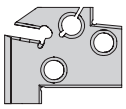
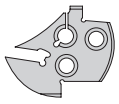
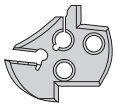
6 Verweis zu weiterführenden Informationen



# Bezeichnungssystem CERATIZIT

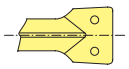
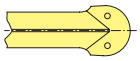
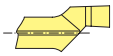
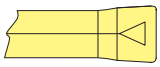
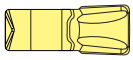
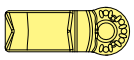
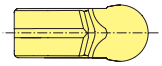
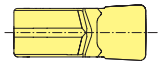
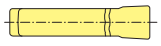
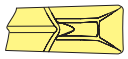
Grundhalter

| | System UTS / HSK-T | System-Baugröße | System MSS | E = außen / I = innen | Baugröße | Ausführung | Anstellwinkel | Stechtiefe | Schaftquerschnitt / Ausführung | Schaftlänge | Plattensystem |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  | | | MSS | E | 25 | R | 00 | | 2525 | L | |
|  | | | MSS | E | 25 | R | 00 | | AD | | |
|  | UT | 40 | MSS | E | 25 | R | 00 | | | | |
|  | HSK | T63 | MSS | E | 32 | L | 90 | | | | |
|  | | | | E | 16 | R | 00 | 21 | 1616 | K | GX24-1 |
|  | | | MC | | 05 | R | | | 1010 | K | |
|  | | | | E | 12 | R | 00 | 21 | | | TC16 |
|  | | | MSS | I | 25 | R | 90 | 1.5D | | | |
|  | UT | 40 | MSS | I | 32 | R | 90 | 2D | | | |
|  | UT | 40 | MSS | I | 32 | R | 90 | 2D | | | TC16 |
|  | | | | I | 12 | R | 90 | 2.5D | | | GX09 |

| | System MSS | E = außen / I = innen | Baugröße | Ausführung | max. Stechtiefe | Plattensystem | Plattengröße | Breitenklasse | Axial Durchmesserbereich $D_{min}$ - $D_{max}$ |
|---|---|---|---|---|---|---|---|---|---|
|  | MSS | E | 25 | R | 12 | GX | 16 | 2 | |
|  | MSS | E | 25 | R | 15 | GX | 24 | 3 | A70-100 |
|  | MSS | E | 25 | R | 10 | AX | 10 | | |
|  | MSS | E | 25 | R | 25 | SX | 3 | | |
|  | MSS | E | 32 | N | 45 | LX | | | |
|  | MSS | E | 25 | R | 20 | FX | 3.1 | | |
|  | MSS | E | 25 | R | | TC | 16 | 2 | |
|  | MSS | I | 25 | R | 06 | GX | 09 | 1 | |
|  | MSS | I | 32 | R | | TC | 16 | 2 | |

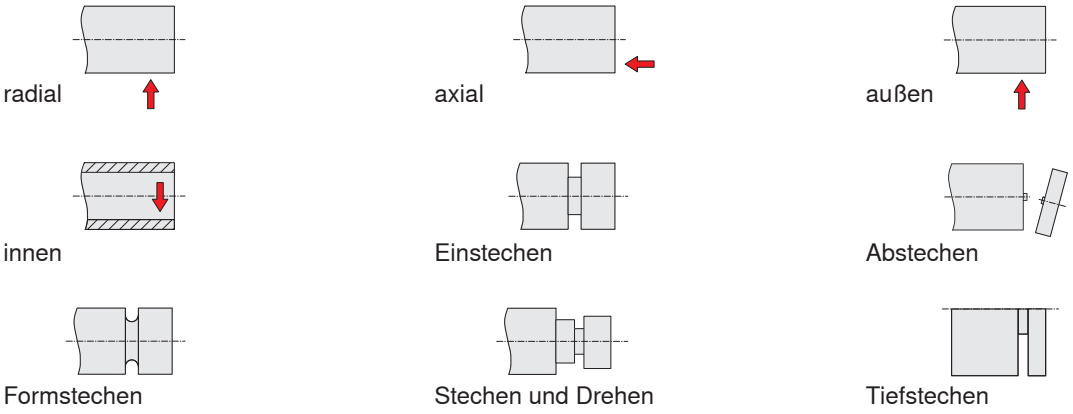
# Bezeichnungssystem CERATIZIT

Wendeplatten

| | Plattensystem | Plattengröße | Anzahl der Schneiden | Breitenklasse | Plattenform / Anwendung | Stechbreite / Gewindesteigung | Ausführung / Gewindenorm | Eckenradius / Winkel | | Spanleitstufencode |
|---|---|---|---|---|---|---|---|---|---|---|
|  | GX | 16 | | 2 | E | 3.00 | N | 0.30 | | Code |
|  | GX | 16 | | 2 | R | 1.50 | N | | | Code |
|  | GX | 16 | | 2 | S | 1.00 | R | | | |
|  | AX | 10 | | | E | 3.00 | N | 0.30 | 20 | Code |
|  | SX | | | | E | 2.00 | N | 0.20 | | Code |
|  | SX | | | | R | 1.50 | N | | | Code |
|  | LX | | | | E | 8.00 | N | 0.80 | | Code |
|  | LX | | | | R | 4.00 | N | | | Code |
|  | FX | | | | | 3.10 | N | 0.20 | | Code |
|  | MC | 05 | 5 | | | 1.00 | N | 0.10 | | Code |
|  | TC | 16 | | 1 | E | 1.50 | ISO | | | Code |

## Hohe Variantenvielfalt

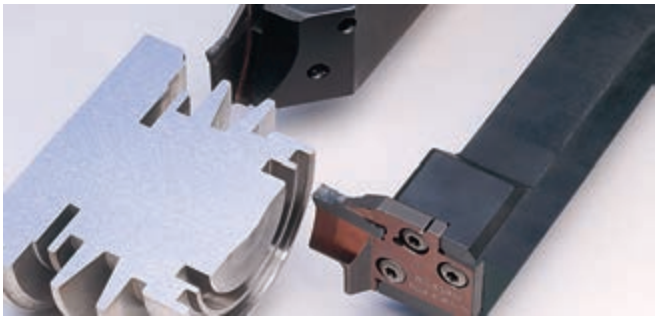
Das Stechdrehen ist gekennzeichnet durch eine hohe Variantenvielfalt, eine anspruchsvolle Technologie und durch eine komplexe Werkzeuggestaltung.






## Anspruchsvolle Technologie

- Spanbildung
- Spanausbringung
- Parallelität / Ebenheit der Stechfläche
- Oberflächengüte
- Gratbildung beim Durchstechen
- Butzenbildung beim Abstechen
- $v_c$ = 0 im Zentrum
- gesamte Hauptschneide im Einsatz



## Komplexe Werkzeuggestaltung

- Schmal, lang auskragend
- Wendeplattenklemmung
- Steifigkeit
- Sicherheit gegen Bruch
- Handhabbarkeit
- Wirtschaftlichkeit

# Das modulare System



## MSS - Das modulare Stech- und Gewindesystem

Um die Vielfalt der Ansprüche in ihrer Gesamtheit abdecken zu können, sind moderne Werkzeuge modular aufgebaut.




### Systemfunktionen

- Schaft und Schneidenträger getrennt
- Einheitliche Trennstelle für alle Stech- und auch Gewindeanwendungen
- Stabile, präzise Verbindung
- Erweiterbar durch neue „Module“
- Einfaches Handling
- Anwendungsoptimierte Spannfunktionen

### Flexibilität

- Der Bearbeitungsaufgabe anpassbar
- Ein System für alle Stech- und Gewindeverfahren
- Hohe Eignung für Semistandardwerkzeuge

### Einfachheit

- Rascher Modulwechsel bei Werkzeugbruch, kurze Maschinenstillstandszeiten

### Präzision

- Hohe Wiederholgenauigkeit bei Modulwechsel
- Reduzierte Maschinenrüstzeiten
- Qualitativ hochwertige Stechteile

### Wirtschaftlichkeit

- Wenige Lagerartikel ergeben eine Vielfalt an Kombinationsmöglichkeiten
- Bei Werkzeugbruch nur Modul tauschen

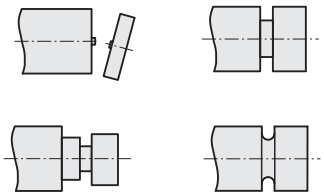
### Stabilität

- Anwendungssicherheit
- Stechen und Längsdrehen möglich

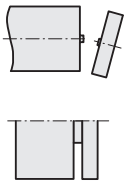
### Komplettheit

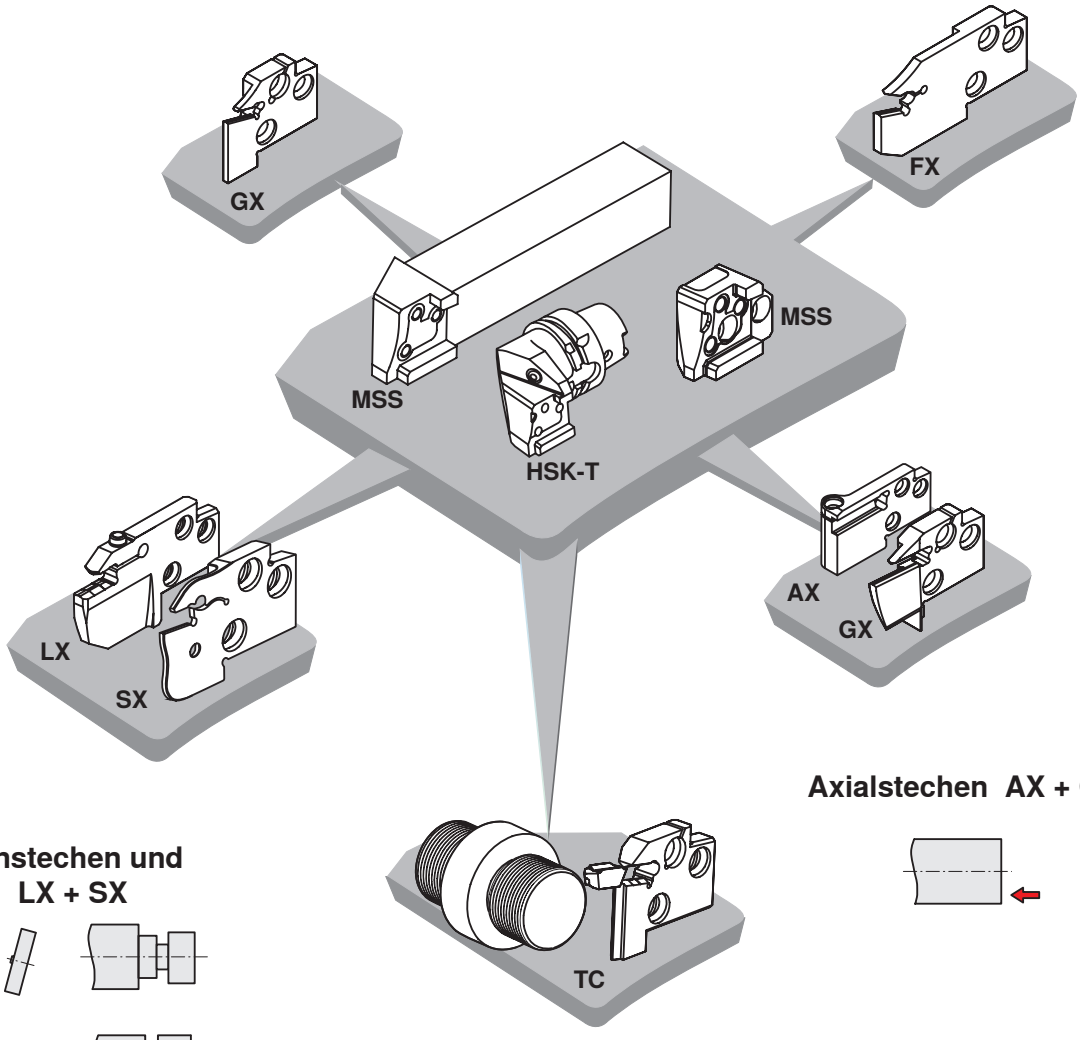
- Komponenten für alle Stechteile und Werkstoffe

**Ab-, Einstechen und Drehen GX**



**Ab- und Einstechen FX**

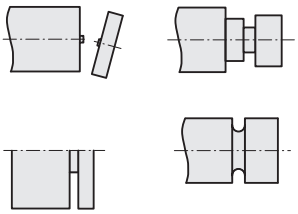




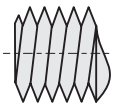

**Axialstechen AX + GX**



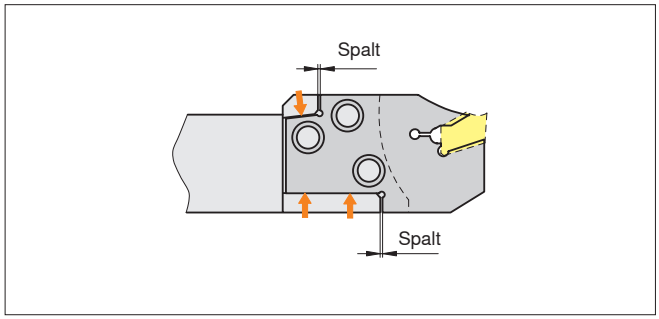
**Ab-, Einstechen und Drehen LX + SX**



**Gewindedrehen TC**



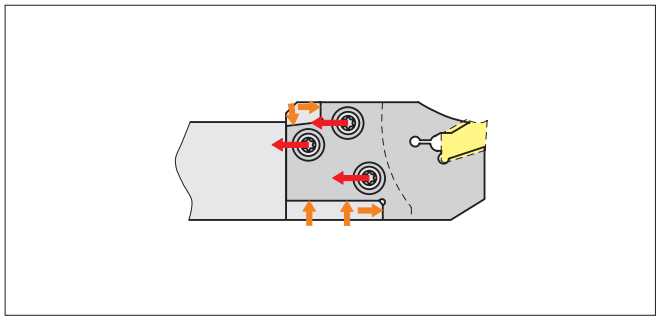
# Die Trennstelle




## Die starke Verbindung

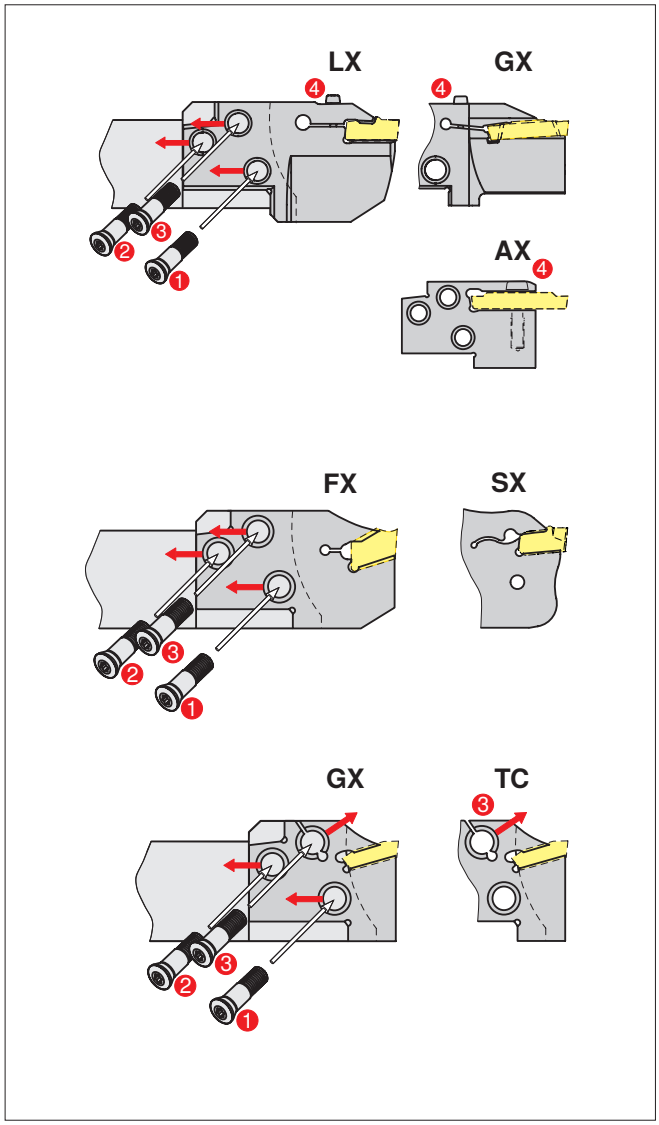
### Modul ungespannt

- Spalt zwischen Modul und Plananlage zur axialen Verspannung



### Modul gespannt

- Axiale Verspannung mit Plananlage
- Spielfreie Verbindung, daher höchste Stabilität




### Klemmfunktionen
### LX / GX / AX
### Aktive Wendeschneidplatten-Klemmung

Die Klemmschrauben 1, 2 und 3 dienen zum Spannen des Moduls. Die Stechplatte wird durch den elastischen Teil des Moduls über die zusätzliche Schraube 4 geklemmt.

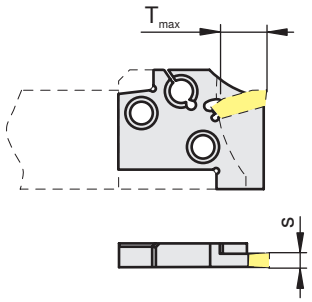
### FX / SX
### Selbstklemmung der Wendeplatte

Die Klemmschrauben 1, 2 und 3 dienen zum Spannen des Moduls, selbstklemmende Spannung der Stechplatte.

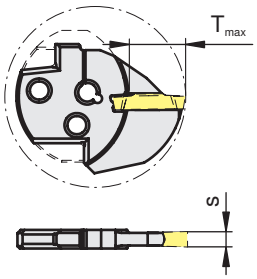
### GX / TC
### aktive Wendeschneidplatten-Klemmung

Die Klemmschrauben 1 und 2 dienen zum Spannen des Moduls. **Wichtig:** Schrauben 1 und 2 vor- und nachspannen. Danach erfolgt erst die Klemmung der Stechplatte mittels Schraube 3.

## GX außen




## GX innen




### Einstechen / Abstechen / Längsdrehen / Axialstechen

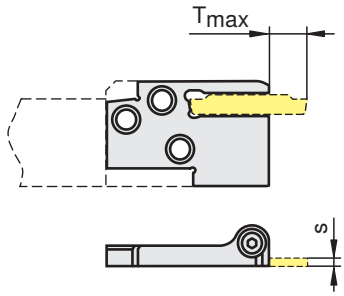
$T_{max}$ = 7 - 21 mm
s = 2,0 - 8,0 mm

Sicherungsringeinstechen
$T_{max}$ = 0,75 - 4,0 mm
s = 0,6 - 5,25 mm

O-Ringeinstechen
$T_{max}$ = 1,78 - 2,58 mm
s = 1,6 - 2,4 mm

$T_{max}$ = 4 - 19 mm
s = 2,0 - 6,0 mm

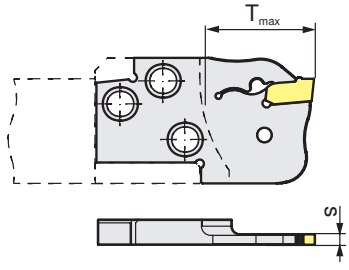
## AX




### Axialstechen

$T_{max}$ = 5 - 15 mm
s = 3 mm

## SX




### Einstechen / Abstechen / Längsdrehen

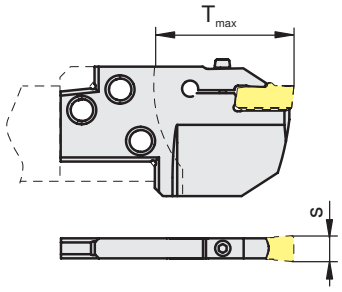
$T_{max}$ = 20 - 35 mm
s = 2 - 4 mm

# Die Module

System LX / FX / TC



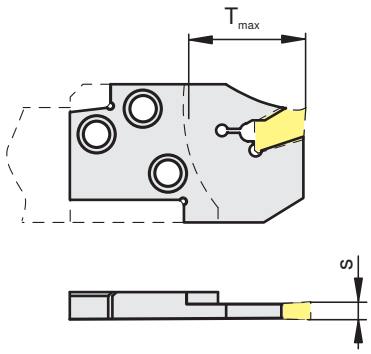
## LX




### Einstechen / Abstechen / Längsdrehen / Axial-stechen

$T_{max}$ = 25 - 45 mm
s = 8,0 - 10,0 mm

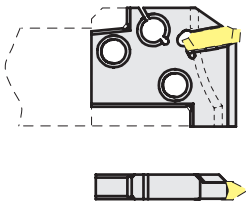
## FX




### Einstechen / Abstechen

$T_{max}$ 20 = 45 mm
s = 2,2 - 6,5 mm

## TC

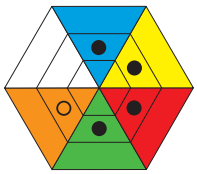


### Gewindedrehen / -fräsen

Steigung
ISO 0,5 - 5,0 mm
BSW 28 - 5 Gänge/“

## Einstechen / Abstechen / Längsdrehen / Axialstechen



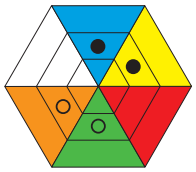


**GX**

| WSP-Größe | s | r | s | r | |
|---|---|---|---|---|---|
| 09 | 0,6-3,25 | 0,8-1,2 | 2,0-3,5 | 1,0-1,2 | auf Anfrage |
| 16 | 0,6-5,25 | 0,8-1,2 | 2,0-6,0 | 1,5-3,0 | |
| 24 | | | 2,0-6,0 | 1,5-3,0 | |

## Axialstechen

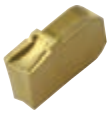


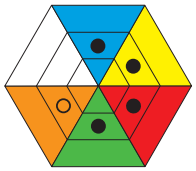


**AX**

| s |
|---|
| 3,0 |

## Einstechen / Abstechen / Längsdrehen



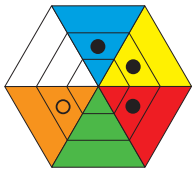


**SX**

| R | s N | s L | s R |
|---|---|---|---|
| 1,5-3,0 | 2,0-6,0 | 2,0-4,0 | 2,0-4,0 |

## Einstechen / Abstechen / Längsdrehen / Axialstechen



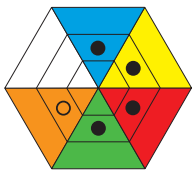


**LX**

| r | s |
|---|---|
| 4,0 | 8,0-10,0 |

## Einstechen / Abstechen





**FX**

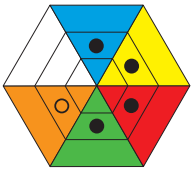
| s N | s L | s R |
|---|---|---|
| 2,2-9,7 | 2,2-6,5 | 2,2-5,1 |

# Die Wendeplatten

System GX / AX / SX / LX/ FX / TC

**Einstechen / Abstechen / Längsdrehen**



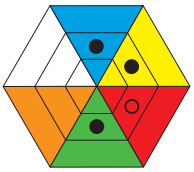


**MC**

| S N | S L | S R |
|---|---|---|
| 1,0-2,5 | 1,0-2,5 | 1,0-2,5 |

**Gewindedrehen / -fräsen**





**TC**

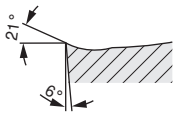
|  |  |
|---|---|
| **Voll- und Teilprofil außen / innen ISO 60°** | **Voll- und Teilprofil außen / innen BSW 55°** |
| **Stg. 0,5 - 5,0 mm** | **48 - 5 Gänge/Zoll** |

- je nach Anwendung präzisionsgeschliffen oder gesintert
- optimierte Geometrien für alle Werkstoffe
- Sicherheit durch ideale Kombination von Substrat und Beschichtung
- Microfinish-Oberfläche für alle Wendeplatten zur Aluminiumbearbeitung

## -F2

- sehr positive Geometrie
- geschliffene Schneidkante
- kleine Vorschübe
- geringe Schnittkräfte
- erste Wahl für Rostfreiwerkstoffe






f [mm]

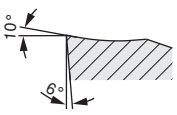
0,05 - 0,15

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP325** | **CTP1340** | **CTPP345** |
| **CTP1340** | **CTP1340 CTPP345** | **CTPP345** |
| CTCP325 | CTP1340 | |
| | | |
| CTP1340 | CTP1340 | CTPP345 |
| | | |

## -EN

- sehr positive Geometrie
- kleine bis mittlere Vorschübe
- geringe Schnittkräfte
- universell einsetzbar
- erste Wahl zum Axialstechen






f [mm]

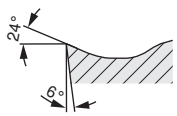
0,05 - 0,17

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP325** | **CTCP335 CTP1340** | **CTP1340** |
| CTCP335 | CTCP335 CTP1340 | CTP1340 |
| **CTCP325** | **CTCP335 CTP1340** | **CTP1340** |
| | | |
| CTP1340 | CTP1340 | CTP1340 |
| | | |

## -EN (GX24)

- sehr positive Geometrie
- kleine bis mittlere Vorschübe
- geringe Schnittkräfte
- universell einsetzbar
- erste Wahl zum Axialstechen






f [mm]

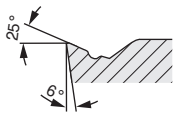
0,05 - 0,17

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP325** | **CTCP335 CTP1340** | **CTPP345** |
| CTP1340 | CTP1340 CTPP345 | CTPP345 |
| **CTCP325** | **CTCP335 CTP1340** | **CTP1340** |
| | | |
| CTP1340 | CTP1340 | CTPP345 |
| | | |

## -M40

- stabile Geometrie
- mittlere Vorschübe
- universell einsetzbar
- gute Spankontrolle






f [mm]

0,075 - 0,20

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP325** | **CTP1340** | **CTPP345** |
| CTP1340 | CTP1340 CTPP345 | CTPP345 |
| **CTCP325** | **CTCP325 CTP1340** | **CTP1340** |
| | | |
| CTP1340 | CTP1340 | CTPP345 |
| | | |

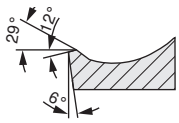
# Spanleitstufen für System GX-E

Ab-, Einstechen und Drehen

## -M1

- sehr stabile Schneidkante
- mittlere bis hohe Vorschübe
- für unterbrochene Schnitte
- für höherfeste Werkstoffe
- erste Wahl zum Abstechen






f [mm]

0,10 - 0,20

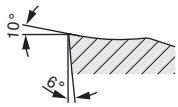
Bearbeitungsbedingungen

| | | |
|---|---|---|
| **CTCP325** | **CTP1340** | **CTPP345** |
| CTP1340 | CTP1340<br>CTPP345 | CTPP345 |
| **CTCP325** | **CTCP325**<br>**CTP1340** | **CTP1340** |
| | | |
| CTP1340 | CTP1340 | CTPP345 |
| | | |

## -27P

- hoch positive Geometrie
- umfangseitig geschliffen
- scharfe Schneidkante
- Geringe Aufklebeneigung
- erste Wahl für Nichteisenmetalle






f [mm]

0,05 - 0,25

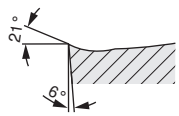
Bearbeitungsbedingungen

| | | |
|---|---|---|
| | | |
| | | |
| | | |
| **H216T** | **H216T** | **H216T** |
| | | |
| | | |

## -27P (GX24)

- hoch positive Geometrie
- umfangseitig geschliffen
- scharfe Schneidkante
- Geringe Aufklebeneigung
- erste Wahl für Nichteisenmetalle






f [mm]

0,05 - 0,25

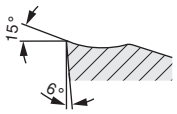
Bearbeitungsbedingungen

| | | |
|---|---|---|
| | | |
| | | |
| | | |
| **H216T** | **H216T** | **H216T** |
| | | |
| | | |

## -ER/-EL

- positive Geometrie
- geschliffene Schneidkante
- kleine Vorschübe
- geringe Schnittkräfte
- Radien- / O-Ringeinstiche





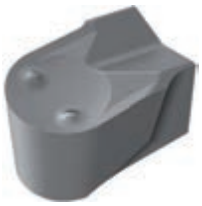

f [mm]

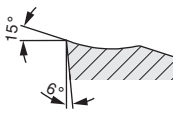
0,05 - 0,15

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP325** | **CTCP325** | |
| CTCP325 | CTCP325 | |
| **CTCP325** | **CTCP325** | |
| | | |
| | | |
| | | |

## -EN

- positive Geometrie
- geschliffene Schneidkante
- kleine bis mittlere Vorschübe
- geringe Schnittkräfte
- Radieneinstiche / Kopierdrehen





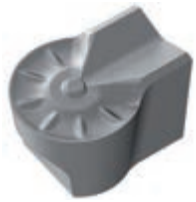

f [mm]

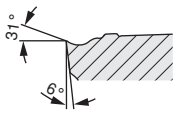
0,05 - 0,20

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP325** | **CTCP325 CTP1340** | **CTP1340** |
| **CTP1340** | **CTP1340** | **CTP1340** |
| **CTCP325** | **CTCP325 CTP1340** | **CTP1340** |
| | | |
| CTP1340 | CTP1340 | |
| | | |

## -M3

- positive Geometrie
- mittlere bis hohe Vorschübe
- hohe Oberflächengüten
- Radieneinstiche / Kopierdrehen





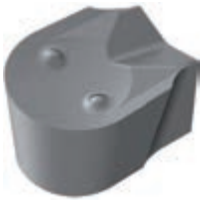

f [mm]

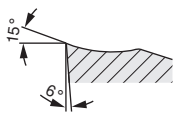
0,07 - 0,20

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP325** | **CTCP325 CTCP335** | **CTCP335** |
| CTCP335 | CTCP335 | |
| **CTCP325** | **CTCP325 CTCP335** | **CTCP335** |
| | | |
| | | |
| | | |

## -27P

- hoch positive Geometrie
- umfangseitig geschliffen
- scharfe Schneidkante
- Geringe Aufklebeneigung
- erste Wahl für Nichteisenmetalle






f [mm]

0,05 - 0,30

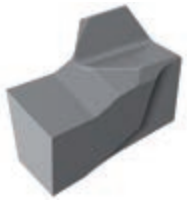
| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| **H216T** | **H216T** | **H216T** |
| | | |
| | | |

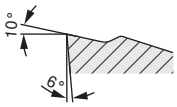
# Spanleitstufen für System GX-S

Sicherungsringeinstechen

## -ER/-EL

- positive Geometrie
- geschliffene Schneidkante
- kleine Vorschübe
- kleine Eckenradien
- Sicherungseinstiche






f [mm]

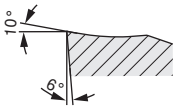
0,025 - 0,125

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTP1340** | **CTP1340** | |
| **CTP1340** | **CTP1340** | |
| CTP1340 | CTP1340 | |
| CTP1340 | CTP1340 | |
| CTP1340 | CTP1340 | |
| | | |

## -EN

- positive Geometrie
- geschliffene Schneidkante
- kleine Vorschübe
- kleine Eckenradien
- Sicherungseinstiche






f [mm]

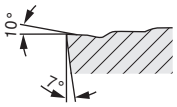
0,025 - 0,125

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTP1340** | **CTP1340** | |
| **CTP1340** | **CTP1340** | |
| CTP1340 | CTP1340 | |
| CTP1340 | CTP1340 | |
| CTP1340 | CTP1340 | |
| | | |

## -F50

- positive Geometrie
- geschliffene Schneidkante
- kleine Vorschübe
- geringe Schnittkräfte
- zum Axialstechen






f [mm]

0,025 - 0,125

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTP1340** | **CTP1340** | |
| **CTP1340** | **CTP1340** | |
| CTP1340 | CTP1340 | |
| CTP1340 | CTP1340 | |
| CTP1340 | CTP1340 | |
| | | |

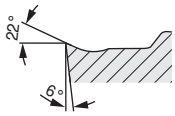
# Spanleitstufen für System SX



## -F2

- sehr positive Geometrie
- geschliffene Schneidkante
- kleine Vorschübe
- geringe Schnittkräfte
- erste Wahl für Rostfreiwerkstoffe






f [mm]

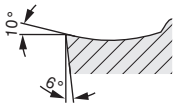
0,05 - 0,15

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTP1340** | **CTP1340** | **CTPP345** |
| **CTP1340** | **CTP1340 CTPP345** | **CTPP345** |
| CTP1340 | CTP1340 | |
| | | |
| CTP1340 | CTP1340 CTPP345 | |
| | | |

## -M2

- stabile Geometrie
- mittlere Vorschübe
- universell einsetzbar
- gute Spankontrolle






f [mm]

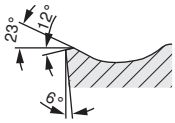
0,075 - 0,20

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP325** | **CTCP335 CTP1340** | **CTPP345** |
| CTCP335 | CTP1340 | CTPP345 |
| **CTCP325** | **CTCP325** | **CTCP335** |
| | | |
| CTP1340 | CTP1340 | CTPP345 |
| | | |

## -M1

- sehr stabile Schneidkante
- mittlere bis hohe Vorschübe
- für unterbrochene Schnitte
- für höherfeste Werkstoffe
- erste Wahl zum Abstechen






f [mm]

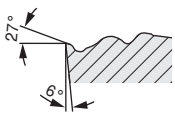
0,10 - 0,20

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP325** | **CTCP335 CTP1340** | **CTPP345** |
| CTCP335 | CTP1340 | CTPP345 |
| **CTCP325** | **CTCP325** | **CTCP335** |
| | | |
| CTP1340 | CTP1340 | CTPP345 |
| | | |

## -M3

- stabile Geometrie
- mittlere bis hohe Vorschübe
- hohe Oberflächengüten
- Radieneinstiche / Kopierdrehen




f [mm]

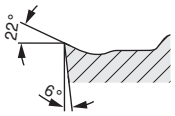
0,05 - 0,20

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP335** | **CTCP335 CTP1340** | **CTP1340** |
| **CTCP335** | **CTCP335 CTP1340** | **CTP1340** |
| CTCP335 | CTCP335 CTP1340 | CTP1340 |
| | | |
| CTP1340 | CTP1340 | CTP1340 |
| | | |

## -27P

- hoch positive Geometrie
- umfangseitig geschliffen
- scharfe Schneidkante
- Geringe Aufklebeneigung
- erste Wahl für Nichteisenmetalle





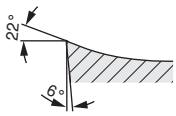

| f [mm] | Bearbeitungsbedingungen | | |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | **H216T** | **H216T** | **H216T** |
| | | | |
| 0,05 - 0,25 | | | |

# Spanleitstufen für System LX

## -M2

- stabile Geometrie
- mittlere Vorschübe
- universell einsetzbar
- gute Spankontrolle






f [mm]

0,20 - 0,50

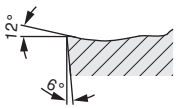
Bearbeitungsbedingungen

| | | |
|---|---|---|
| **CTCP325** | **CTCP335<br>CTP1340** | **CTP1340** |
| CTCP335 | CTP1340 | CTP1340 |
| **CTCP325** | **CTCP325** | **CTCP335** |
| | | |
| CTP1340 | CTP1340 | CTP1340 |
| | | |

## -M3

- stabile Geometrie
- mittlere bis hohe Vorschübe
- hohe Oberflächengüten
- Radieneinstiche / Kopierdrehen






f [mm]

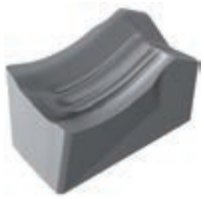
0,15 - 0,35

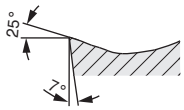
Bearbeitungsbedingungen

| | | |
|---|---|---|
| **CTCP325** | **CTCP335<br>CTP1340** | **CTP1340** |
| **CTCP335** | **CTCP335<br>CTP1340** | **CTP1340** |
| CTCP325 | CTCP335<br>CTP1340 | CTP1340 |
| | | |
| CTP1340 | CTP1340 | CTP1340 |
| | | |

## -F1

- sehr positive Geometrie
- kleine bis mittlere Vorschübe
- geringe Schnittkräfte
- gute Spankontrolle
- geringe Aufbauschneidenbildung






f [mm]

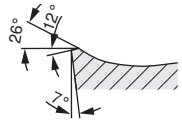
0,05 - 0,15

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP325** | **CTP1340** | **CTPP345** |
| **CTP1340** | **CTP1340 CTPP345** | **CTPP345** |
| CTCP325 | CTCP325 CTP1340 | |
| | | |
| CTP1340 | CTP1340 CTPP345 | CTPP345 |
| | | |

## -M1

- sehr stabile Schneidkante
- mittlere bis hohe Vorschübe
- für unterbrochene Schnitte
- für höherfeste Werkstoffe
- erste Wahl zum Abstechen






f [mm]

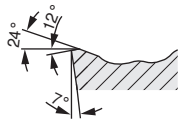
0,08 - 0,20

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP325** | **CTCP335 CTP1340** | **CTPP345** |
| CTCP335 | CTP1340 | CTPP345 |
| **CTCP325** | **CTCP325** | **CTCP335** |
| | | |
| CTP1340 | CTP1340 | CTPP345 |
| | | |

## -R2

- sehr stabile Schneidkante
- hohe Vorschübe
- gute Spankontrolle





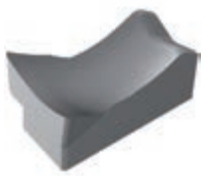

f [mm]

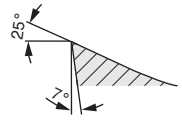
0,10 - 0,27

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP325** | **CTP1340** | **CTPP345** |
| CTP1340 | CTP1340 CTPP345 | CTPP345 |
| **CTCP325** | **CTCP325 CTP1340** | |
| | | |
| CTP1340 | CTP1340 CTPP345 | CTPP345 |
| | | |

## -27P

- hoch positive Geometrie
- umfangseitig geschliffen
- scharfe Schneidkante
- Geringe Aufklebeneigung
- erste Wahl für Nichteisenmetalle






f [mm]

0,03 - 0,13

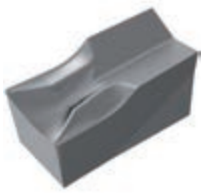
| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| **H216T** | **H216T** | **H216T** |
| | | |
| | | |

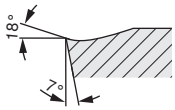
# Spanleitstufen für System MaxiClick



## -F2

- sehr positive Geometrie
- geschliffene Schneidkante
- kleine Vorschübe
- geringe Schnittkräfte
- erste Wahl für Rostfreiwerkstoffe



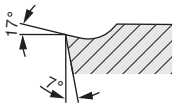



| f [mm] | Bearbeitungsbedingungen | | |
|---|---|---|---|
| | **CTP1340** | **CTP1340** | **CTP1340** |
| | **CTP1340** | **CTP1340** | **CTP1340** |
| | CTP1340 | CTP1340 | |
| 0,05 - 0,10 | CTP1340 | CTP1340 | CTP1340 |
| | CTP1340 | CTP1340 | |
| | | | |

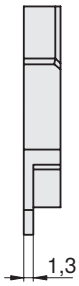
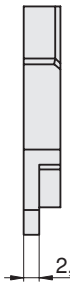
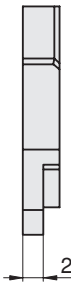
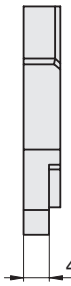
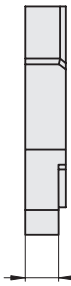
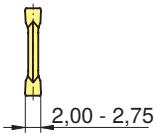
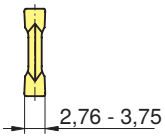
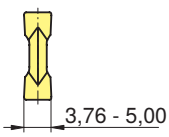
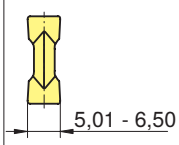
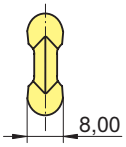
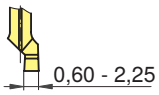
## -F3

- sehr positive Geometrie
- geschliffene Schneidkante
- kleine Vorschübe
- geringe Schnittkräfte
- geringe Grat- / Butzenbildung






| f [mm] | Bearbeitungsbedingungen | | |
|---|---|---|---|
| | CTP1340 | CTP1340 | |
| | CTP1340 | CTP1340 | |
| | CTP1340 | CTP1340 | |
| | | | |
| 0,02 - 0,06 | CTP1340 | CTP1340 | |
| | | | |

| Breitenklassen | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Stechmodule |  |  |  |  |  |
| Stechplatten |  |  |  |  |  |
| Stechplatten zum Sicherungsringeinstechen |  |  | | | |

## Bezeichnung Modul

MSS-E20R12-GX16- **2**

1

## Bezeichnung Wendeplatte

GX16- **2** E3.00N0.30

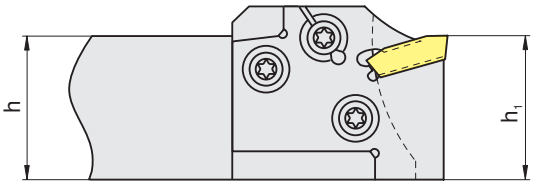
1

1 **Breitenklasse** [1)]

Die Stechbreiten des MSS-Stechsystems sind in Breitenklassen eingeteilt. Jede Breitenklasse stellt einen bestimmten Stechbreitenbereich dar. Der gewählten Stechbreite kann mittels der Breitenklasse das passende Stechmodul zugeordnet werden.

[1)] Modul und Wendeplatte weisen idealerweise die gleiche Breitenklasse auf. Diese Kombination ergibt die bestmögliche Anwendungssicherheit.

# Die Baugröße




Die Baugröße wird durch die Schaftabmessungen der MSS-Grundhalter bestimmt.
Diese Einteilung ermöglicht die Zuordnung der jeweils richtigen Modulgröße zur Grundhaltergröße und umgekehrt.
Die folgenden Tabellen geben Ihnen eine Übersicht der pro Baugröße verfügbaren Breitenklassen bzw. Plattengrößen.

## Bezeichnung Werkzeug

MSS- **E25** R00-2525L
1

## Bezeichnung Modul

MSS- **E25** R25-GX16-2
1

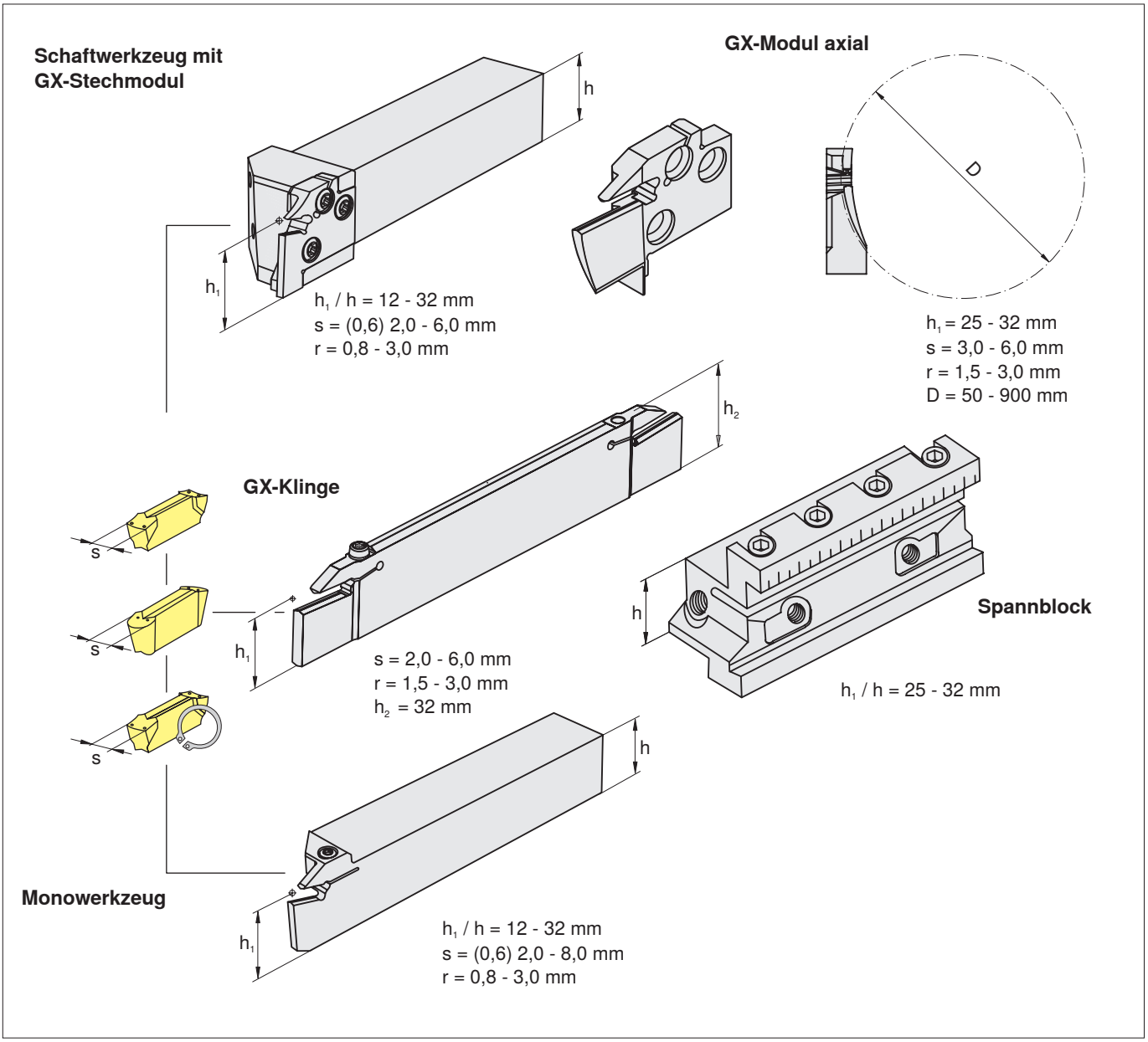
1 **Baugröße (h)**

| Baugröße (h) | GX | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Außenbearbeitung | | | | Innenbearbeitung | | | |
| | Breitenklasse | | | | | | | |
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| 10 | | | | | | | | |
| 12 | | | | | | | | |
| 16 | | | | | | | | |
| 20 | | | | | | | | |
| 25 | | | | | | | | |
| 32 | | | | | | | | |
| 40 | | | | | | | | |

| Baugröße (h) | GX Wendeplattengröße | | | | | |
|---|---|---|---|---|---|---|
| | 09 | | 16 | | 24 | |
| 10 | | | | | | |
| 12 | | | | | | |
| 16 | | | | | | |
| 20 | | | | | | |
| 25 | | | | | | |
| 32 | | | | | | |
| 40 | | | | | | |

Das System GX ist gekennzeichnet durch eine zweischneidige Wendeplatte mit vielfältigen Einsatzmöglichkeiten. Der Einsatzschwerpunkt liegt beim radialen Einstechen und Drehen. Durch speziell ausgelegte Module ist das System schnell für das Axialstechen oder Sicherungsringeinstechen umrüstbar.

Für GX-Wendeplatten sind auch für die Innenbearbeitung entsprechende Module und Bohrstangen verfügbar.




## Systemmerkmale

- Zweischneidige Wendeplatte
- Direkt gepresste und geschliffene Wendeplatten

## Nutzen

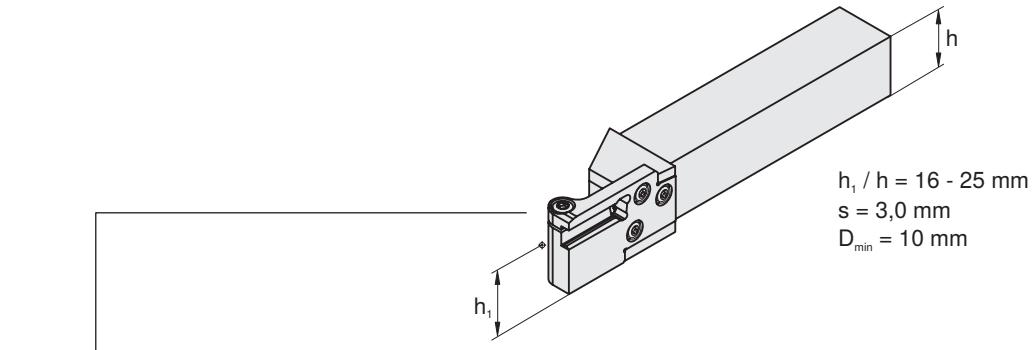
- Hohe Wirtschaftlichkeit
- Optimale Lösung für alle Situationen

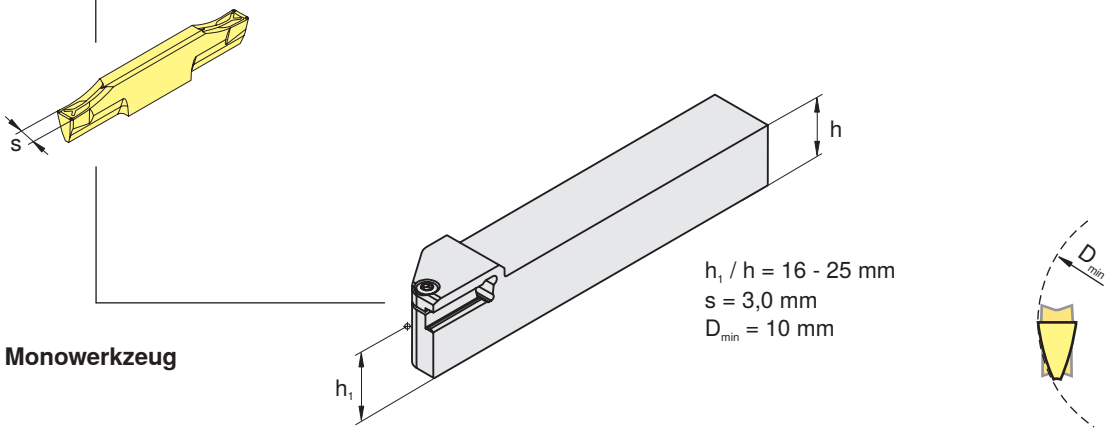
# Systemübersicht

System AX

Das System AX ist ein Axialstechwerkzeug für kleine Durchmesser. Besonderes Kennzeichen ist die konstruktive Auslegung, welche im Schneidenbereich ohne Unterbau auskommt.

**Schaftwerkzeug mit AX-Stechmodul**




**Monowerkzeug**

## Systemmerkmale

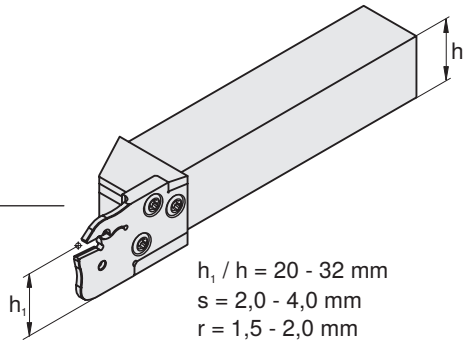
- Neutrale Wendeplatte
- Monoblock- und Modularwerkzeuge

## Nutzen

- Einsatz auf rechten und linken Werkzeugen möglich
- Für jede Anwendung die kostenoptimalste Lösung

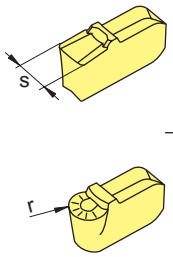
Beim System SX wird die Stechplatte selbstklemmend mit höchster Haltekraft im Plattensitz fixiert. Genaue Schneidenpositionierung und einfache Handhabung sind garantiert.

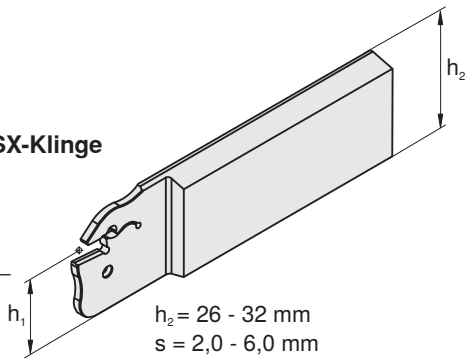
**Schaftwerkzeug mit SX-Stechmodul**



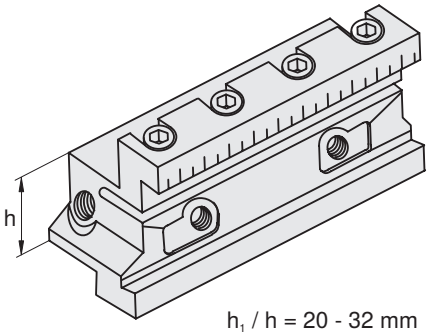

$h_1$ / h = 20 - 32 mm
s = 2,0 - 4,0 mm
r = 1,5 - 2,0 mm

**SX-Klinge**



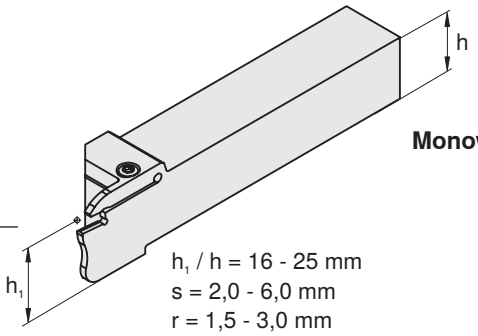




$h_2$ = 26 - 32 mm
s = 2,0 - 6,0 mm
r = 1,5 - 3,0 mm




$h_1$ / h = 20 - 32 mm

**Spannblock**




**Monowerkzeug**

$h_1$ / h = 16 - 25 mm
s = 2,0 - 6,0 mm
r = 1,5 - 3,0 mm

## Systemmerkmale

- Aktive Klemmung
- Plattensitz mit Fixanschlag
- Einfache Handhabung
- FEM optimiertes Werkzeug

## Nutzen

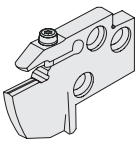
- Kein Herausziehen der Wendeschneidplatte
- Genaue Schneidenposition
- Geringer Zeitaufwand für den Wendeplattenwechsel
- Maximale Stabilität auch beim Längsdrehen

# Systemübersicht

System LX

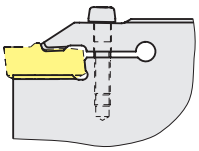
Das System LX ist durch eine hohe Belastbarkeit und Stabilität gekennzeichnet. Der Einsatzschwerpunkt liegt bei der Herstellung breiter und tiefer Nuten, sowie beim Abstechen großer Stangendurchmesser.

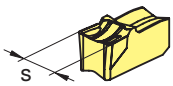
**LX-Stechmodul**



s = 8 - 10 mm
r = 4 mm
$T_{max}$ = 25 / 32 / 45 mm

**Detail Z**
**aktive WSP-Klemmung**

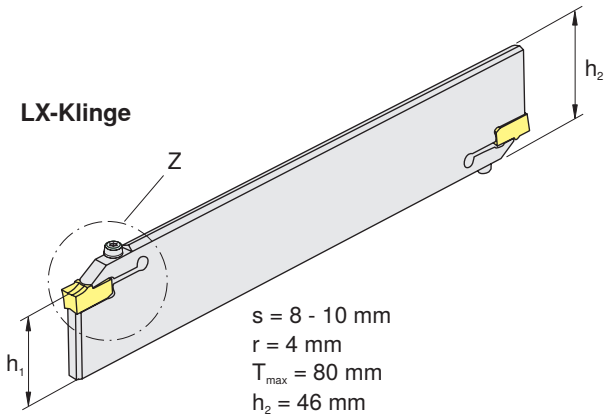






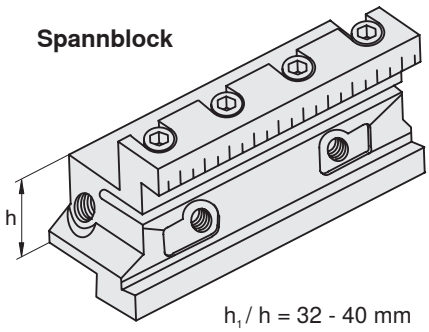


**LX-Klinge**




s = 8 - 10 mm
r = 4 mm
$T_{max}$ = 80 mm
$h_2$ = 46 mm

**Spannblock**




$h_1$ / h = 32 - 40 mm

**Anwendung LX - Module**

- Abstechen
- Einstechen und Drehen
- Axialstechen bei D > 500 mm
- Inneneinstechen und Drehen bei D > 200 mm

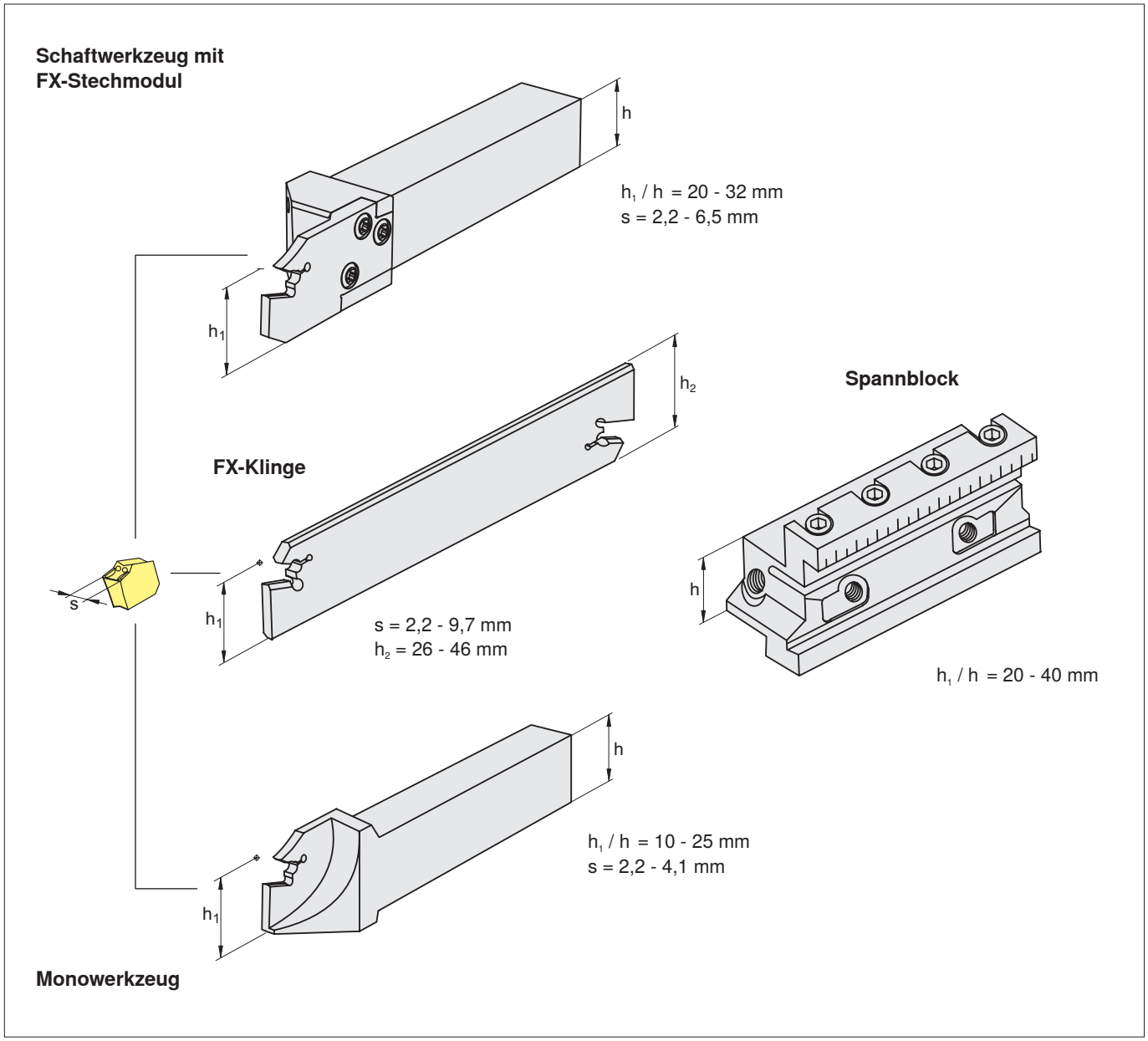
## Systemmerkmale

- Robuste Konstruktion
- Aktive Wendeschneidplattenklemmung
- Wendeschneidplatte mit Vollradius

## Nutzen

- Anwendungssicher, hoch belastbar
- Hohe Eignung für Kopierdrehbearbeitung

Das System FX ist gekennzeichnet durch eine selbstklemmende einschneidige Stechplatte für tiefes Einstechen und Abstechen auch großer Durchmesser. In Form von entsprechenden Modulen ist FX direkt in das System MSS integriert. Darüberhinaus sind auch die bewährte Block / Klingen - Lösung und Monowerkzeuge verfügbar.




## Systemmerkmale

- Selbstklemmende Stechplatte
- Verschiebbare Klinge
- Einschneidige, direkt gepresste Stechplatte

## Nutzen

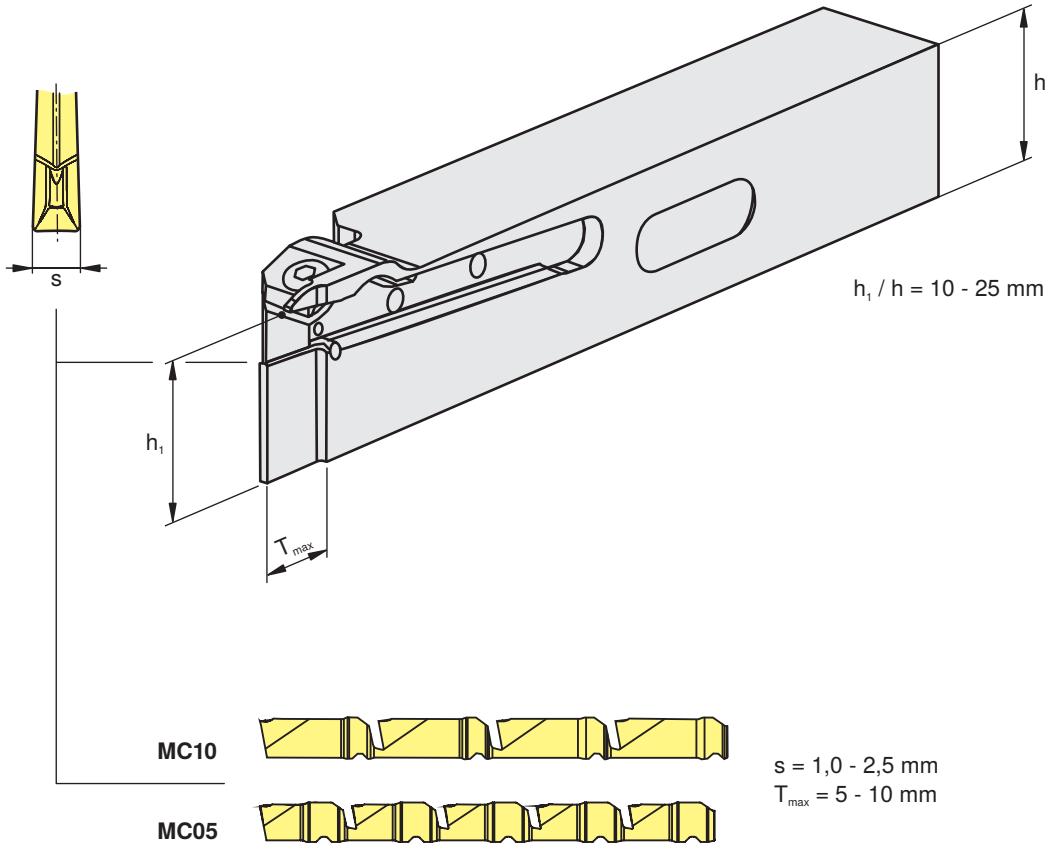
- Einfach, keine Klemmteile
- Stechtiefe, Auskragung optimal einstellbar
- Wirtschaftlich für tiefe Einstiche / Abstiche

# Systemübersicht

System MaxiClick

MaxiClick ist gekennzeichnet durch einen aus 4 bzw. 5 Schneidelementen bestehenden Schneideinsatz. Der Schneidkantenwechsel erfolgt ähnlich wie bei Cutter Messer durch abbrechen des verschlissenen Schneidelements.

**Monowerkzeug**




## Systemmerkmale

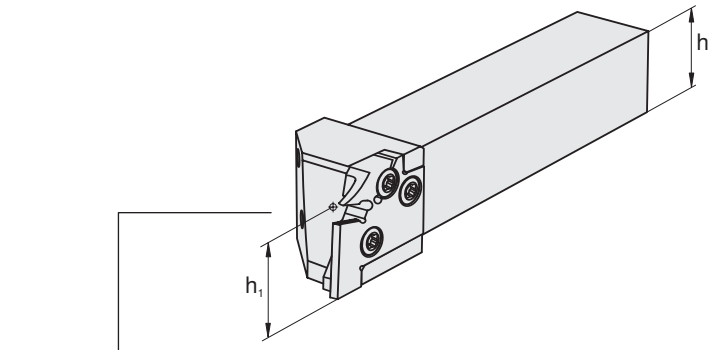
- Extrem schmale Ein- bzw. Abstiche möglich
- Ausgezeichnete Werkstückoberfläche erzielbar
- Mehrfachabstiche möglich

## Nutzen

- Einsparung teurer Werkstoffe
- Keine Nachbearbeitungskosten
- Reduzierung der Bearbeitungskosten

Beim System TC können Gewinde mit ein und derselben Platte mit den Verfahren Drehen und Fräsen hergestellt werden. TC bietet eine Reihe von Vorteilen welche bei vielen Gewindeanwendungen von entscheidender Bedeutung sind.

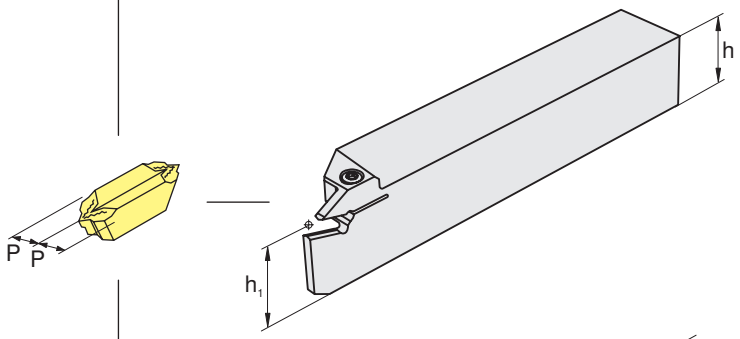
**Schaftwerkzeug mit TC-Gewindemodul**




$h_1$ / h = 20 - 25 mm

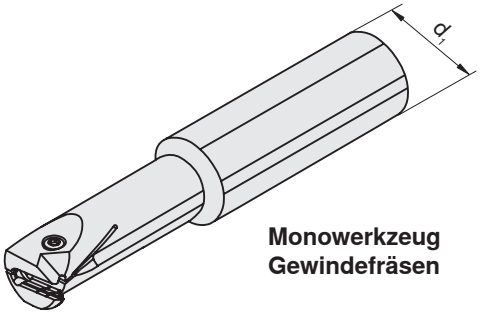
Steigung
P = 0,5 - 5,0 mm
P = 48 - 5 Gänge/Zoll

**Monowerkzeug**




$h_1$ / h = 12 mm

Steigung
P = 0,5 - 3,0 mm
P = 48 - 8 Gänge/Zoll




**Monowerkzeug Gewindefräsen**

$d_1$ = 25 - 32 mm

Steigung
P = 0,5 - 5,0 mm
P = 48 - 5 Gänge/Zoll

## Systemmerkmale

- Drehen und Fräsen mit derselben Wendeplatte
- Neutrale Ausführung der Wendeplatte

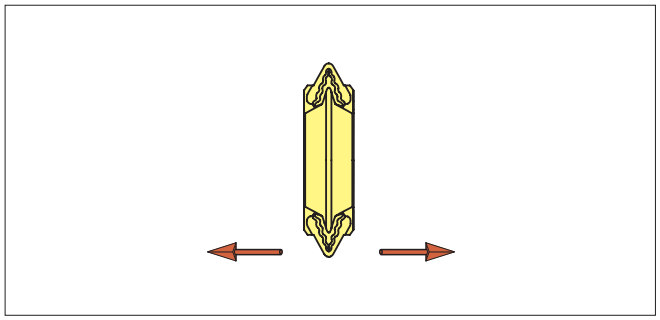
## Nutzen

- Flexibilität, reduzierte Vielfalt und Kosten
- Rechte und linke Gewinde mit einer Platte möglich
- Reduzierte Lagerhaltung

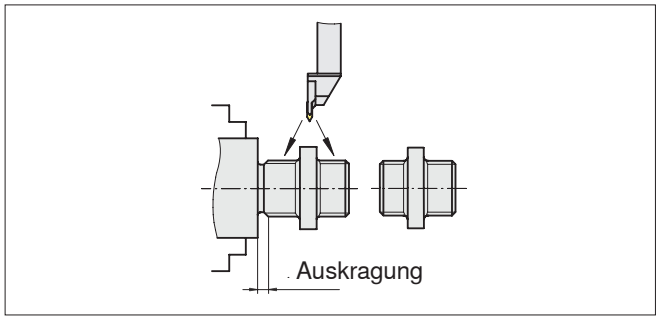
# System TC – Gewindedrehen

Das System TC für das Gewindedrehen ist integrierter Bestandteil des Systems MSS. Im Vergleich zu herkömmlichen Systemen bietet TC eine Reihe von Vorteilen, die bei vielen Gewindeanwendungen von entscheidender Bedeutung sind.

## System TC

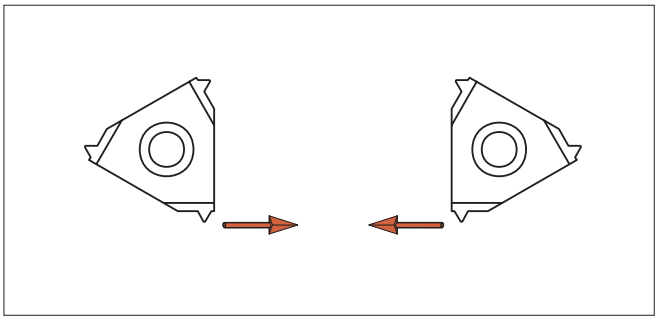


- Neutrale Ausführung der Gewindeplatte ermöglicht Einsatz in beiden Richtungen
- Nur eine Gewindeplatte je Steigung für Teilprofil- und Whitworth-Gewinde; nur zwei Gewindeplatten (Innen - Außen) je Steigung für ISO-Gewinde
- Reduzierung der Lagerartikel
- Gute Spanformung durch Spanleitstufe mit Spanwinkel +10°

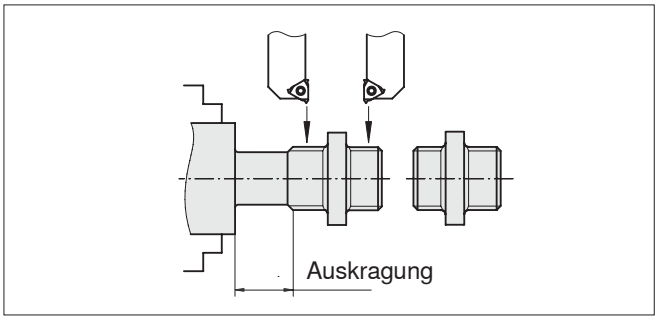



Höhere Wirtschaftlichkeit durch
- Kürzere Bearbeitungszeiten
- Einsparung des Werkzeugwechsels
- Hohe Stabilität bei kurzer Spannung
- Materialeinsparung
- Gewindedrehen zwischen Schultern möglich
- Weniger Werkzeuge und Wendeplatten

## Konventionelles System

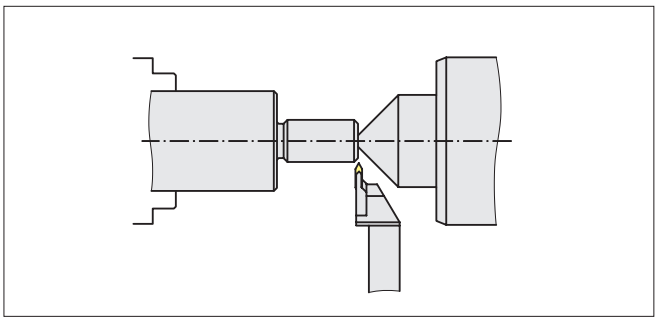


- Rechte und linke Ausführung der Gewindeplatte, daher nur in einer Richtung einsetzbar
- Für jede Gewindesteigung sind 4 Gewindeplatten notwendig (Rechte - Linke, Innen - Außen)



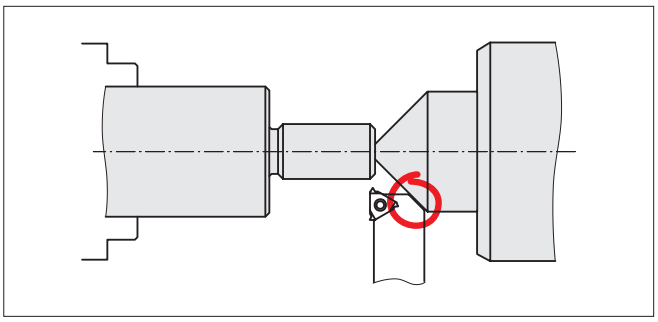

- Für diese Bearbeitung sind 2 Werkzeuge notwendig
- Zusätzlicher Material- und Stabilitätsverlust durch große Auskragungen

## System TC

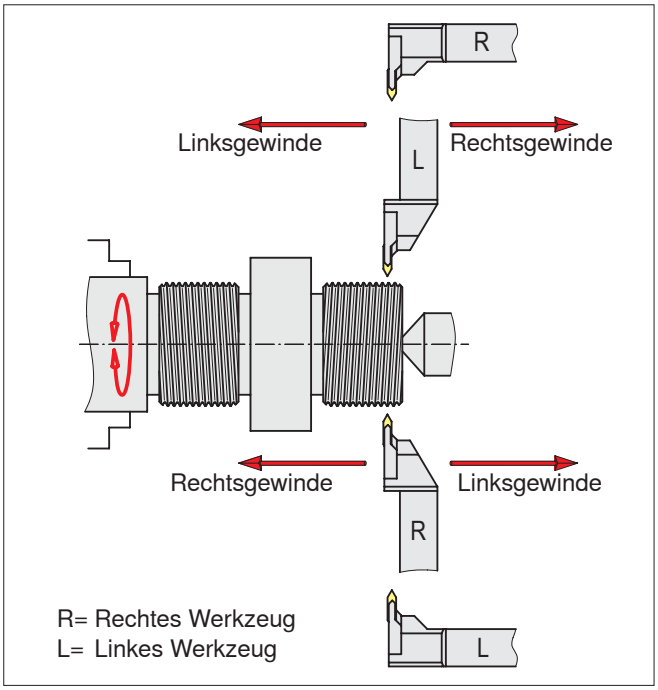


○ Sehr gute Zugänglichkeit zum Werkstück, damit ist die Verwendung des Reitstocks auch bei kleinen Gewindedurchmessern möglich

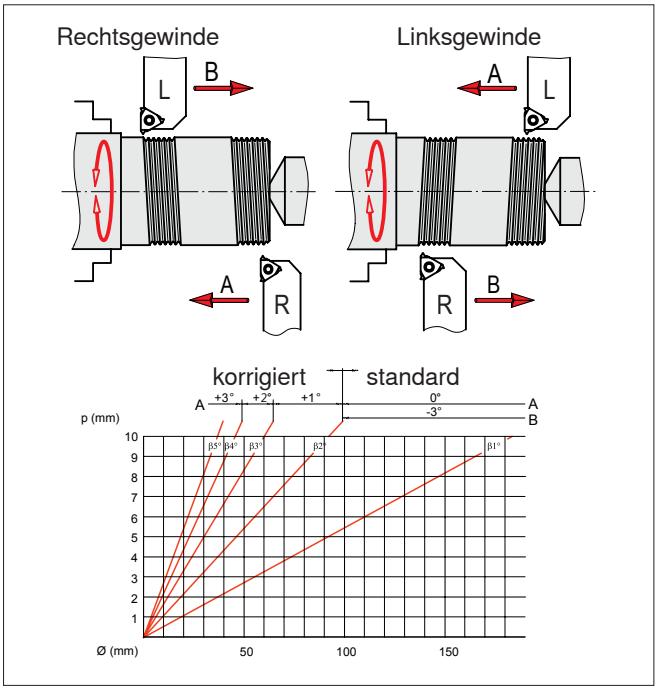
## Konventionelles System



○ Schlechte Zugänglichkeit
○ Kollisionsgefahr



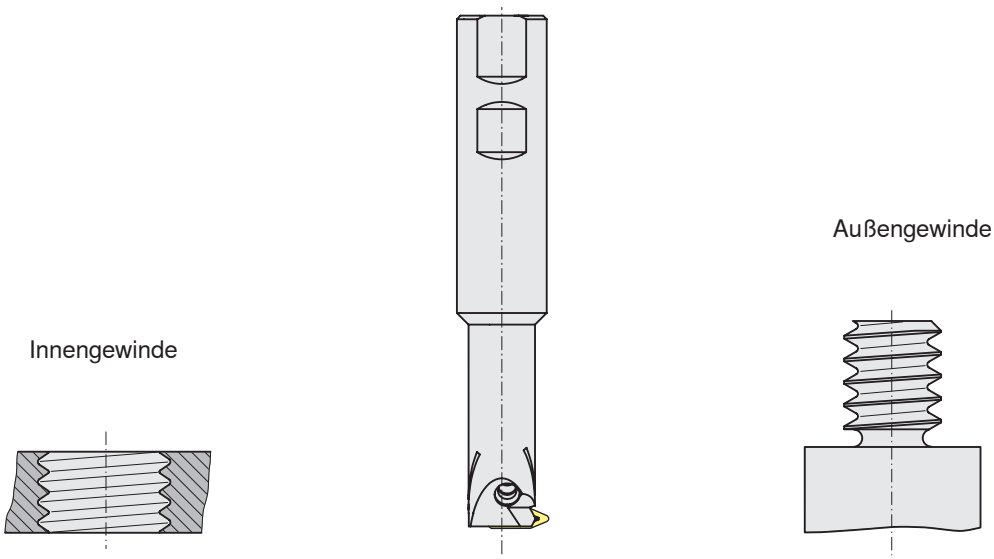

○ Einfache Anwendung, da die Werkzeuge ohne Steigungswinkelkorrektur in beiden Richtungen einsetzbar sind

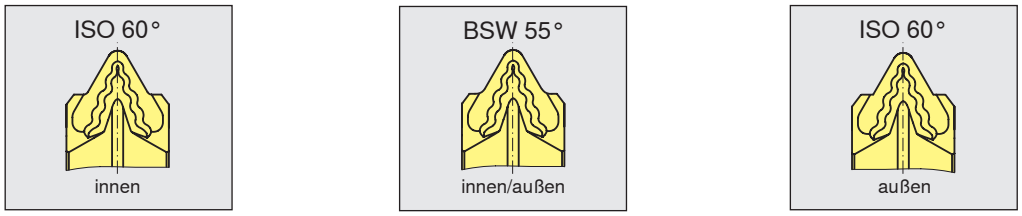



○ Steigungswinkelkorrektur zu beachten, daher hohes Anwendungs-Know-how notwendig
○ Nur in einer Drehrichtung einsetzbar

# System TC – Gewindefräsen

Für das Gewindefräsen kommen die gleichen Wendeplatten wie für das Gewindedrehen zur Anwendung. Mit speziellen Werkzeugschäften in kompakter und modularer Bauweise können **Außen- und Innengewinde** auf allen modernen Bearbeitungszentren gefertigt werden.



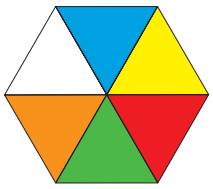




## Systemmerkmale

- Drehen und Fräsen mit derselben Wendeschneidplatte
- Einzahn-Gewindefräsen
- Gewinde wird durchgehend geschnitten

## Nutzen

- Flexibilität, reduzierte Vielfalt und Kosten
- Geringe Bearbeitungskräfte, große Auskragung möglich, hohe Schnittwerte ($v_c$ und f), einfache Programmierung
- Keine Übergänge bzw. Stufen im Gewinde



## Ebene Werkstoff

Der MasterGuide von CERATIZIT teilt die Werkstoffe nach VDI 3323 in sechs Hauptgruppen (P, M, K, N, S, H) ein. Jeder Gruppe ist eine zum Teil schon aus der ISO 513 bekannte Kennfarbe zugeordnet.

**P** **Stahl**

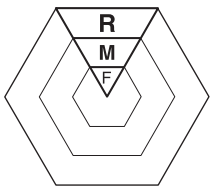
**M** **Rostfrei**

**K** **Eisenguss**

**N** **Nichteisenmetalle und Nichtmetalle**

**S** **hochwarmfeste Legierungen/Titan**

**H** **harte Werkstoffe**




## Ebene Bearbeitung

Jedes Kennfarbenfeld ist durch Linien in drei Ebenen eingeteilt. Diese kennzeichnen die jeweiligen Bearbeitungsarten:

**R = Grobzerspanung**

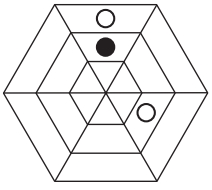


**M = Mittlere Zerspanung**



**F = Feinzerspanung**





## Ebene Anwendung

Den idealen Anwendungsbereich einer Wendeplatte kennzeichnet ein voller Kreis. Erweiterte Anwendungsbereiche sind durch ein leeres Kreissymbol gekennzeichnet. So schafft MasterGuide von CERATIZIT Übersicht bei Einkauf, Auswahl und Bearbeitung und reduziert Sorten- und Geometriebestände im Lager.

● **Hauptanwendung**
o **Erweiterte Anwendung**

# Bezeichnungssystem CERATIZIT

Schneidstoffe

CUTTING SOLUTIONS BY CERATIZIT

C T C P 3 3 5

1 2 3 4 5

## 1 Hersteller: CERATIZIT

## 2 Schneidstoffart

W Hartmetall unbeschichtet
C Hartmetall beschichtet CVD
P Hartmetall beschichtet PVD
T Cermet unbeschichtet
E Cermet beschichtet
N Siliziumnitrid unbeschichtet
M Siliziumnitrid beschichtet
S Mischkeramik
I Sialon
D PKD
B CBN
L CBN beschichtet
H PM-HSS

## 3 Primäre Eignung für Werkstoff Variante 1: Nummer

1 Stahl
2 rostfreier Stahl
3 Eisenguss
4 Leicht- und Buntmetalle/Nichtmetalle
5 Superlegierungen/Titan
6 harte Werkstoffe
7 Mehrbereichssorte ohne besonderen Werkstoffschwerpunkt

## Primäre Eignung für Werkstoff Variante 2: ISO-Buchstabe

P Stahl
M rostfreier Stahl
K Eisenguss
N Leicht- und Buntmetalle/Nichtmetalle
S Superlegierungen/Titan
H harte Werkstoffe
X Mehrbereichssorte ohne besonderen Werkstoffschwerpunkt

## 4 Primäre Eignung für Anwendung

1 Drehen
2 Fräsen
3 Stechen
4 Bohren
5 Gewindedrehen
6 Andere
7 Mehrbereichssorte ohne besonderen Anwendungsschwerpunkt

## 5 ISO 513 Anwendungsbereich

z.B.
05
10
15
25
35 ISO P35
.
.
.

## Hartmetall

**HW** Unbeschichtetes Hartmetall, vorwiegend aus Wolframcarbid (WC)
**HT**[1)] Unbeschichtetes Hartmetall, vorwiegend aus Titancarbid (TiC) oder Titannitrid (TiN) oder aus beiden
**HC** Hartmetalle wie oben, jedoch beschichtet

## Schneidkeramik

**CA** Oxidkeramik, vorwiegend aus Aluminiumoxid ($Al_2O_3$)
**CM** Mischkeramik, auf der Basis von Aluminiumoxid ($Al_2O_3$), jedoch auch mit anderen Bestandteilen als Oxide
**CN** Nitridkeramik, vorwiegend aus Siliziumnitrid ($Si_3N_4$)
**CC** Schneidkeramik wie oben, jedoch beschichtet

## Diamant

**DP**[2)] Polykristalliner Diamant

## Bornitrid

**BL**[2)] Polykristallines kubisches Bornitrid, mit niedrigem CBN-Anteil (40% - 65%)
**BH**[2)] Polykristallines kubisches Bornitrid, mit hohem CBN-Anteil (70% - 95%)
**BC**[2)] Polykristallines kubisches Bornitrid, beschichtet

[1)] Diese Hartmetalle werden auch „Cermet“ genannt.

[2)] Polykristalliner Diamant und polykristallines Bornitrid werden auch „hochharte Schneidstoffe“ genannt

# Sortenübersicht

Stechen

| Sortenbezeichnung | Normbezeichnung ISO | Normbezeichnung ANSI | Schneidstoffart | Anwendungsbereich 01 05 10 15 20 25 30 35 40 45 50 | P Stahl | M Rostfrei | K Eisenguss | N NE-Metalle | S Hochwarmfest | H Harte Werkstoffe |
|---|---|---|---|---|---|---|---|---|---|---|
| **CTCP325** COLORSTAR™ | HC-P25 | C6 | C | | ● | | | | | |
| | HC-K30 | C1 | C | | | | ● | | | |
| | HC-M20 | - | C | | | ○ | | | | |
| **CTP1340** SILVERSTAR™ | HC-P30 | C6 | P | | ● | | | | | |
| | HC-M25 | - | P | | | ● | | | | |
| | HC-K30 | C1 | P | | | | ● | | | |
| | HC-S30 | - | P | | | | | | ● | |
| **CTCP335** COLORSTAR™ | HC-P35 | C6 | C | | ● | | | | | |
| | HC-K35 | C1 | C | | | | ● | | | |
| | HC-M30 | - | C | | | ○ | | | | |
| **CTPP345** SILVERSTAR™ | HC-P45 | C5 | P | | ● | | | | | |
| | HC-M40 | - | P | | | ● | | | | |
| | HC-S40 | - | P | | | | | | ○ | |
| **H216T** | HW-N15 | C3 | W | | | | | ● | | |
| | HW-K15 | C3 | W | | | | ● | | | |

● Hauptanwendung

○ Erweiterte Anwendung

** **Auslauf**

| Sortenbezeichnung | Normbezeichnung | | Schneidstoffart | Anwendungsbereich | P | M | K | N | S | H |
|---|---|---|---|---|---|---|---|---|---|---|
| | ISO | ANSI | | 01 05 10 15 20 25 30 35 40 45 50 | Stahl | Rostfrei | Eisenguss | NE-Metalle | Hochwarmfest | Harte Werkstoffe |
| **GM213** | HC-P20 | C7 | C | | ● | | | | | |
| | HC-M15 | - | C | | | ● | | | | |
| | HC-K25 | C2 | C | | | | ● | | | |
| **GM240** | HC-P35 | C6 | C | | ● | | | | | |
| | HC-M25 | - | C | | | ● | | | | |
| **H216T** | HW-N15 | C3 | W | | | | | ● | | |
| | HW-K15 | C3 | W | | | | ● | | | |

● Hauptanwendung

○ Erweiterte Anwendung

# Sortenbeschreibung

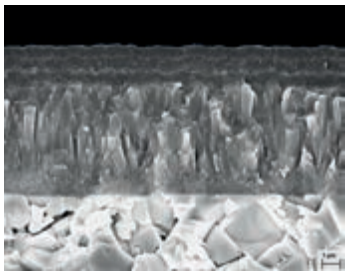
Stechen

## CTCP325

COLORSTAR™

HC-P25 | HC-K30 | HC-M20

● ● ○



**Spezifikation:**
Zusammensetzung: Co 7,0%; Mischkarbide 8,1%; WC Rest | Korngröße: 1-2 µm | Härte: $HV_{30}$ 1450 | Schichtsystem: CVD TiCN-$Al_2O_3$ Multilayer

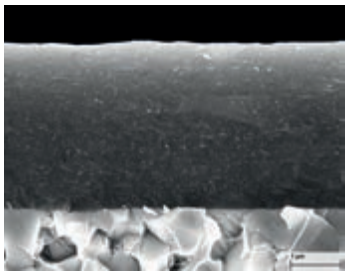
**Einsatzempfehlung:**
Die verschleißfeste Lösung für Stahl- und Gusswerkstoffen im hohen Schnittgeschwindigkeitsbereich.

## CTP1340

SILVERSTAR™

HC-P30 | HC-M25 | HC-K30 | HC-S30

● ● ● ●



**Spezifikation:**
Zusammensetzung: Co 9,0%; Mischkarbide 2,0%; WC Rest | Korngröße: 0,7-1 µm | Härte: $HV_{30}$ 1590 | Schichtsystem: PVD TiAlTaN

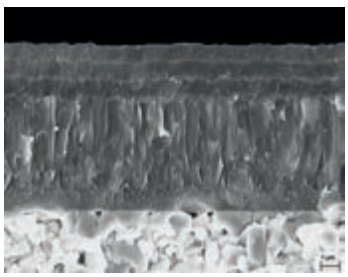
**Einsatzempfehlung:**
Die universell einsetzbare Hochleistungssorte für Stahlwerkstoffe, austenitischen Stahl, Gusswerkstoffe und hochwarmfeste Legierungen.

## CTCP335

COLORSTAR™

HC-P35 | HC-K35 | HC-M30

● ● ○



**Spezifikation:**
Zusammensetzung: Co 10,5%; Mischkarbide 2,0%; WC Rest | Korngröße: 1 µm | Härte: $HV_{30}$ 1400 | Schichtsystem: CVD TiCN-$Al_2O_3$ Multilayer

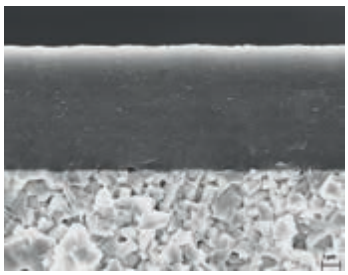
**Einsatzempfehlung:**
Die zuverlässige Wahl für die Bearbeitung von Stahl- und Gusswerkstoffen.

## CTPP345

SILVERSTAR™

HC-P45 | HC-M40 | HC-S40

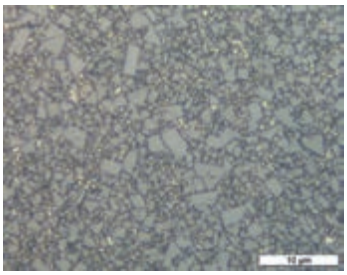
● ● ○



**Spezifikation:**
Zusammensetzung: Co 12,5%; Mischkarbide 2,0%; WC Rest | Korngröße: 1-1,5 µm | Härte: $HV_{30}$ 1380 | Schichtsystem: PVD TiAlTaN

**Einsatzempfehlung:**
Die zuverlässige Lösung für Stahlwerkstoffe und austenitische Stähle bei instabilen Verhältnissen.

| H216T | HW-N15 \| HW-K15 | ● ● |
|---|---|---|



**Spezifikation:**
Zusammensetzung: Co 6,0%; WC Rest | Korngröße: 1 $\mu$m | Härte: $HV_{30}$ 1630

**Einsatzempfehlung:**
Die unbeschichtete Hartmetallsorte für die Bearbeitung von Aluminium und anderen Nichteisenmetallen.

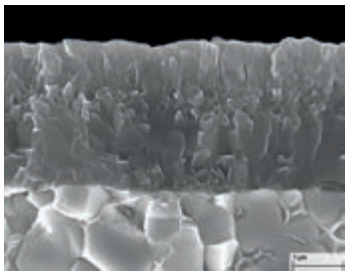
# Sortenbeschreibung

Gewinde



## GM213

HC-P20 | HC-M15 | HC-K25

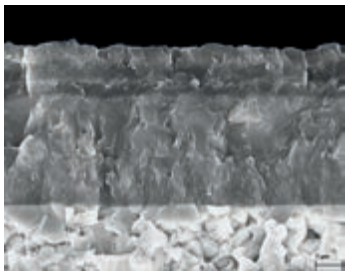


**Spezifikation:**
Zusammensetzung: Co 6,0%; WC Rest | Korngröße: 1 µm | Härte: $HV_{30}$ 1630 | Schichtsystem: CVD TiCN-TiN

**Einsatzempfehlung:**
Die verschleißfeste Gewindedrehsorte für hohe Schnittgeschwindigkeiten.

## GM240

HC-P35 | HC-M25

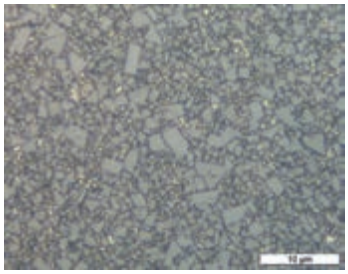


**Spezifikation:**
Zusammensetzung: Co 10,0%; Mischkarbide 0,6%; WC Rest | Korngröße: 0,7 µm | Härte: $HV_{30}$ 1590 | Schichtsystem: CVD TiCN-$Al_2O_3$ Multilayer

**Einsatzempfehlung:**
Die zähe Gewindedrehsorte für den universellen Einsatz.

## H216T

HW-N15 | HW-K15



**Spezifikation:**
Zusammensetzung: Co 6,0%; WC Rest | Korngröße: 1 µm | Härte: $HV_{30}$ 1630

**Einsatzempfehlung:**
Die unbeschichtete Hartmetallsorte für die Bearbeitung von Aluminium und anderen Nichteisenmetallen.

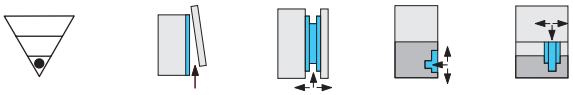

CERATIZIT
CERATIZIT
CERATIZIT

# Einfach zum Erfolg

Einsatzempfehlungen



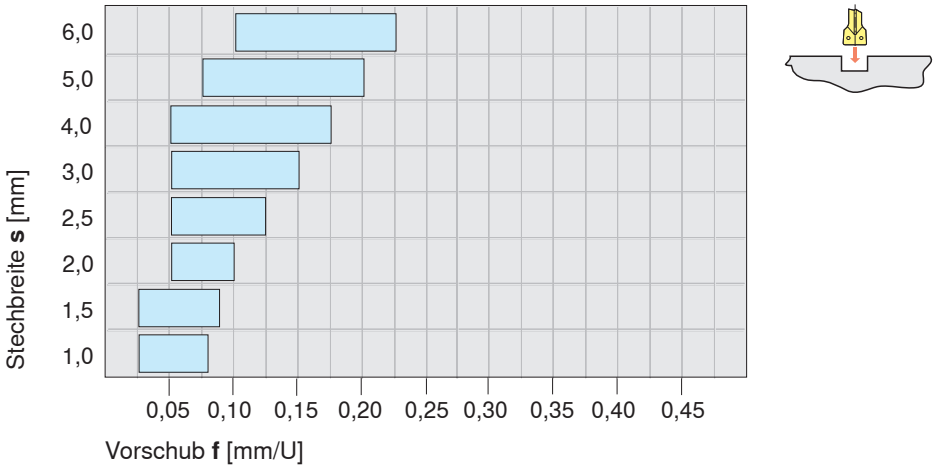

**Anwendung**



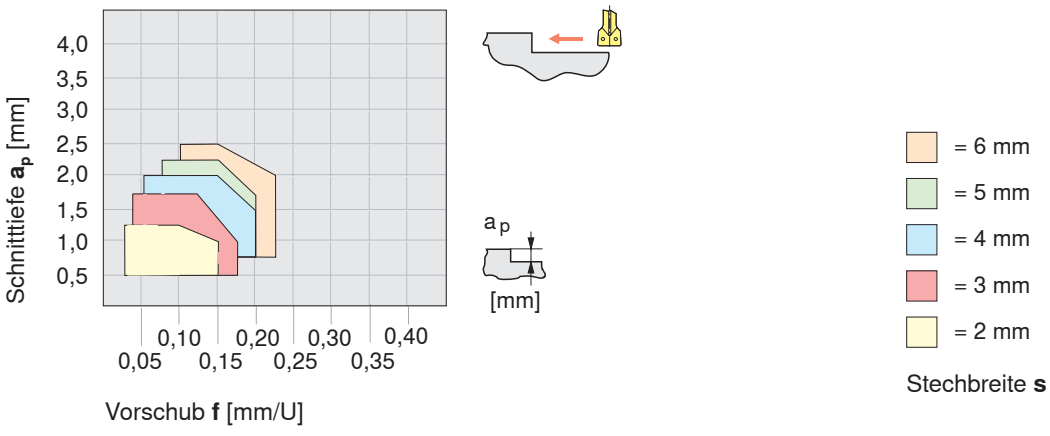
## -F2

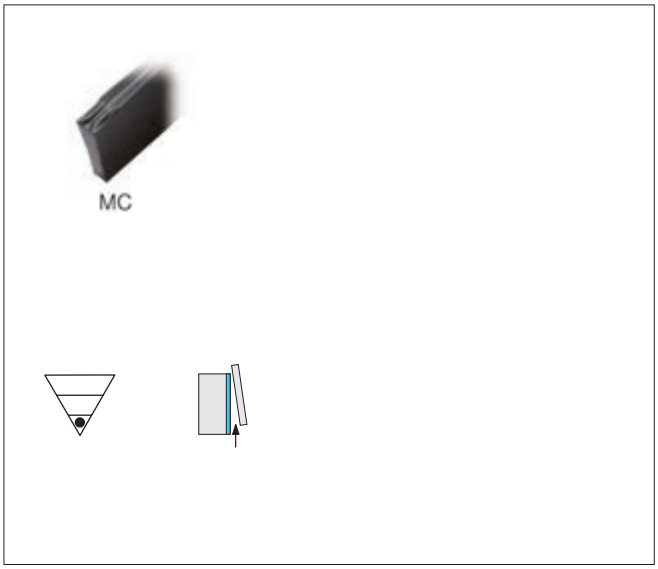
- Für Stähle allgemein, besonders geeignet für **Rostfreiwerkstoffe**
- Umfangseitig geschliffene Platte
- Toleranz Stechbreite ± 0,02 mm
- Geeignet auch zum Abstechen von Hohlkörpern und dünnwandigen Werkstücken
- Sonderformen (SX, GX) möglich

## Vorschub Einstechen/Abstechen




## Vorschub Längsdrehen

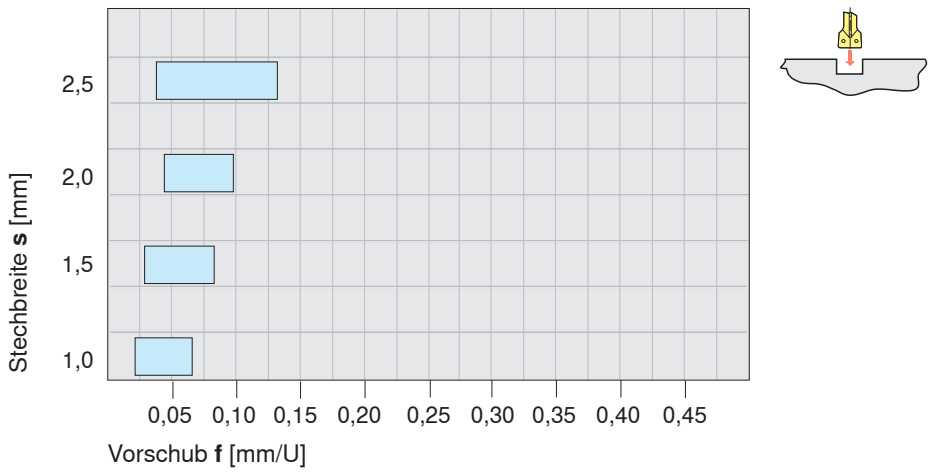





## -F3

- Besonders geeignet zum Abstechen von Hohlkörpern und dünnwandigen Werkstücken
- Für Stähle allgemein, Rostfreie Stähle und Superlegierungen

### Vorschub Einstechen/Abstechen



# Einfach zum Erfolg

Einsatzempfehlungen

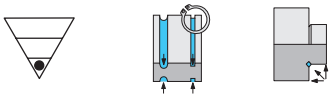


GX-R/L



GX-N

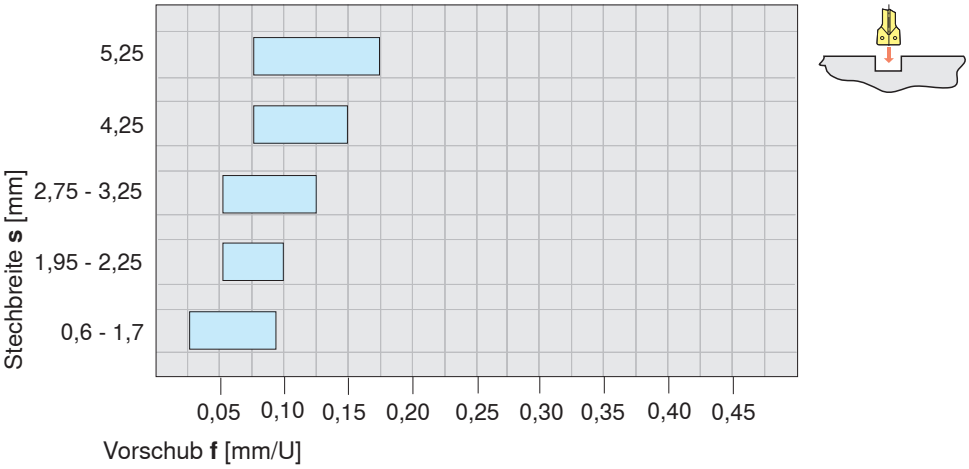
**Anwendung**



## Sicherungsringeinstechen L/N/R

- Stechplatte für Sicherungsringeinstiche nach DIN 471-472
- Für Innen- und Außenbearbeitung

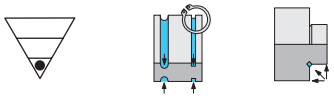
## Vorschub Einstechen





GX R/L

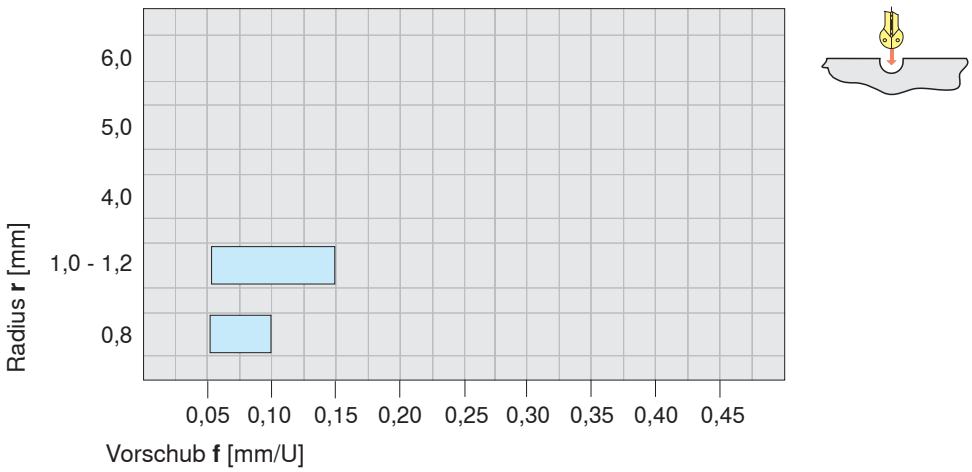
**Anwendung**



## Radieneinstechen R/L

- Stechplatte für Radieneinstiche und zum Kopierdrehen
- Für alle Stahlwerkstoffe
- Für Innen- und Außenbearbeitung

## Vorschub Einstechen



# Einfach zum Erfolg

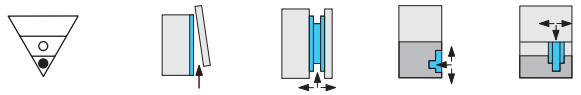
Einsatzempfehlungen







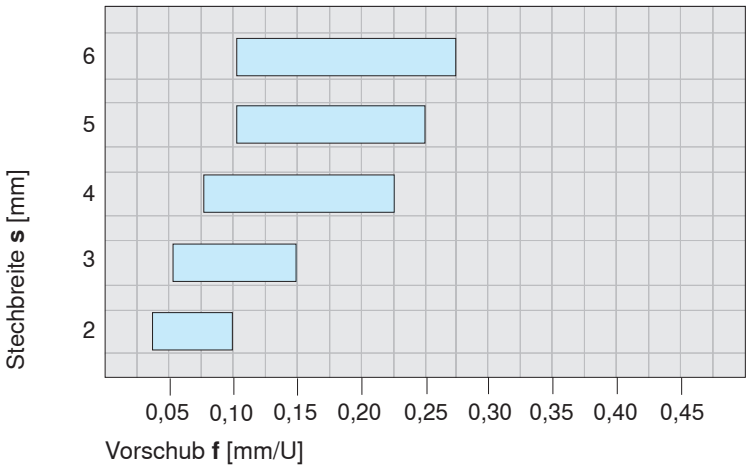
**Anwendung**

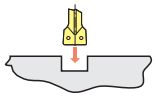


## -EN

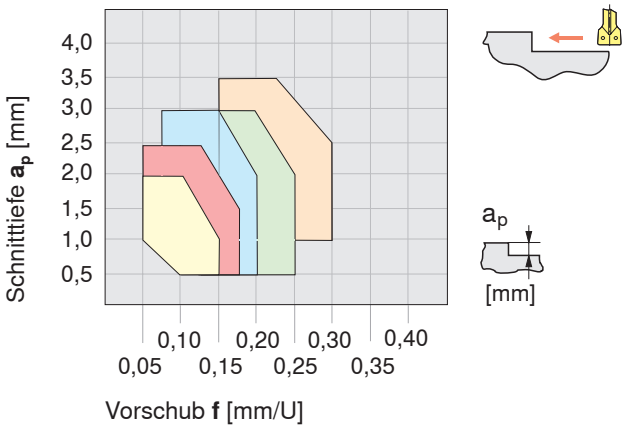
- Für alle Stahlwerkstoffe
- Universell einsetzbar
- Breiter Anwendungsbereich

## Vorschub Einstechen/Abstechen



## Vorschub Längsdrehen

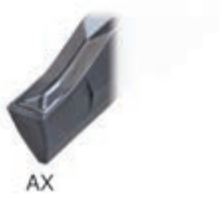












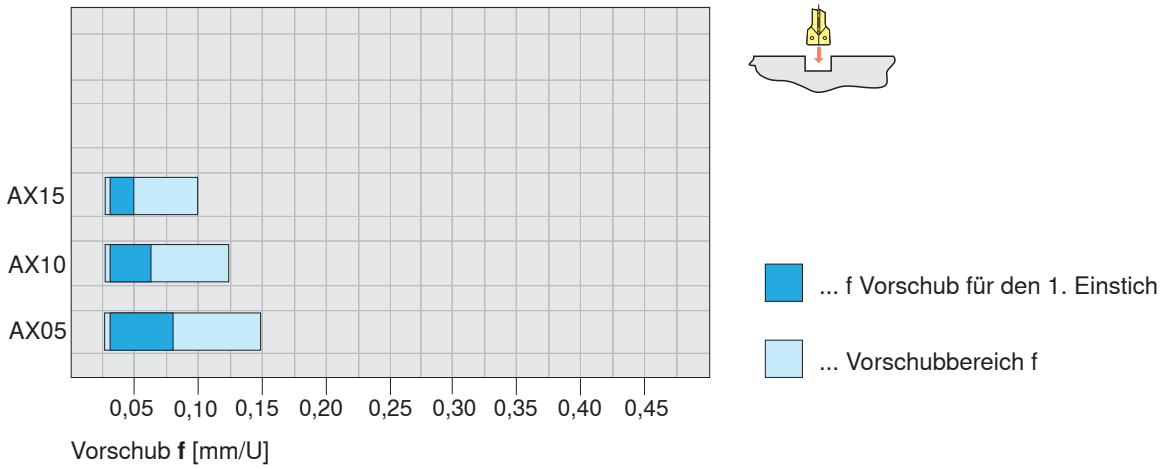

**Anwendung**



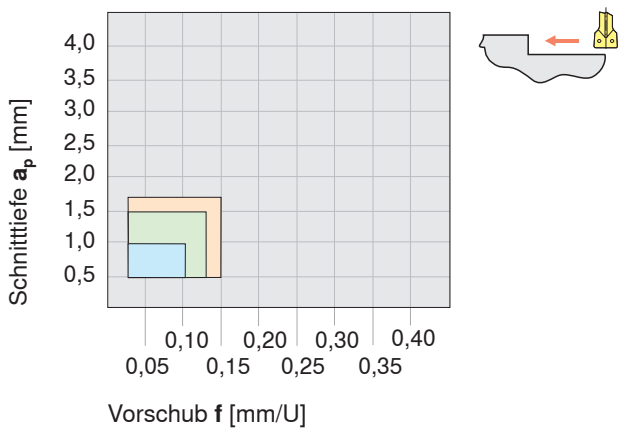
## -F50

- Universalgeometrie für:
  - **Stahl**
  - **Rostfreier Stahl**
  - Eisenguss
  - NE-Metalle
- Umfangseitig geschliffen
- Toleranz Stechbreite ± 0,02 mm

## Vorschub Axialstechen




## Vorschub Plandrehen



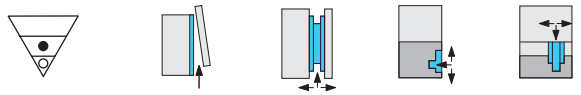
# Einfach zum Erfolg

Einsatzempfehlungen



SX/LX

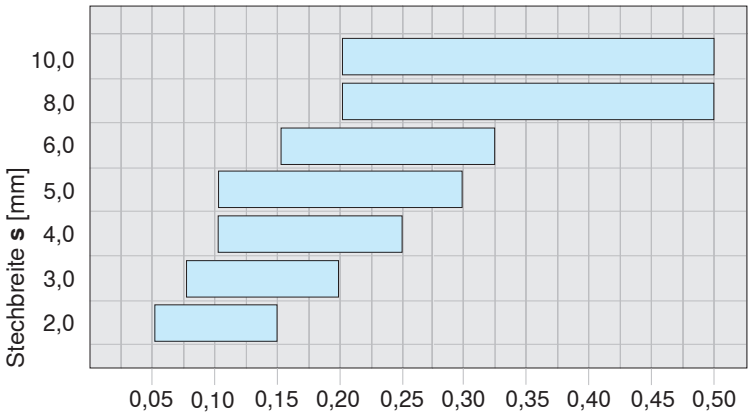
**Anwendung**

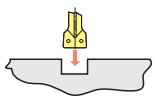


## -M2

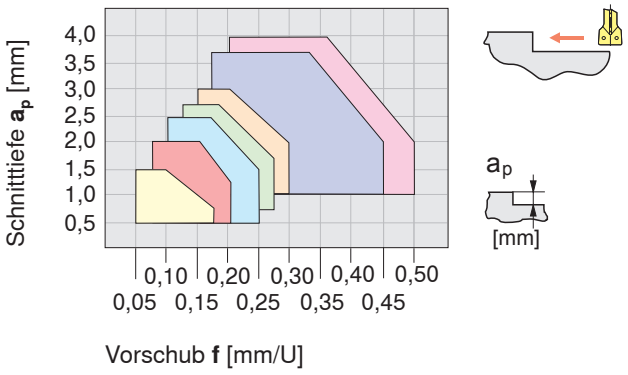
- Zum Einstechen und Drehen
- Geeignet für alle Stahl- und Gusswerkstoffe
- Sehr gute Spankontrolle

## Vorschub Einstechen/Abstechen



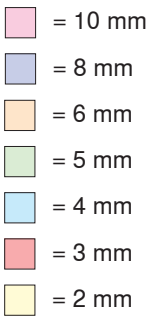
## Vorschub Längsdrehen







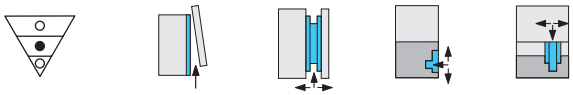






GX

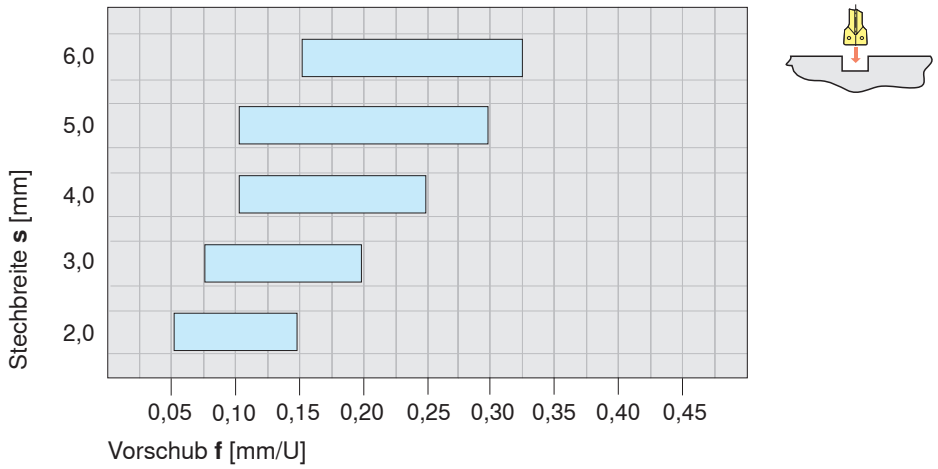
**Anwendung**



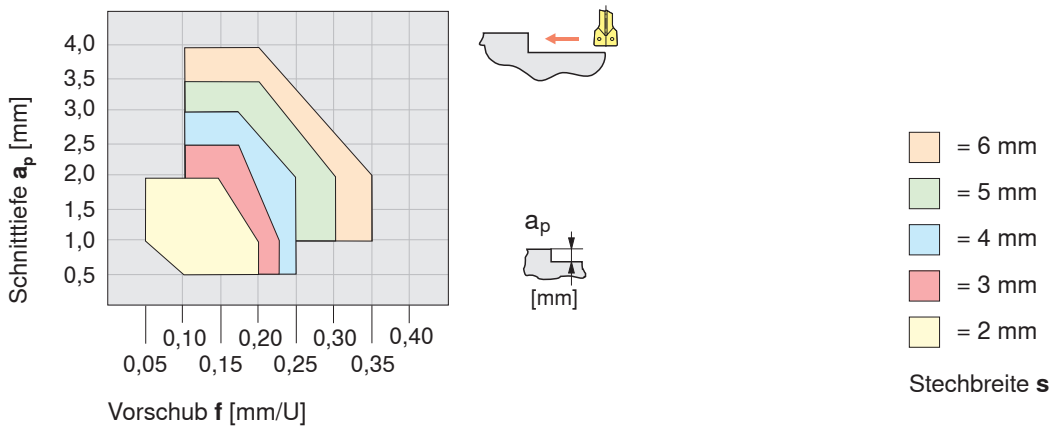
## -M40

- Zum Einstechen und Drehen
- Geeignet für alle Stahlwerkstoffe
- Sehr gute Spankontrolle
- Toleranz Stechbreite ± 0,05 mm

## Vorschub Einstechen/Abstechen




## Vorschub Längsdrehen

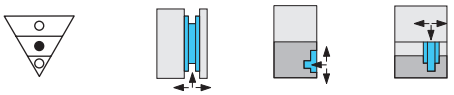


# Einfach zum Erfolg

Einsatzempfehlungen



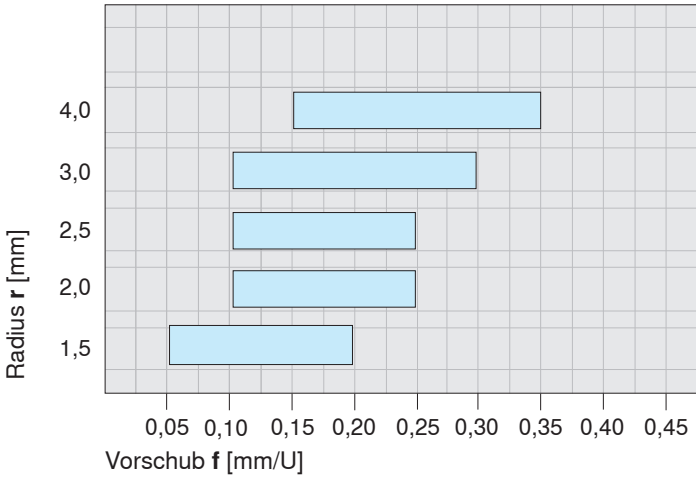

**Anwendung**

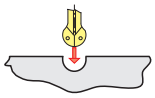


## -M3

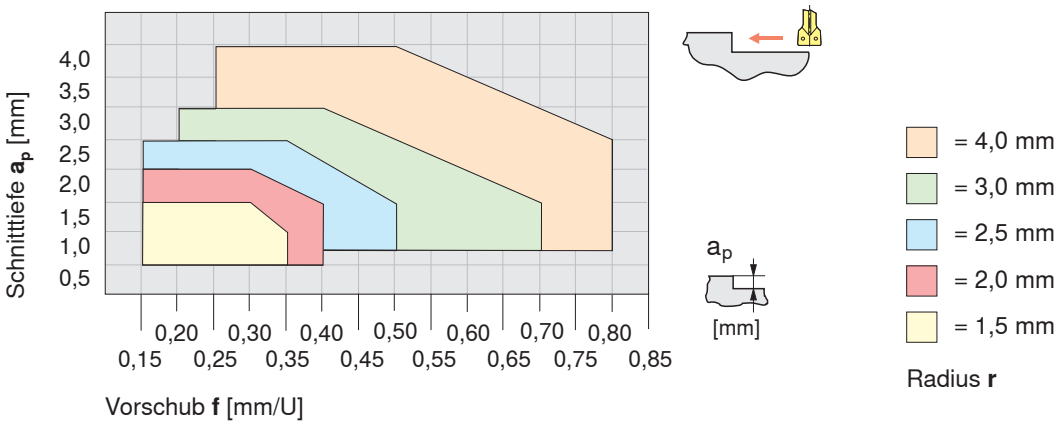
- Stechplatte für Radieneinstiche und Kopierdrehen
- Für alle Stahlwerkstoffe
- Für Innen- und Außenbearbeitung

## Vorschub Einstechen/Abstechen



## Vorschub Längsdrehen




SX


GX16/GX24

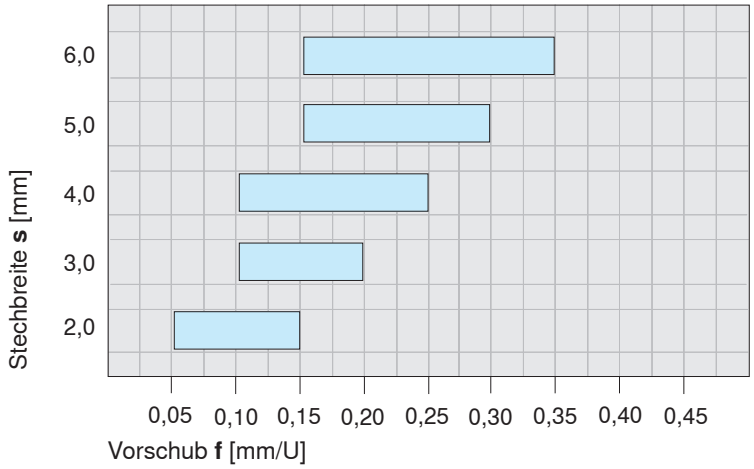
**Anwendung**

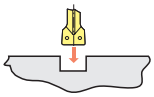


## -M1

- Stechplatte mit schmaler Negativfase
- geeignet für alle Stahlwerkstoffe mittlerer bis hoher Festigkeit
- universell einsetzbar
- für Stahl und Grauguss

## Vorschub Einstechen/Abstechen



# Einfach zum Erfolg

Einsatzempfehlungen

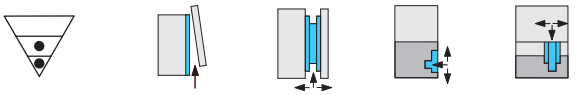








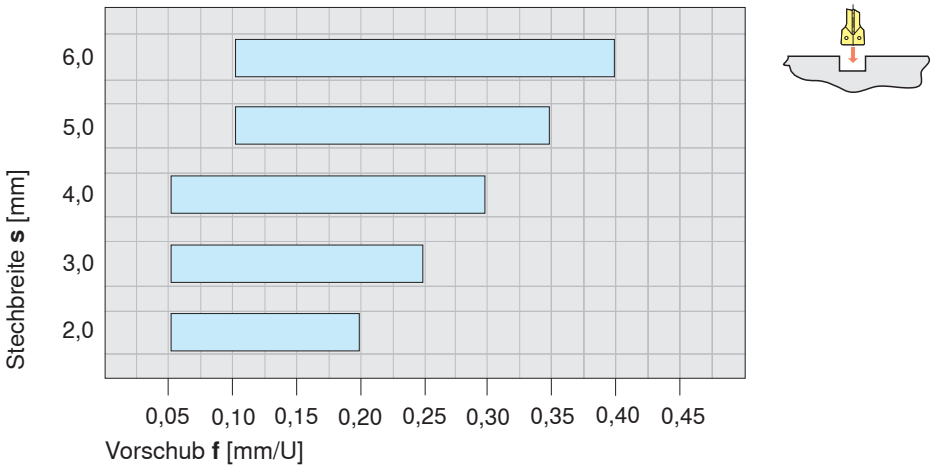

**Anwendung**



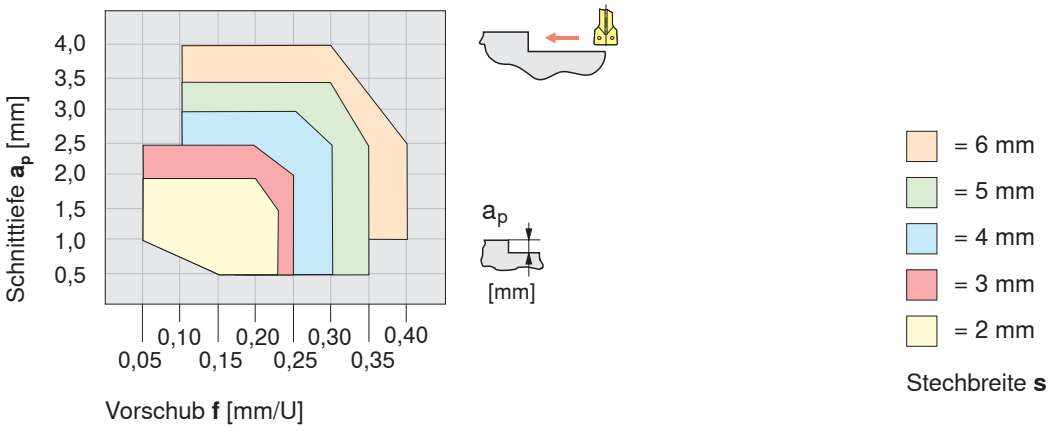
## -27P

- Speziell geeignet für **Aluminium und Nichteisenmetalle**
- Stechplatte mit hochpositiver Schneidengeometrie und scharfer Schneidkante
- Umfangseitig geschliffen
- Toleranz Stechbreite ± 0,02 mm
- Spiegelglatte Spanfläche durch „microfinish"

## Vorschub Einstechen/Abstechen

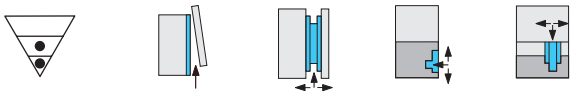



## Vorschub Längsdrehen





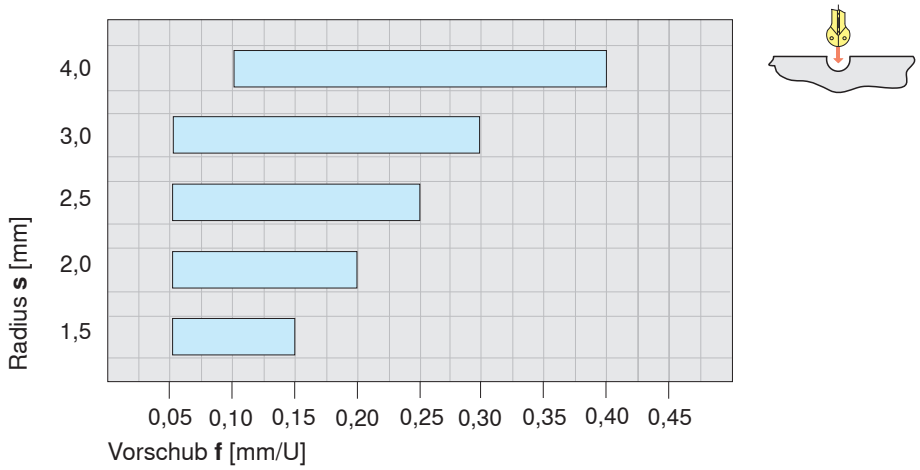

**Anwendung**



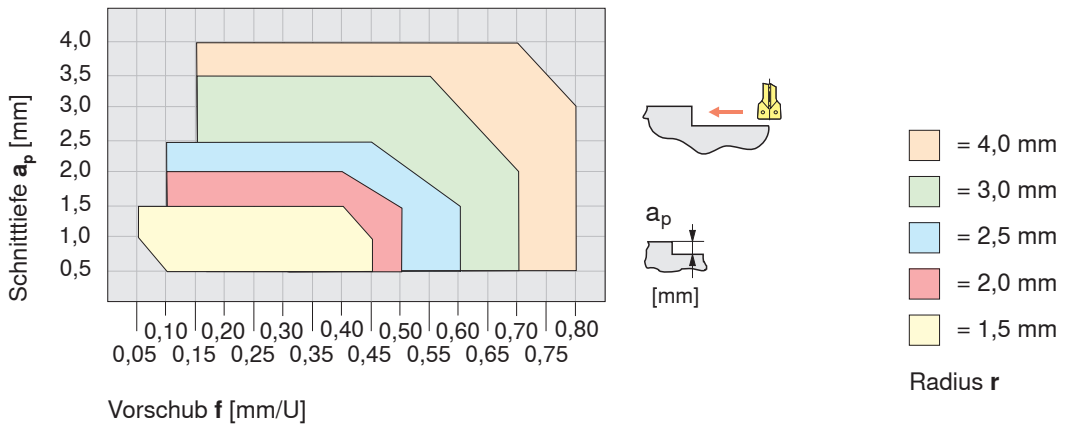
## -27P

- Speziell geeignet für **Aluminium und Nichteisenmetalle**
- Stechplatte mit hochpositiver Schneidengeometrie und scharfer Schneidkante
- Umfangseitig geschliffen
- Toleranz Stechbreite ± 0,02 mm
- Spiegelglatte Spanfläche durch „microfinish“

## Vorschub Einstechen/Abstechen




## Vorschub Längsdrehen



# Einfach zum Erfolg

Einsatzempfehlungen



FX

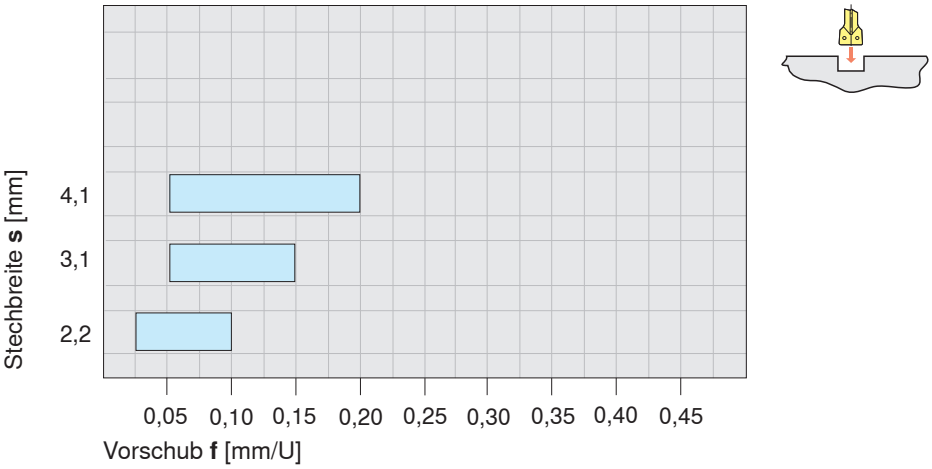
**Anwendung**



## -F1

- Sehr schneidfreudige Geometrie mit niedrigen Schnittkräften
- Für Werkstoffe im niedrigen bis mittleren Festigkeitsbereich
- Besonders geeignet zum Abstechen von Hohlkörpern und dünnwandigen Werkstücken
- Sehr gute Spankontrolle auch bei niedrigem Vorschub
- Geringe Aufbauschneidenbildung

## Vorschub Einstechen/Abstechen





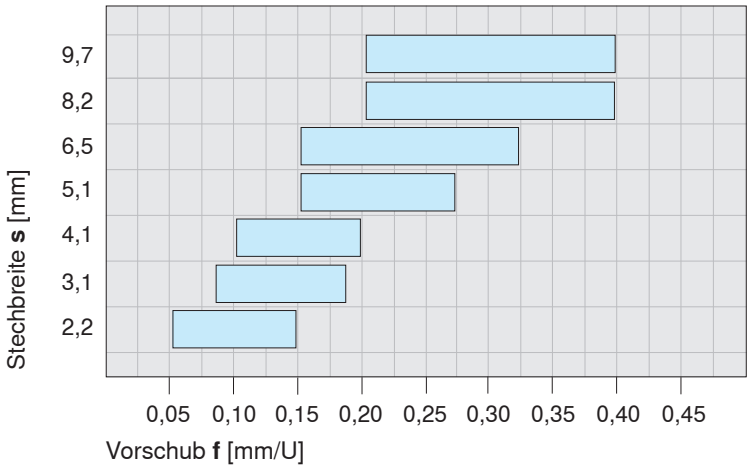

**Anwendung**

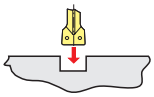


## -M1

- Stechplatte mit schmaler Negativfase
- Geeignet für alle Stahlwerkstoffe mittlerer bis hoher Festigkeit
- Universell einsetzbar
- Für Stahl und Grauguss

## Vorschub Einstechen/Abstechen



# Einfach zum Erfolg

Einsatzempfehlungen



FX

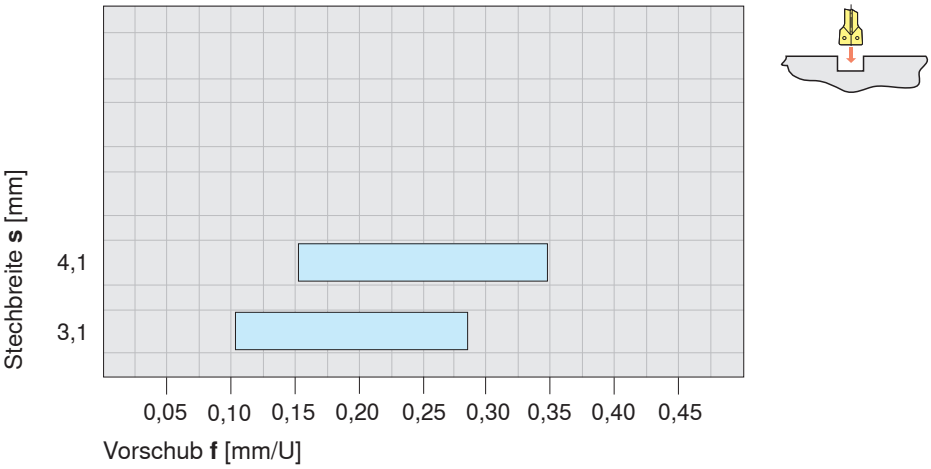
**Anwendung**



## -R2

- Stechplatte mit exzellenter Spanbildung über einen breiten Vorschubbereich
- Sehr stabile Schneidkante
- Besonders geeignet für wirtschaftliches Abstechen wenn eine etwas stärkere Grat- / Butzenbildung am Werkstück verbleiben kann

## Vorschub Einstechen/Abstechen





FX

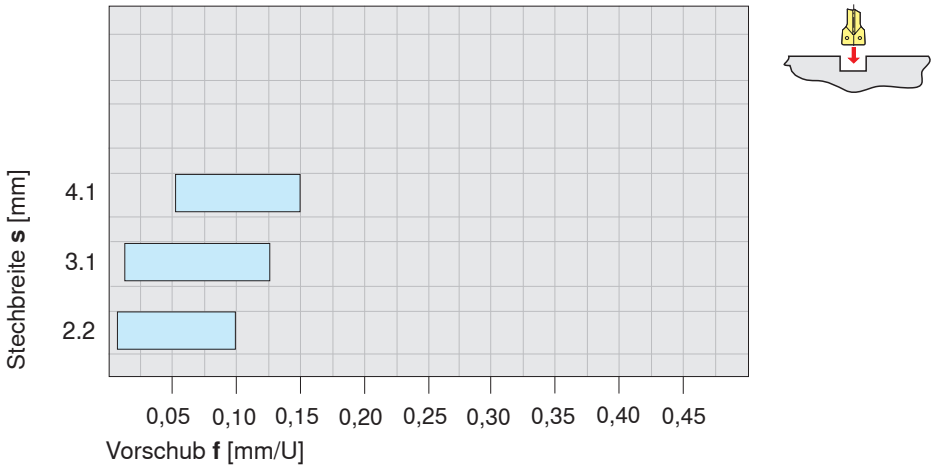
**Anwendung**



## -27P

- Speziell geeignet für **Aluminium und Nichteisenmetalle**
- Stechplatte mit hochpositiver Schneidegeometrie und scharfer Schneidkante
- Spiegelglatte Spanfläche durch „microfinish“
- Verminderte Aufbauschneidenbildung

## Vorschub Einstechen/Abstechen



# Übersicht

Anwendung



## Abstechen


| | | |
|---|---|---|
|  | Modular | C65-C67 |
|  | Spannblock / Klinge | C68-C70 |
|  | Mono | C71-C73 |

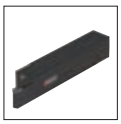

## Einstechen und Drehen


| | | |
|---|---|---|
|  | Modular außen | C74-C78 |
|  | Mono außen | C79-C80 |
|  | Modular innen | C81-C85 |
|  | Monobohrstange – innen | C86 |


## Sicherungsringeinstechen


| | | |
|---|---|---|
|  | Modular außen | C87-C91 |
|  | Mono außen | C92-C95 |
|  | Modular innen | C96-C100 |
|  | Monobohrstange – innen | C101-C104 |


## Radieneinstechen


| | | |
|---|---|---|
|  | Modular außen | C105-C109 |
|  | Mono außen | C110-C112 |
|  | Modular innen | C113-C117 |
|  | Monobohrstange – innen | C118-C120 |


## Axialstechen


| | | |
|---|---|---|
|  | Modular | C121-C128 |
|  | Mono | C129-C130 |


## Eckenfreistechen


| | | |
|---|---|---|
|  | Modular | C131-C134 |


## Gewindedrehen


| | | |
|---|---|---|
|  | Modular außen | C135-C138 |
|  | Mono außen | C139 |
|  | Modular innen | C141-C142 |
|  | Monobohrstange – innen | C143 |

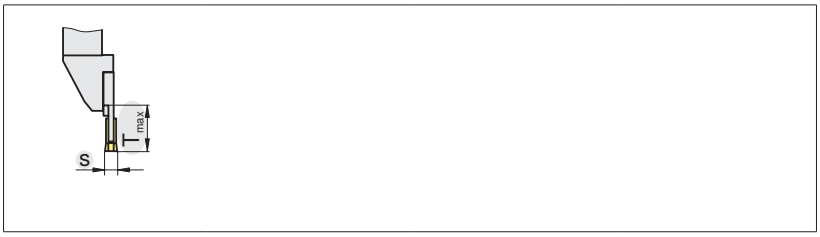
**Gewindefräsen**


| | | |
|---|---|---|
|  | Bohrstange - TC | C145-C146 |
|  | Gewindefräser - TC | C147 |

# Abstechen

Modular, Baugröße 20



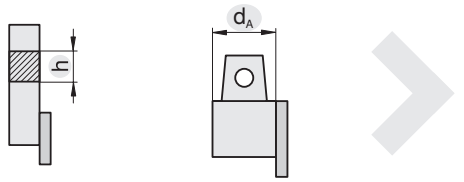




| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **20** | **R** | MSS-E20R00-2020J |
| | | **16** | **R** | MSS-E20R00-1620G |
| C169 |  90 | **20** | **L** | MSS-E20L90-2020J |

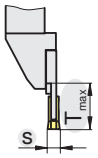
| | | s/$s_{min}$ | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C177 |  | 2,00 | 2,75 | 12 | R | MSS-E20R12-GX16-1 | GX16-1.. | C151 |
| | | 2,76 | 3,75 | 12 | R | MSS-E20R12-GX16-2 | GX16-2.. | C151 |
| | | 3,76 | 5,00 | 12 | R | MSS-E20R12-GX16-3 | GX16-3.. | C151 |
| C178 |  | 2,00 | 2,75 | 21 | R | MSS-E20R21-GX24-1 | GX24-1.. | C151 |
| | | 2,76 | 3,75 | 21 | R | MSS-E20R21-GX24-2 | GX24-2.. | C151 |
| | | 3,76 | 5,00 | 21 | R | MSS-E20R21-GX24-3 | GX24-3.. | C151 |
| C184 |  | 2,0 | | 20 | R | MSS-E20R20-SX2 | SX..2 | C156 |
| | | 3,0 | | 20 | R | MSS-E20R20-SX3 | SX..3 | C156 |
| C186 |  | 2,2 | | 20 | R | MSS-E20R20-FX2.2 | FX 2.2.. | C158 |
| | | 3,1 | | 20 | R | MSS-E20R20-FX3.1 | FX 3.1.. | C158 |
| | | 4,1 | | 20 | R | MSS-E20R20-FX4.1 | FX 4.1.. | C158 |

| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **20** | **L** | MSS-E20L00-2020J |
| | | **16** | **L** | MSS-E20L00-1620G |
| C169 |  90 | **20** | **R** | MSS-E20R90-2020J |

| | | s/$s_{min}$ | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C177 |  | 2,00 | 2,75 | 12 | L | MSS-E20L12-GX16-1 | GX16-1.. | C151 |
| | | 2,76 | 3,75 | 12 | L | MSS-E20L12-GX16-2 | GX16-2.. | C151 |
| | | 3,76 | 5,00 | 12 | L | MSS-E20L12-GX16-3 | GX16-3.. | C151 |
| C178 |  | 2,00 | 2,75 | 21 | L | MSS-E20L21-GX24-1 | GX24-1.. | C151 |
| | | 2,76 | 3,75 | 21 | L | MSS-E20L21-GX24-2 | GX24-2.. | C151 |
| | | 3,76 | 5,00 | 21 | L | MSS-E20L21-GX24-3 | GX24-3.. | C151 |
| C184 |  | 2,0 | | 20 | L | MSS-E20L20-SX2 | SX..2 | C156 |
| | | 3,0 | | 20 | L | MSS-E20L20-SX3 | SX..3 | C156 |
| C186 |  | 2,2 | | 20 | L | MSS-E20L20-FX2.2 | FX 2.2.. | C158 |
| | | 3,1 | | 20 | L | MSS-E20L20-FX3.1 | FX 3.1.. | C158 |
| | | 4,1 | | 20 | L | MSS-E20L20-FX4.1 | FX 4.1.. | C158 |




Passende Produkte siehe rechts




| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **25** | **R** | MSS-E25R00-2525L |
| C169 |  90 | **25** | **L** | MSS-E25L90-2525L |
| C171 |  0 | **63** | **R** | HSK-T63-MSS-E25R00 |
| | | **100** | **R** | HSK-T100-MSS-E25R00 |
| C173 |  0 | **40** | **R** | UT40-MSS-E25R00 |
| | | **50** | **R** | UT50-MSS-E25R00 |
| | | **63** | **R** | UT63-MSS-E25R00 |
| C174 |  90 | **40** | **L** | UT40-MSS-E25L90 |
| | | **50** | **L** | UT50-MSS-E25L90 |

| | | $s/s_{min}$ | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C177 |  | 2,00 | 2,75 | 12 | R | MSS-E25R12-GX16-1 | GX16-1.. | C151 |
| | | 2,76 | 3,75 | 12 | R | MSS-E25R12-GX16-2 | GX16-2.. | C151 |
| | | 3,76 | 5,00 | 12 | R | MSS-E25R12-GX16-3 | GX16-3.. | C151 |
| | | 5,01 | 6,50 | 12 | R | MSS-E25R12-GX16-4 | GX16-4.. | C151 |
| C178 |  | 2,00 | 2,75 | 21 | R | MSS-E25R21-GX24-1 | GX24-1.. | C151 |
| | | 2,76 | 3,75 | 21 | R | MSS-E25R21-GX24-2 | GX24-2.. | C151 |
| | | 3,76 | 5,00 | 21 | R | MSS-E25R21-GX24-3 | GX24-3.. | C151 |
| | | 5,01 | 6,50 | 21 | R | MSS-E25R21-GX24-4 | GX24-4.. | C151 |
| C184 |  | 2,0 | | 20 | R | MSS-E25R20-SX2 | SX..2 | C156 |
| | | 3,0 | | 25 | R | MSS-E25R25-SX3 | SX..3 | C156 |
| | | 3,0 | | 35 | R | MSS-E25R35-SX3 | SX..3 | C156 |
| | | 4,0 | | 25 | R | MSS-E25R25-SX4 | SX..4 | C156 |
| | | 4,0 | | 35 | R | MSS-E25R35-SX4 | SX..4 | C156 |
| C186 |  | 2,2 | | 20 | R | MSS-E25R20-FX2.2 | FX 2.2.. | C158 |
| | | 3,1 | | 25 | R | MSS-E25R25-FX3.1 | FX 3.1.. | C158 |
| | | 4,1 | | 25 | R | MSS-E25R25-FX4.1 | FX 4.1.. | C158 |
| | | 5,1 | | 25 | R | MSS-E25R25-FX5.1 | FX 5.1.. | C158 |
| | | 6,5 | | 25 | R | MSS-E25R25-FX6.5 | FX 6.5.. | C158 |
| C187 |  | 3,1 | | 35 | R | MSS-E25R35-FX3.1 | FX 3.1.. | C158 |
| | | 4,1 | | 35 | R | MSS-E25R35-FX4.1 | FX 4.1.. | C158 |
| | | 5,1 | | 35 | R | MSS-E25R35-FX5.1 | FX 5.1.. | C158 |
| | | 6,5 | | 35 | R | MSS-E25R35-FX6.5 | FX 6.5.. | C158 |

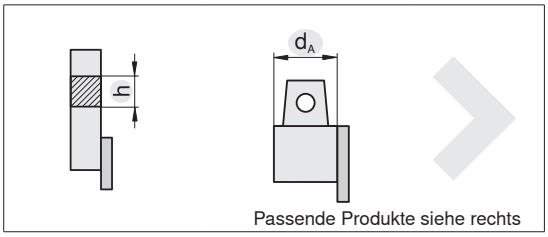
| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **25** | **L** | MSS-E25L00-2525L |
| C169 |  90 | **25** | **R** | MSS-E25R90-2525L |
| C171 |  0 | **63** | **L** | HSK-T63-MSS-E25L00 |
| | | **100** | **L** | HSK-T100-MSS-E25L00 |
| C173 |  0 | **40** | **L** | UT40-MSS-E25L00 |
| | | **50** | **L** | UT50-MSS-E25L00 |
| | | **63** | **L** | UT63-MSS-E25L00 |
| C174 |  90 | **40** | **R** | UT40-MSS-E25R90 |
| | | **50** | **R** | UT50-MSS-E25R90 |

| | | $s/s_{min}$ | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C177 |  | 2,00 | 2,75 | 12 | L | MSS-E25L12-GX16-1 | GX16-1.. | C151 |
| | | 2,76 | 3,75 | 12 | L | MSS-E25L12-GX16-2 | GX16-2.. | C151 |
| | | 3,76 | 5,00 | 12 | L | MSS-E25L12-GX16-3 | GX16-3.. | C151 |
| | | 5,01 | 6,50 | 12 | L | MSS-E25L12-GX16-4 | GX16-4.. | C151 |
| C178 |  | 2,00 | 2,75 | 21 | L | MSS-E25L21-GX24-1 | GX24-1.. | C151 |
| | | 2,76 | 3,75 | 21 | L | MSS-E25L21-GX24-2 | GX24-2.. | C151 |
| | | 3,76 | 5,00 | 21 | L | MSS-E25L21-GX24-3 | GX24-3.. | C151 |
| | | 5,01 | 6,50 | 21 | L | MSS-E25L21-GX24-4 | GX24-4.. | C151 |
| C184 |  | 2,0 | | 20 | L | MSS-E25L20-SX2 | SX..2 | C156 |
| | | 3,0 | | 25 | L | MSS-E25L25-SX3 | SX..3 | C156 |
| | | 3,0 | | 35 | L | MSS-E25L35-SX3 | SX..3 | C156 |
| | | 4,0 | | 25 | L | MSS-E25L25-SX4 | SX..4 | C156 |
| | | 4,0 | | 35 | L | MSS-E25L35-SX4 | SX..4 | C156 |
| C186 |  | 2,2 | | 20 | L | MSS-E25L20-FX2.2 | FX 2.2.. | C158 |
| | | 3,1 | | 25 | L | MSS-E25L25-FX3.1 | FX 3.1.. | C158 |
| | | 4,1 | | 25 | L | MSS-E25L25-FX4.1 | FX 4.1.. | C158 |
| | | 5,1 | | 25 | L | MSS-E25L25-FX5.1 | FX 5.1.. | C158 |
| | | 6,5 | | 25 | L | MSS-E25L25-FX6.5 | FX 6.5.. | C158 |
| C187 |  | 3,1 | | 35 | L | MSS-E25L35-FX3.1 | FX 3.1.. | C158 |
| | | 4,1 | | 35 | L | MSS-E25L35-FX4.1 | FX 4.1.. | C158 |
| | | 5,1 | | 35 | L | MSS-E25L35-FX5.1 | FX 5.1.. | C158 |
| | | 6,5 | | 35 | L | MSS-E25L35-FX6.5 | FX 6.5.. | C158 |

# Abstechen

Modular, Baugröße 32






Passende Produkte siehe rechts

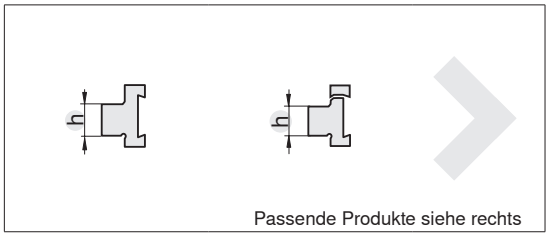


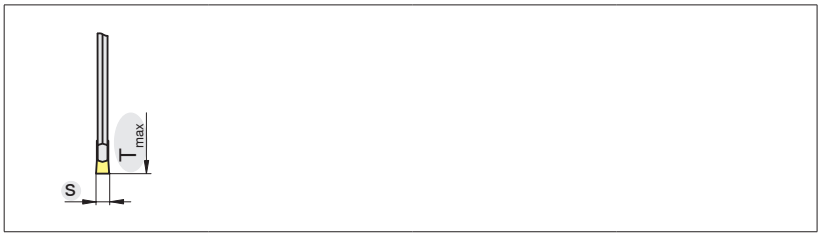

| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | 32 | R | MSS-E32R00-3232Q |
| | | 32 | R | MSS-E32R00-3225N |
| C169 |  90 | 32 | L | MSS-E32L90-3225N |
| | | 32 | L | MSS-E32L90-3232R |
| C171 |  0 | 100 | R | HSK-T100-MSS-E32R00 |
| | | 63 | R | HSK-T63-MSS-E32R00 |
| C172 |  90 | 100 | L | HSK-T100-MSS-E32L90 |
| | | 63 | L | HSK-T63-MSS-E32L90 |
| C173 |  0 | 50 | R | UT50-MSS-E32R00 |
| | | 63 | R | UT63-MSS-E32R00 |

| | | $s/s_{min}$ | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C177 |  | 2,76 | 3,75 | 12 | R | MSS-E32R12-GX16-2 | GX16-2.. | C151 |
| | | 3,76 | 5,00 | 12 | R | MSS-E32R12-GX16-3 | GX16-3.. | C151 |
| | | 5,01 | 6,50 | 12 | R | MSS-E32R12-GX16-4 | GX16-4.. | C151 |
| C178 |  | 2,76 | 3,75 | 21 | R | MSS-E32R21-GX24-2 | GX24-2.. | C151 |
| | | 3,76 | 5,00 | 21 | R | MSS-E32R21-GX24-3 | GX24-3.. | C151 |
| | | 5,01 | 6,50 | 21 | R | MSS-E32R21-GX24-4 | GX24-4.. | C151 |
| C184 |  | 3,0 | | 35 | R | MSS-E32R35-SX3 | SX..3 | C156 |
| | | 4,0 | | 35 | R | MSS-E32R35-SX4 | SX..4 | C156 |
| C185 |  | 8,00 | 10,00 | 25 | N | MSS-E32N25-LX | LX.. | C157 |
| | | 8,00 | 10,00 | 32 | N | MSS-E32N32-LX | LX.. | C157 |
| | | 8,00 | 10,00 | 45 | N | MSS-E32N45-LX | LX.. | C157 |
| C186 |  | 3,1 | | 32 | R | MSS-E32R32-FX3.1 | FX 3.1.. | C158 |
| | | 4,1 | | 32 | R | MSS-E32R32-FX4.1 | FX 4.1.. | C158 |
| | | 5,1 | | 32 | R | MSS-E32R32-FX5.1 | FX 5.1.. | C158 |
| | | 6,5 | | 32 | R | MSS-E32R32-FX6.5 | FX 6.5.. | C158 |
| C187 |  | 3,1 | | 45 | R | MSS-E32R45-FX3.1 | FX 3.1.. | C158 |
| | | 4,1 | | 45 | R | MSS-E32R45-FX4.1 | FX 4.1.. | C158 |
| | | 5,1 | | 45 | R | MSS-E32R45-FX5.1 | FX 5.1.. | C158 |
| | | 6,5 | | 45 | R | MSS-E32R45-FX6.5 | FX 6.5.. | C158 |

| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | 32 | L | MSS-E32L00-3225N |
| | | 32 | L | MSS-E32L00-3232Q |
| C169 |  90 | 32 | R | MSS-E32R90-3232R |
| | | 32 | R | MSS-E32R90-3225N |
| C171 |  0 | 100 | L | HSK-T100-MSS-E32L00 |
| | | 63 | L | HSK-T63-MSS-E32L00 |
| C172 |  90 | 100 | R | HSK-T100-MSS-E32R90 |
| | | 63 | R | HSK-T63-MSS-E32R90 |
| C173 |  0 | 63 | L | UT63-MSS-E32L00 |

| | | $s/s_{min}$ | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C177 |  | 2,76 | 3,75 | 12 | L | MSS-E32L12-GX16-2 | GX16-2.. | C151 |
| | | 3,76 | 5,00 | 12 | L | MSS-E32L12-GX16-3 | GX16-3.. | C151 |
| | | 5,01 | 6,50 | 12 | L | MSS-E32L12-GX16-4 | GX16-4.. | C151 |
| C178 |  | 2,76 | 3,75 | 21 | L | MSS-E32L21-GX24-2 | GX24-2.. | C151 |
| | | 3,76 | 5,00 | 21 | L | MSS-E32L21-GX24-3 | GX24-3.. | C151 |
| | | 5,01 | 6,50 | 21 | L | MSS-E32L21-GX24-4 | GX24-4.. | C151 |
| C184 |  | 3,0 | | 35 | L | MSS-E32L35-SX3 | SX..3 | C156 |
| | | 4,0 | | 35 | L | MSS-E32L35-SX4 | SX..4 | C156 |
| C185 |  | 8,00 | 10,00 | 25 | N | MSS-E32N25-LX | LX.. | C157 |
| | | 8,00 | 10,00 | 32 | N | MSS-E32N32-LX | LX.. | C157 |
| | | 8,00 | 10,00 | 45 | N | MSS-E32N45-LX | LX.. | C157 |
| C186 |  | 3,1 | | 32 | L | MSS-E32L32-FX3.1 | FX 3.1.. | C158 |
| | | 4,1 | | 32 | L | MSS-E32L32-FX4.1 | FX 4.1.. | C158 |
| | | 5,1 | | 32 | L | MSS-E32L32-FX5.1 | FX 5.1.. | C158 |
| | | 6,5 | | 32 | L | MSS-E32L32-FX6.5 | FX 6.5.. | C158 |
| C187 |  | 3,1 | | 45 | L | MSS-E32L45-FX3.1 | FX 3.1.. | C158 |
| | | 4,1 | | 45 | L | MSS-E32L45-FX4.1 | FX 4.1.. | C158 |
| | | 5,1 | | 45 | L | MSS-E32L45-FX5.1 | FX 5.1.. | C158 |
| | | 6,5 | | 45 | L | MSS-E32L45-FX6.5 | FX 6.5.. | C158 |




| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C204 |  | | N | SBN 2020-26 K |
| C205 |  | | N | SBN 2020-26 KS |

| | | $s/s_{min}$ | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C199 |  | 2,0 | | 25 | L | XLCFL 2602-SX2 | SX..2 | C156 |
| | | 2,0 | | 25 | R | XLCFR 2602-SX2 | SX..2 | C156 |
| | | 3,0 | | 35 | N | XLCFN 2603-SX3 | SX..3 | C156 |
| | | 4,0 | | 40 | N | XLCFN 2604-SX4 | SX..4 | C156 |
| C200 |  | 2,0 | | 22 | L | XLCFL 2608-SX2 | SX..2 | C156 |
| | | 2,0 | | 22 | R | XLCFR 2608-SX2 | SX..2 | C156 |
| | | 3,0 | | 22 | L | XLCFL 2608-SX3 | SX..3 | C156 |
| | | 3,0 | | 22 | R | XLCFR 2608-SX3 | SX..3 | C156 |
| C203 |  | 2,2 | | 25 | N | XLCEN 2602 J22 FX | FX 2.2.. | C158 |
| | | 3,1 | | 35 | N | XLCFN 2603 J31 FX | FX 3.1.. | C158 |
| | | 4,1 | | 40 | N | XLCFN 2604 J41 FX | FX 4.1.. | C158 |

# Abstechen

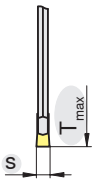
Spannblock/Klinge, Bauhöhe 32







Passende Produkte siehe rechts

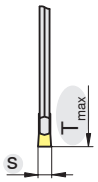



| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C204 |  | | **N** | SBN 2520-32 K |
| | | | **N** | SBN 3229-32 K |
| C205 |  | | **N** | SBN 2520-32 KS |
| | | | **N** | SBN 3229-32 KS |
| C206 |  | | **R** | HSK-T63-KHR00-32 |
| | | | **L** | HSK-T63-KHL00-32 |
| | | | **L** | HSK-T100-KHL00-32 |
| | | | **R** | HSK-T100-KHR00-32 |

| | | $s/s_{min}$ | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C198 |  | 2,00 | 2,75 | 21 | N | XLCFN 3202-GX24-1S | GX24-1.. | C151 |
| | | 2,76 | 3,75 | 21 | N | XLCFN 3203 GX24-2S | GX24-2.. | C151 |
| | | 3,76 | 5,00 | 21 | N | XLCFN 3204 GX24-3S | GX24-3.. | C151 |
| | | 5,01 | 6,50 | 21 | N | XLCFN 3206 GX24-4S | GX24-4.. | C151 |
| C199 |  | 2,0 | | 25 | L | XLCFL 3202-SX2 | SX..2 | C156 |
| | | 2,0 | | 25 | R | XLCFR 3202-SX2 | SX..2 | C156 |
| | | 3,0 | | 50 | N | XLCFN 3203-SX3 | SX..3 | C156 |
| | | 4,0 | | 50 | N | XLCFN 3204-SX4 | SX..4 | C156 |
| | | 5,0 | | 55 | N | XLCFN 3205-SX5 | SX..5 | C156 |
| | | 6,0 | | 60 | N | XLCFN 3206-SX6 | SX..6 | C156 |
| C201 |  | 3,0 | | 33 | L | XLCFL 3208C-SX3 | SX..3 | C156 |
| | | 3,0 | | 33 | L | XLCFL 3208-SX3 | SX..3 | C156 |
| | | 3,0 | | 33 | R | XLCFR 3208C-SX3 | SX..3 | C156 |
| | | 3,0 | | 33 | R | XLCFR 3208-SX3 | SX..3 | C156 |
| | | 4,0 | | 33 | L | XLCFL 3208-SX4 | SX..4 | C156 |
| | | 4,0 | | 33 | R | XLCFR 3208-SX4 | SX..4 | C156 |
| C203 |  | 2,2 | | 30 | N | XLCEN 3202 M22 FX | FX 2.2.. | C158 |
| | | 3,1 | | 50 | N | XLCFN 3203 M31 FX | FX 3.1.. | C158 |
| | | 4,1 | | 50 | N | XLCFN 3204 M41 FX | FX 4.1.. | C158 |
| | | 5,1 | | 55 | N | XLCFN 3205 M51 FX | FX 5.1.. | C158 |
| | | 6,5 | | 55 | N | XLCFN 3206 M65 FX | FX 6.5.. | C158 |




Passende Produkte siehe rechts

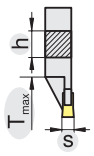



| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C204 |  | | N | SBN 3229-46 K |
| | | | N | SBN 4037-46 K |

| | | $s/s_{min}$ | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C202 |  | 8,00 | 10,00 | 80 | N | XLCEN 4608 LX | LX.. | C157 |
| C203 |  | 8,2 | | 80 | N | XLCEN 4608 S82 FX | FX 8.2.. | C158 |
| | | 9,7 | | 80 | N | XLCEN 4609 S97 FX | FX 9.7.. | C158 |

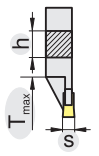
# Abstechen

Monowerkzeug – GX




| | | h [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|
| C189 |  | 12 | 2,00 | 2,75 | 12 | R | E12R0012-1212K-GX16-1 | GX16-1.. | C151 |
| | | 12 | 2,76 | 3,75 | 12 | R | E12R0012-1212K-GX16-2 | GX16-2.. | C151 |
| | | 16 | 2,00 | 2,75 | 12 | R | E16R0012-1616K-GX16-1 | GX16-1.. | C151 |
| | | 16 | 2,76 | 3,75 | 12 | R | E16R0012-1616K-GX16-2 | GX16-2.. | C151 |
| | | 16 | 3,76 | 5,00 | 12 | R | E16R0012-1616K-GX16-3 | GX16-3.. | C151 |
| | | 20 | 2,00 | 2,75 | 12 | R | E20R0012-2020K-GX16-1 | GX16-1.. | C151 |
| | | 20 | 2,76 | 3,75 | 12 | R | E20R0012-2020K-GX16-2 | GX16-2.. | C151 |
| | | 20 | 3,76 | 5,00 | 12 | R | E20R0012-2020K-GX16-3 | GX16-3.. | C151 |
| | | 25 | 2,76 | 3,75 | 12 | R | E25R0012-2525M-GX16-2 | GX16-2.. | C151 |
| | | 25 | 3,76 | 5,00 | 12 | R | E25R0012-2525M-GX16-3 | GX16-3.. | C151 |
| | | 12 | 2,00 | 2,75 | 12 | L | E12L0012-1212K-GX16-1 | GX16-1.. | C151 |
| | | 12 | 2,76 | 3,75 | 12 | L | E12L0012-1212K-GX16-2 | GX16-2.. | C151 |
| | | 16 | 2,00 | 2,75 | 12 | L | E16L0012-1616K-GX16-1 | GX16-1.. | C151 |
| | | 16 | 2,76 | 3,75 | 12 | L | E16L0012-1616K-GX16-2 | GX16-2.. | C151 |
| | | 16 | 3,76 | 5,00 | 12 | L | E16L0012-1616K-GX16-3 | GX16-3.. | C151 |
| | | 20 | 2,00 | 2,75 | 12 | L | E20L0012-2020K-GX16-1 | GX16-1.. | C151 |
| | | 20 | 2,76 | 3,75 | 12 | L | E20L0012-2020K-GX16-2 | GX16-2.. | C151 |
| | | 20 | 3,76 | 5,00 | 12 | L | E20L0012-2020K-GX16-3 | GX16-3.. | C151 |
| | | 25 | 2,76 | 3,75 | 12 | L | E25L0012-2525M-GX16-2 | GX16-2.. | C151 |
| | | 25 | 3,76 | 5,00 | 12 | L | E25L0012-2525M-GX16-3 | GX16-3.. | C151 |

| | | h [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|
| C190 |  | 16 | 2,00 | 2,75 | 21 | R | E16R0021-1616K-GX24-1 | GX24-1.. | C151 |
| | | 16 | 2,76 | 3,75 | 21 | R | E16R0021-1616K-GX24-2 | GX24-2.. | C151 |
| | | 20 | 2,00 | 2,75 | 21 | R | E20R0021-2020K-GX24-1 | GX24-1.. | C151 |
| | | 20 | 2,76 | 3,75 | 21 | R | E20R0021-2020K-GX24-2 | GX24-2.. | C151 |
| | | 20 | 3,76 | 5,00 | 21 | R | E20R0021-2020K-GX24-3 | GX24-3.. | C151 |
| | | 25 | 2,76 | 3,75 | 21 | R | E25R0021-2525M-GX24-2 | GX24-2.. | C151 |
| | | 25 | 3,76 | 5,00 | 21 | R | E25R0021-2525M-GX24-3 | GX24-3.. | C151 |
| | | 25 | 5,01 | 6,50 | 21 | R | E25R0021-2525M-GX24-4 | GX24-4.. | C151 |
| | | 32 | 2,76 | 3,75 | 21 | R | E32R0021-3225P-GX24-2 | GX24-2.. | C151 |
| | | 32 | 3,76 | 5,00 | 21 | R | E32R0021-3225P-GX24-3 | GX24-3.. | C151 |
| | | 32 | 5,01 | 6,50 | 21 | R | E32R0021-3225P-GX24-4 | GX24-4.. | C151 |
| | | 16 | 2,00 | 2,75 | 21 | L | E16L0021-1616K-GX24-1 | GX24-1.. | C151 |
| | | 16 | 2,76 | 3,75 | 21 | L | E16L0021-1616K-GX24-2 | GX24-2.. | C151 |
| | | 20 | 2,00 | 2,75 | 21 | L | E20L0021-2020K-GX24-1 | GX24-1.. | C151 |
| | | 20 | 2,76 | 3,75 | 21 | L | E20L0021-2020K-GX24-2 | GX24-2.. | C151 |
| | | 20 | 3,76 | 5,00 | 21 | L | E20L0021-2020K-GX24-3 | GX24-3.. | C151 |
| | | 25 | 2,76 | 3,75 | 21 | L | E25L0021-2525M-GX24-2 | GX24-2.. | C151 |
| | | 25 | 3,76 | 5,00 | 21 | L | E25L0021-2525M-GX24-3 | GX24-3.. | C151 |
| | | 25 | 5,01 | 6,50 | 21 | L | E25L0021-2525M-GX24-4 | GX24-4.. | C151 |
| | | 32 | 2,76 | 3,75 | 21 | L | E32L0021-3225P-GX24-2 | GX24-2.. | C151 |
| | | 32 | 3,76 | 5,00 | 21 | L | E32L0021-3225P-GX24-3 | GX24-3.. | C151 |
| | | 32 | 5,01 | 6,50 | 21 | L | E32L0021-3225P-GX24-4 | GX24-4.. | C151 |



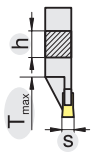

| | | h [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C194 |  | 16 | 2,0 | 16 | R | E16R0016-1616K-SX2 | SX..2 | C158 |
| | | 16 | 3,0 | 20 | R | E16R0020-1616K-SX3 | SX..3 | C158 |
| | | 20 | 2,0 | 16 | R | E20R0016-2020K-SX2 | SX..2 | C158 |
| | | 20 | 3,0 | 20 | R | E20R0020-2020K-SX3 | SX..3 | C158 |
| | | 20 | 4,0 | 25 | R | E20R0025-2020K-SX4 | SX..4 | C158 |
| | | 25 | 3,0 | 20 | R | E25R0020-2525M-SX3 | SX..3 | C158 |
| | | 25 | 4,0 | 25 | R | E25R0025-2525M-SX4 | SX..4 | C158 |
| | | 25 | 5,0 | 25 | R | E25R0025-2525M-SX5 | SX..5 | C158 |
| | | 25 | 6,0 | 32 | R | E25R0032-2525M-SX6 | SX..6 | C158 |
| | | 16 | 2,0 | 16 | L | E16L0016-1616K-SX2 | SX..2 | C158 |
| | | 16 | 3,0 | 20 | L | E16L0020-1616K-SX3 | SX..3 | C158 |
| | | 20 | 2,0 | 16 | L | E20L0016-2020K-SX2 | SX..2 | C158 |
| | | 20 | 3,0 | 20 | L | E20L0020-2020K-SX3 | SX..3 | C158 |
| | | 20 | 4,0 | 25 | L | E20L0025-2020K-SX4 | SX..4 | C158 |
| | | 25 | 3,0 | 20 | L | E25L0020-2525M-SX3 | SX..3 | C158 |
| | | 25 | 4,0 | 25 | L | E25L0025-2525M-SX4 | SX..4 | C158 |
| | | 25 | 5,0 | 25 | L | E25L0025-2525M-SX5 | SX..5 | C158 |
| | | 25 | 6,0 | 32 | L | E25L0032-2525M-SX6 | SX..6 | C158 |

| | | h [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C195 |  | 10 | 2,2 | 15 | R | XLCER 1010 M22 FX | FX 2.2.. | C158 |
| | | 12 | 2,2 | 15 | R | XLCER 1212 M22 FX | FX 2.2.. | C158 |
| | | 12 | 2,2 | 15 | R | XLCER 1212 F22 FX | FX 2.2.. | C158 |
| | | 14 | 2,2 | 15 | R | XLCER 1414 M22 FX | FX 2.2.. | C158 |
| | | 16 | 2,2 | 15 | R | XLCER 1612 H22 FX | FX 2.2.. | C158 |
| | | 16 | 3,1 | 17,5 | R | XLCFR 1612 H31 FX | FX 3.1.. | C158 |
| | | 20 | 3,1 | 20 | R | XLCFR 2016 K31 FX | FX 3.1.. | C158 |
| | | 20 | 4,1 | 20 | R | XLCFR 2016 K41 FX | FX 4.1.. | C158 |
| | | 25 | 3,1 | 25 | R | XLCFR 2520 M31 FX | FX 3.1.. | C158 |
| | | 25 | 4,1 | 25 | R | XLCFR 2520 M41 FX | FX 4.1.. | C158 |
| | | 10 | 2,2 | 15 | L | XLCEL 1010 M22 FX | FX 2.2.. | C158 |
| | | 12 | 2,2 | 15 | L | XLCEL 1212 M22 FX | FX 2.2.. | C158 |
| | | 12 | 2,2 | 15 | L | XLCEL 1212 F22 FX | FX 2.2.. | C158 |
| | | 14 | 2,2 | 15 | L | XLCEL 1414 M22 FX | FX 2.2.. | C158 |
| | | 16 | 2,2 | 15 | L | XLCEL 1612 H22 FX | FX 2.2.. | C158 |
| | | 16 | 3,1 | 17,5 | L | XLCFL 1612 H31 FX | FX 3.1.. | C158 |
| | | 20 | 3,1 | 20 | L | XLCFL 2016 K31 FX | FX 3.1.. | C158 |
| | | 20 | 4,1 | 20 | L | XLCFL 2016 K41 FX | FX 4.1.. | C158 |
| | | 25 | 3,1 | 25 | L | XLCFL 2520 M31 FX | FX 3.1.. | C158 |
| | | 25 | 4,1 | 25 | L | XLCFL 2520 M41 FX | FX 4.1.. | C158 |

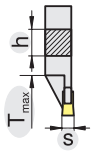
# Abstechen

Monowerkzeug – MaxiClick

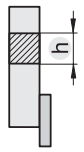




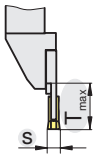

| | | h [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|
| C196 |  | 10 | 1,00 | 1,50 | 5 | R | MC05R-1010K | MC 05.. | C158 |
| | | 12 | 1,00 | 1,50 | 5 | R | MC05R-1212K | MC 05.. | C158 |
| | | 16 | 1,00 | 1,50 | 5 | R | MC05R-1616K | MC 05.. | C158 |
| | | 20 | 1,00 | 1,50 | 5 | R | MC05R-2020K | MC 05.. | C158 |
| | | 25 | 1,00 | 1,50 | 5 | R | MC05R-2525M | MC 05.. | C158 |
| | | 10 | 1,00 | 1,50 | 5 | L | MC05L-1010K | MC 05.. | C158 |
| | | 12 | 1,00 | 1,50 | 5 | L | MC05L-1212K | MC 05.. | C158 |
| | | 16 | 1,00 | 1,50 | 5 | L | MC05L-1616K | MC 05.. | C158 |
| | | 20 | 1,00 | 1,50 | 5 | L | MC05L-2020K | MC 05.. | C158 |
| | | 25 | 1,00 | 1,50 | 5 | L | MC05L-2525M | MC 05.. | C158 |
| C197 |  | 10 | 1,50 | 2,50 | 10 | R | MC10R-1010K | MC 10.. | C158 |
| | | 10 | 1,50 | 2,50 | 10 | R | MC10R-1010K-S | MC 10.. | C158 |
| | | 12 | 1,50 | 2,50 | 10 | R | MC10R-1212K | MC 10.. | C158 |
| | | 12 | 1,50 | 2,50 | 10 | R | MC10R-1212K-S | MC 10.. | C158 |
| | | 16 | 1,50 | 2,50 | 10 | R | MC10R-1616K | MC 10.. | C158 |
| | | 20 | 1,50 | 2,50 | 10 | R | MC10R-2020K | MC 10.. | C158 |
| | | 25 | 1,50 | 2,50 | 10 | R | MC10R-2525M | MC 10.. | C158 |
| | | 10 | 1,50 | 2,50 | 10 | L | MC10L-1010K | MC 10.. | C158 |
| | | 10 | 1,50 | 2,50 | 10 | L | MC10L-1010K-S | MC 10.. | C158 |
| | | 12 | 1,50 | 2,50 | 10 | L | MC10L-1212K | MC 10.. | C158 |
| | | 12 | 1,50 | 2,50 | 10 | L | MC10L-1212K-S | MC 10.. | C158 |
| | | 16 | 1,50 | 2,50 | 10 | L | MC10L-1616K | MC 10.. | C158 |
| | | 20 | 1,50 | 2,50 | 10 | L | MC10L-2020K | MC 10.. | C158 |
| | | 25 | 1,50 | 2,50 | 10 | L | MC10L-2525M | MC 10.. | C158 |




| | | h [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|
| C196 |  | 10 | 1,00 | 1,50 | 5 | R | MC05R-1010K | MC 05.. | C158 |
| | | 12 | 1,00 | 1,50 | 5 | R | MC05R-1212K | MC 05.. | C158 |
| | | 16 | 1,00 | 1,50 | 5 | R | MC05R-1616K | MC 05.. | C158 |
| | | 20 | 1,00 | 1,50 | 5 | R | MC05R-2020K | MC 05.. | C158 |
| | | 25 | 1,00 | 1,50 | 5 | R | MC05R-2525M | MC 05.. | C158 |
| | | 10 | 1,00 | 1,50 | 5 | L | MC05L-1010K | MC 05.. | C158 |
| | | 12 | 1,00 | 1,50 | 5 | L | MC05L-1212K | MC 05.. | C158 |
| | | 16 | 1,00 | 1,50 | 5 | L | MC05L-1616K | MC 05.. | C158 |
| | | 20 | 1,00 | 1,50 | 5 | L | MC05L-2020K | MC 05.. | C158 |
| | | 25 | 1,00 | 1,50 | 5 | L | MC05L-2525M | MC 05.. | C158 |
| C197 |  | 10 | 1,50 | 2,50 | 10 | R | MC10R-1010K | MC 10.. | C158 |
| | | 10 | 1,50 | 2,50 | 10 | R | MC10R-1010K-S | MC 10.. | C158 |
| | | 12 | 1,50 | 2,50 | 10 | R | MC10R-1212K | MC 10.. | C158 |
| | | 12 | 1,50 | 2,50 | 10 | R | MC10R-1212K-S | MC 10.. | C158 |
| | | 16 | 1,50 | 2,50 | 10 | R | MC10R-1616K | MC 10.. | C158 |
| | | 20 | 1,50 | 2,50 | 10 | R | MC10R-2020K | MC 10.. | C158 |
| | | 25 | 1,50 | 2,50 | 10 | R | MC10R-2525M | MC 10.. | C158 |
| | | 10 | 1,50 | 2,50 | 10 | L | MC10L-1010K | MC 10.. | C158 |
| | | 10 | 1,50 | 2,50 | 10 | L | MC10L-1010K-S | MC 10.. | C158 |
| | | 12 | 1,50 | 2,50 | 10 | L | MC10L-1212K | MC 10.. | C158 |
| | | 12 | 1,50 | 2,50 | 10 | L | MC10L-1212K-S | MC 10.. | C158 |
| | | 16 | 1,50 | 2,50 | 10 | L | MC10L-1616K | MC 10.. | C158 |
| | | 20 | 1,50 | 2,50 | 10 | L | MC10L-2020K | MC 10.. | C158 |
| | | 25 | 1,50 | 2,50 | 10 | L | MC10L-2525M | MC 10.. | C158 |




Passende Produkte siehe rechts




| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **12** | **R** | MSS-E12R00-1212E |

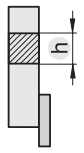
| | | $s/s_{min}$ | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C176 |  | 2,00 | 2,75 | 7 | R | MSS-E12R07-GX09-1 | GX09-1.. | C151 |
| | | 2,76 | 3,75 | 7 | R | MSS-E12R07-GX09-2 | GX09-2.. | C151 |

| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **12** | **L** | MSS-E12L00-1212E |

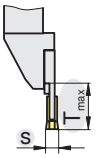
| | | $s/s_{min}$ | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C176 |  | 2,00 | 2,75 | 7 | L | MSS-E12L07-GX09-1 | GX09-1.. | C151 |
| | | 2,76 | 3,75 | 7 | L | MSS-E12L07-GX09-2 | GX09-2.. | C151 |

# Einstechen und Drehen – außen

Modular – außen, Baugröße 16




Passende Produkte siehe rechts

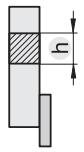



| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | 16 | R | MSS-E16R00-1616G |

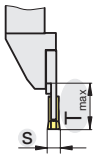
| | | $s/s_{min}$ | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C176 |  | 2,00 | 2,75 | 7 | R | MSS-E16R07-GX09-1 | GX09-1.. | C151 |
| | | 2,76 | 3,75 | 7 | R | MSS-E16R07-GX09-2 | GX09-2.. | C151 |

| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | 16 | L | MSS-E16L00-1616G |

| | | $s/s_{min}$ | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C176 |  | 2,00 | 2,75 | 7 | L | MSS-E16L07-GX09-1 | GX09-1.. | C151 |
| | | 2,76 | 3,75 | 7 | L | MSS-E16L07-GX09-2 | GX09-2.. | C151 |




Passende Produkte siehe rechts




| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **20** | **R** | MSS-E20R00-2020J |
| | | **16** | **R** | MSS-E20R00-1620G |
| C169 |  90 | **20** | **L** | MSS-E20L90-2020J |

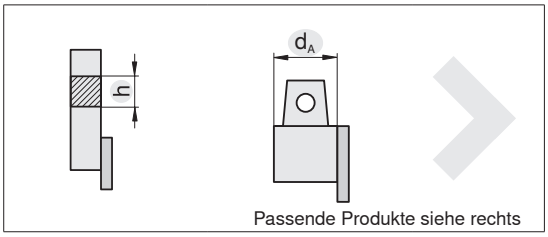
| | | $s/s_{min}$ | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C177 |  | 2,00 | 2,75 | 12 | R | MSS-E20R12-GX16-1 | GX16-1.. | C151 |
| | | 2,76 | 3,75 | 12 | R | MSS-E20R12-GX16-2 | GX16-2.. | C151 |
| | | 3,76 | 5,00 | 12 | R | MSS-E20R12-GX16-3 | GX16-3.. | C151 |
| C178 |  | 2,00 | 2,75 | 21 | R | MSS-E20R21-GX24-1 | GX24-1.. | C151 |
| | | 2,76 | 3,75 | 21 | R | MSS-E20R21-GX24-2 | GX24-2.. | C151 |
| | | 3,76 | 5,00 | 21 | R | MSS-E20R21-GX24-3 | GX24-3.. | C151 |
| C184 |  | 2,0 | | 20 | R | MSS-E20R20-SX2 | SX..2 | C156 |
| | | 3,0 | | 20 | R | MSS-E20R20-SX3 | SX..3 | C156 |

| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **20** | **L** | MSS-E20L00-2020J |
| | | **16** | **L** | MSS-E20L00-1620G |
| C169 |  90 | **20** | **R** | MSS-E20R90-2020J |

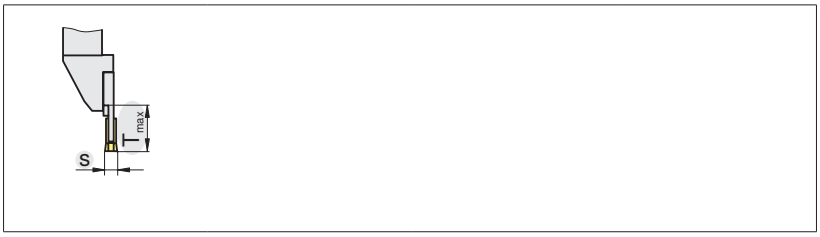
| | | $s/s_{min}$ | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C177 |  | 2,00 | 2,75 | 12 | L | MSS-E20L12-GX16-1 | GX16-1.. | C151 |
| | | 2,76 | 3,75 | 12 | L | MSS-E20L12-GX16-2 | GX16-2.. | C151 |
| | | 3,76 | 5,00 | 12 | L | MSS-E20L12-GX16-3 | GX16-3.. | C151 |
| C178 |  | 2,00 | 2,75 | 21 | L | MSS-E20L21-GX24-1 | GX24-1.. | C151 |
| | | 2,76 | 3,75 | 21 | L | MSS-E20L21-GX24-2 | GX24-2.. | C151 |
| | | 3,76 | 5,00 | 21 | L | MSS-E20L21-GX24-3 | GX24-3.. | C151 |
| C184 |  | 2,0 | | 20 | L | MSS-E20L20-SX2 | SX..2 | C156 |
| | | 3,0 | | 20 | L | MSS-E20L20-SX3 | SX..3 | C156 |

# Einstechen und Drehen – außen

Modular – außen, Baugröße 25




Passende Produkte siehe rechts

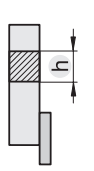


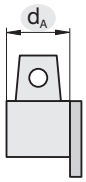

| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **25** | **R** | MSS-E25R00-2525L |
| C169 |  90 | **25** | **L** | MSS-E25L90-2525L |
| C171 |  0 | **100** | **R** | HSK-T100-MSS-E25R00 |
| | | **63** | **R** | HSK-T63-MSS-E25R00 |
| C173 |  0 | **63** | **R** | UT63-MSS-E25R00 |
| | | **40** | **R** | UT40-MSS-E25R00 |
| | | **50** | **R** | UT50-MSS-E25R00 |
| C174 |  90 | **40** | **L** | UT40-MSS-E25L90 |
| | | **50** | **L** | UT50-MSS-E25L90 |

| | | $s/s_{min}$ | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C177 |  | 2,00 | 2,75 | 12 | R | MSS-E25R12-GX16-1 | GX16-1.. | C151 |
| | | 2,76 | 3,75 | 12 | R | MSS-E25R12-GX16-2 | GX16-2.. | C151 |
| | | 3,76 | 5,00 | 12 | R | MSS-E25R12-GX16-3 | GX16-3.. | C151 |
| | | 5,01 | 6,50 | 12 | R | MSS-E25R12-GX16-4 | GX16-4.. | C151 |
| C178 |  | 2,00 | 2,75 | 21 | R | MSS-E25R21-GX24-1 | GX24-1.. | C151 |
| | | 2,76 | 3,75 | 21 | R | MSS-E25R21-GX24-2 | GX24-2.. | C151 |
| | | 3,76 | 5,00 | 21 | R | MSS-E25R21-GX24-3 | GX24-3.. | C151 |
| | | 5,01 | 6,50 | 21 | R | MSS-E25R21-GX24-4 | GX24-4.. | C151 |
| C184 |  | 2,0 | | 20 | R | MSS-E25R20-SX2 | SX..2 | C156 |
| | | 3,0 | | 25 | R | MSS-E25R25-SX3 | SX..3 | C156 |
| | | 3,0 | | 35 | R | MSS-E25R35-SX3 | SX..3 | C156 |
| | | 4,0 | | 25 | R | MSS-E25R25-SX4 | SX..4 | C156 |
| | | 4,0 | | 35 | R | MSS-E25R35-SX4 | SX..4 | C156 |

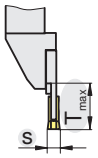
| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **25** | **L** | MSS-E25L00-2525L |
| C169 |  90 | **25** | **R** | MSS-E25R90-2525L |
| C171 |  0 | **100** | **L** | HSK-T100-MSS-E25L00 |
| | | **63** | **L** | HSK-T63-MSS-E25L00 |
| C173 |  0 | **40** | **L** | UT40-MSS-E25L00 |
| | | **50** | **L** | UT50-MSS-E25L00 |
| | | **63** | **L** | UT63-MSS-E25L00 |
| C174 |  90 | **50** | **R** | UT50-MSS-E25R90 |
| | | **40** | **R** | UT40-MSS-E25R90 |

| | | $s/s_{min}$ | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C177 |  | 2,00 | 2,75 | 12 | L | MSS-E25L12-GX16-1 | GX16-1.. | C151 |
| | | 2,76 | 3,75 | 12 | L | MSS-E25L12-GX16-2 | GX16-2.. | C151 |
| | | 3,76 | 5,00 | 12 | L | MSS-E25L12-GX16-3 | GX16-3.. | C151 |
| | | 5,01 | 6,50 | 12 | L | MSS-E25L12-GX16-4 | GX16-4.. | C151 |
| C178 |  | 2,00 | 2,75 | 21 | L | MSS-E25L21-GX24-1 | GX24-1.. | C151 |
| | | 2,76 | 3,75 | 21 | L | MSS-E25L21-GX24-2 | GX24-2.. | C151 |
| | | 3,76 | 5,00 | 21 | L | MSS-E25L21-GX24-3 | GX24-3.. | C151 |
| | | 5,01 | 6,50 | 21 | L | MSS-E25L21-GX24-4 | GX24-4.. | C151 |
| C184 |  | 2,0 | | 20 | L | MSS-E25L20-SX2 | SX..2 | C156 |
| | | 3,0 | | 25 | L | MSS-E25L25-SX3 | SX..3 | C156 |
| | | 3,0 | | 35 | L | MSS-E25L35-SX3 | SX..3 | C156 |
| | | 4,0 | | 25 | L | MSS-E25L25-SX4 | SX..4 | C156 |
| | | 4,0 | | 35 | L | MSS-E25L35-SX4 | SX..4 | C156 |




Passende Produkte siehe rechts




| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **32** | **R** | MSS-E32R00-3232Q |
| | | **32** | **R** | MSS-E32R00-3225N |
| C169 |  90 | **32** | **L** | MSS-E32L90-3225N |
| | | **32** | **L** | MSS-E32L90-3232R |
| C171 |  0 | **100** | **R** | HSK-T100-MSS-E32R00 |
| | | **63** | **R** | HSK-T63-MSS-E32R00 |
| C172 |  90 | **100** | **L** | HSK-T100-MSS-E32L90 |
| | | **63** | **L** | HSK-T63-MSS-E32L90 |
| C173 |  0 | **50** | **R** | UT50-MSS-E32R00 |
| | | **63** | **R** | UT63-MSS-E32R00 |

| | | $s/s_{min}$ | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C177 |  | 2,76 | 3,75 | 12 | R | MSS-E32R12-GX16-2 | GX16-2.. | C151 |
| | | 3,76 | 5,00 | 12 | R | MSS-E32R12-GX16-3 | GX16-3.. | C151 |
| | | 5,01 | 6,50 | 12 | R | MSS-E32R12-GX16-4 | GX16-4.. | C151 |
| C178 |  | 2,76 | 3,75 | 21 | R | MSS-E32R21-GX24-2 | GX24-2.. | C151 |
| | | 3,76 | 5,00 | 21 | R | MSS-E32R21-GX24-3 | GX24-3.. | C151 |
| | | 5,01 | 6,50 | 21 | R | MSS-E32R21-GX24-4 | GX24-4.. | C151 |
| C184 |  | 3,0 | | 35 | R | MSS-E32R35-SX3 | SX..3 | C156 |
| | | 4,0 | | 35 | R | MSS-E32R35-SX4 | SX..4 | C156 |
| C185 |  | 8,00 | 10,00 | 25 | N | MSS-E32N25-LX | LX.. | C157 |
| | | 8,00 | 10,00 | 32 | N | MSS-E32N32-LX | LX.. | C157 |
| | | 8,00 | 10,00 | 45 | N | MSS-E32N45-LX | LX.. | C157 |

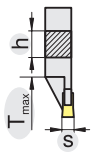
| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **32** | **L** | MSS-E32L00-3225N |
| | | **32** | **L** | MSS-E32L00-3232Q |
| C169 |  90 | **32** | **R** | MSS-E32R90-3232R |
| | | **32** | **R** | MSS-E32R90-3225N |
| C171 |  0 | **100** | **L** | HSK-T100-MSS-E32L00 |
| | | **63** | **L** | HSK-T63-MSS-E32L00 |
| C172 |  90 | **100** | **R** | HSK-T100-MSS-E32R90 |
| | | **63** | **R** | HSK-T63-MSS-E32R90 |
| C173 |  0 | **63** | **L** | UT63-MSS-E32L00 |

| | | $s/s_{min}$ | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C177 |  | 2,76 | 3,75 | 12 | L | MSS-E32L12-GX16-2 | GX16-2.. | C151 |
| | | 3,76 | 5,00 | 12 | L | MSS-E32L12-GX16-3 | GX16-3.. | C151 |
| | | 5,01 | 6,50 | 12 | L | MSS-E32L12-GX16-4 | GX16-4.. | C151 |
| C178 |  | 2,76 | 3,75 | 21 | L | MSS-E32L21-GX24-2 | GX24-2.. | C151 |
| | | 3,76 | 5,00 | 21 | L | MSS-E32L21-GX24-3 | GX24-3.. | C151 |
| | | 5,01 | 6,50 | 21 | L | MSS-E32L21-GX24-4 | GX24-4.. | C151 |
| C184 |  | 3,0 | | 35 | L | MSS-E32L35-SX3 | SX..3 | C156 |
| | | 4,0 | | 35 | L | MSS-E32L35-SX4 | SX..4 | C156 |
| C185 |  | 8,00 | 10,00 | 25 | N | MSS-E32N25-LX | LX.. | C157 |
| | | 8,00 | 10,00 | 32 | N | MSS-E32N32-LX | LX.. | C157 |
| | | 8,00 | 10,00 | 45 | N | MSS-E32N45-LX | LX.. | C157 |

# Einstechen und Drehen – außen

Monowerkzeug – GX

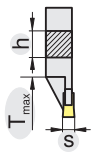





| | | h [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|
| C188 |  | 10 | 2,00 | 3,75 | 7 | R | E10R00-1010M-GX09 | GX09.. | C151 |
| | | 10 | 2,00 | 3,75 | 7 | L | E10L00-1010M-GX09 | GX09.. | C151 |

| | | h [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|
| C189 |  | 12 | 2,00 | 2,75 | 12 | R | E12R0012-1212K-GX16-1 | GX16-1.. | C151 |
| | | 12 | 2,76 | 3,75 | 12 | R | E12R0012-1212K-GX16-2 | GX16-2.. | C151 |
| | | 16 | 2,00 | 2,75 | 12 | R | E16R0012-1616K-GX16-1 | GX16-1.. | C151 |
| | | 16 | 2,76 | 3,75 | 12 | R | E16R0012-1616K-GX16-2 | GX16-2.. | C151 |
| | | 16 | 3,76 | 5,00 | 12 | R | E16R0012-1616K-GX16-3 | GX16-3.. | C151 |
| | | 20 | 2,00 | 2,75 | 12 | R | E20R0012-2020K-GX16-1 | GX16-1.. | C151 |
| | | 20 | 2,76 | 3,75 | 12 | R | E20R0012-2020K-GX16-2 | GX16-2.. | C151 |
| | | 20 | 3,76 | 5,00 | 12 | R | E20R0012-2020K-GX16-3 | GX16-3.. | C151 |
| | | 25 | 2,76 | 3,75 | 12 | R | E25R0012-2525M-GX16-2 | GX16-2.. | C151 |
| | | 25 | 3,76 | 5,00 | 12 | R | E25R0012-2525M-GX16-3 | GX16-3.. | C151 |
| | | 12 | 2,00 | 2,75 | 12 | L | E12L0012-1212K-GX16-1 | GX16-1.. | C151 |
| | | 12 | 2,76 | 3,75 | 12 | L | E12L0012-1212K-GX16-2 | GX16-2.. | C151 |
| | | 16 | 2,00 | 2,75 | 12 | L | E16L0012-1616K-GX16-1 | GX16-1.. | C151 |
| | | 16 | 2,76 | 3,75 | 12 | L | E16L0012-1616K-GX16-2 | GX16-2.. | C151 |
| | | 16 | 3,76 | 5,00 | 12 | L | E16L0012-1616K-GX16-3 | GX16-3.. | C151 |
| | | 20 | 2,00 | 2,75 | 12 | L | E20L0012-2020K-GX16-1 | GX16-1.. | C151 |
| | | 20 | 2,76 | 3,75 | 12 | L | E20L0012-2020K-GX16-2 | GX16-2.. | C151 |
| | | 20 | 3,76 | 5,00 | 12 | L | E20L0012-2020K-GX16-3 | GX16-3.. | C151 |
| | | 25 | 2,76 | 3,75 | 12 | L | E25L0012-2525M-GX16-2 | GX16-2.. | C151 |
| | | 25 | 3,76 | 5,00 | 12 | L | E25L0012-2525M-GX16-3 | GX16-3.. | C151 |

| | | h [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|
| C190 |  | 16 | 2,00 | 2,75 | 21 | R | E16R0021-1616K-GX24-1 | GX24-1.. | C151 |
| | | 16 | 2,76 | 3,75 | 21 | R | E16R0021-1616K-GX24-2 | GX24-2.. | C151 |
| | | 20 | 2,00 | 2,75 | 21 | R | E20R0021-2020K-GX24-1 | GX24-1.. | C151 |
| | | 20 | 2,76 | 3,75 | 21 | R | E20R0021-2020K-GX24-2 | GX24-2.. | C151 |
| | | 20 | 3,76 | 5,00 | 21 | R | E20R0021-2020K-GX24-3 | GX24-3.. | C151 |
| | | 25 | 2,76 | 3,75 | 21 | R | E25R0021-2525M-GX24-2 | GX24-2.. | C151 |
| | | 25 | 3,76 | 5,00 | 21 | R | E25R0021-2525M-GX24-3 | GX24-3.. | C151 |
| | | 25 | 5,01 | 6,50 | 21 | R | E25R0021-2525M-GX24-4 | GX24-4.. | C151 |
| | | 32 | 2,76 | 3,75 | 21 | R | E32R0021-3225P-GX24-2 | GX24-2.. | C151 |
| | | 32 | 3,76 | 5,00 | 21 | R | E32R0021-3225P-GX24-3 | GX24-3.. | C151 |
| | | 32 | 5,01 | 6,50 | 21 | R | E32R0021-3225P-GX24-4 | GX24-4.. | C151 |
| | | 16 | 2,00 | 2,75 | 21 | L | E16L0021-1616K-GX24-1 | GX24-1.. | C151 |
| | | 16 | 2,76 | 3,75 | 21 | L | E16L0021-1616K-GX24-2 | GX24-2.. | C151 |
| | | 20 | 2,00 | 2,75 | 21 | L | E20L0021-2020K-GX24-1 | GX24-1.. | C151 |
| | | 20 | 2,76 | 3,75 | 21 | L | E20L0021-2020K-GX24-2 | GX24-2.. | C151 |
| | | 20 | 3,76 | 5,00 | 21 | L | E20L0021-2020K-GX24-3 | GX24-3.. | C151 |
| | | 25 | 2,76 | 3,75 | 21 | L | E25L0021-2525M-GX24-2 | GX24-2.. | C151 |
| | | 25 | 3,76 | 5,00 | 21 | L | E25L0021-2525M-GX24-3 | GX24-3.. | C151 |
| | | 25 | 5,01 | 6,50 | 21 | L | E25L0021-2525M-GX24-4 | GX24-4.. | C151 |
| | | 32 | 2,76 | 3,75 | 21 | L | E32L0021-3225P-GX24-2 | GX24-2.. | C151 |
| | | 32 | 3,76 | 5,00 | 21 | L | E32L0021-3225P-GX24-3 | GX24-3.. | C151 |
| | | 32 | 5,01 | 6,50 | 21 | L | E32L0021-3225P-GX24-4 | GX24-4.. | C151 |

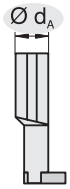



| | | h [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C194 |  | 16 | 2,0 | 16 | R | E16R0016-1616K-SX2 | SX..2 | C158 |
| | | 16 | 3,0 | 20 | R | E16R0020-1616K-SX3 | SX..3 | C158 |
| | | 20 | 2,0 | 16 | R | E20R0016-2020K-SX2 | SX..2 | C158 |
| | | 20 | 3,0 | 20 | R | E20R0020-2020K-SX3 | SX..3 | C158 |
| | | 20 | 4,0 | 25 | R | E20R0025-2020K-SX4 | SX..4 | C158 |
| | | 25 | 3,0 | 20 | R | E25R0020-2525M-SX3 | SX..3 | C158 |
| | | 25 | 4,0 | 25 | R | E25R0025-2525M-SX4 | SX..4 | C158 |
| | | 25 | 5,0 | 25 | R | E25R0025-2525M-SX5 | SX..5 | C158 |
| | | 25 | 6,0 | 32 | R | E25R0032-2525M-SX6 | SX..6 | C158 |
| | | 16 | 2,0 | 16 | L | E16L0016-1616K-SX2 | SX..2 | C158 |
| | | 16 | 3,0 | 20 | L | E16L0020-1616K-SX3 | SX..3 | C158 |
| | | 20 | 2,0 | 16 | L | E20L0016-2020K-SX2 | SX..2 | C158 |
| | | 20 | 3,0 | 20 | L | E20L0020-2020K-SX3 | SX..3 | C158 |
| | | 20 | 4,0 | 25 | L | E20L0025-2020K-SX4 | SX..4 | C158 |
| | | 25 | 3,0 | 20 | L | E25L0020-2525M-SX3 | SX..3 | C158 |
| | | 25 | 4,0 | 25 | L | E25L0025-2525M-SX4 | SX..4 | C158 |
| | | 25 | 5,0 | 25 | L | E25L0025-2525M-SX5 | SX..5 | C158 |
| | | 25 | 6,0 | 32 | L | E25L0032-2525M-SX6 | SX..6 | C158 |

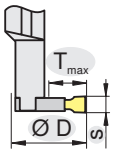
# Einstechen und Drehen – innen

Modular – innen, Baugröße 16






Passende Produkte siehe rechts

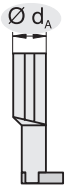



| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 20 | R | MSS-I16R90-1.5D-N |
| C208 |  | 20 | R | MSS-I16R90-2.5D-N |

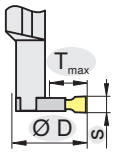
| | | $D_{min}$ [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|
| C210 |  | 20 | 2,00 | 2,75 | 4 | R | MSS-I16R04-GX09-1 | GX09-1.. | C151 |
| | | 20 | 2,76 | 3,75 | 4 | R | MSS-I16R04-GX09-2 | GX09-2.. | C151 |

| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 20 | L | MSS-I16L90-1.5D-N |
| C208 |  | 20 | L | MSS-I16L90-2.5D-N |

| | | $D_{min}$ [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|
| C210 |  | 20 | 2,00 | 2,75 | 4 | L | MSS-I16L04-GX09-1 | GX09-1.. | C151 |
| | | 20 | 2,76 | 3,75 | 4 | L | MSS-I16L04-GX09-2 | GX09-2.. | C151 |




Passende Produkte siehe rechts




| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 20 | R | MSS-I20R90-1.5D-N |
| C208 |  | 25 | R | MSS-I20R90-2.5D-N |

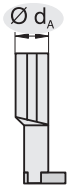
| | | $D_{min}$ [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|
| C210 |  | 25 | 2,00 | 2,75 | 5 | R | MSS-I20R05-GX09-1 | GX09-1.. | C151 |
| | | 25 | 2,76 | 3,75 | 5 | R | MSS-I20R05-GX09-2 | GX09-2.. | C151 |

| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 20 | L | MSS-I20L90-1.5D-N |
| C208 |  | 25 | L | MSS-I20L90-2.5D-N |

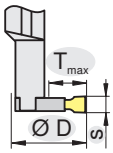
| | | $D_{min}$ [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|
| C210 |  | 25 | 2,00 | 2,75 | 5 | L | MSS-I20L05-GX09-1 | GX09-1.. | C151 |
| | | 25 | 2,76 | 3,75 | 5 | L | MSS-I20L05-GX09-2 | GX09-2.. | C151 |

# Einstechen und Drehen – innen

Modular – innen, Baugröße 25




Passende Produkte siehe rechts

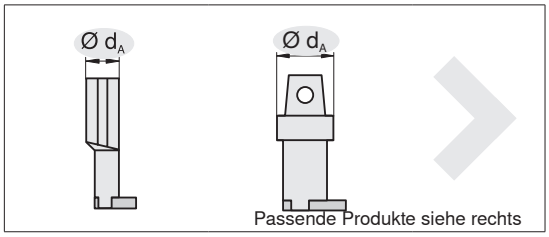



| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | **25** | **R** | MSS-I25R90-1.5D-N |
| C208 |  | **32** | **R** | MSS-I25R90-2.5D-N |

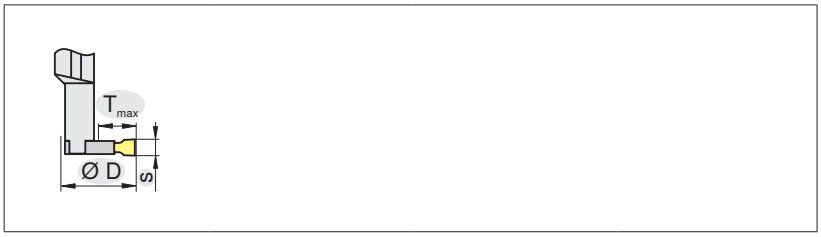
| | | $D_{min}$ [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|
| C210 |  | 32 | 2,00 | 2,75 | 6 | R | MSS-I25R06-GX09-1 | GX09-1.. | C151 |
| | | 32 | 2,76 | 3,75 | 6 | R | MSS-I25R06-GX09-2 | GX09-2.. | C151 |

| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | **25** | **L** | MSS-I25L90-1.5D-N |
| C208 |  | **32** | **L** | MSS-I25L90-2.5D-N |

| | | $D_{min}$ [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|
| C210 |  | 32 | 2,00 | 2,75 | 6 | L | MSS-I25L06-GX09-1 | GX09-1.. | C151 |
| | | 32 | 2,76 | 3,75 | 6 | L | MSS-I25L06-GX09-2 | GX09-2.. | C151 |




Passende Produkte siehe rechts




| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 32 | R | MSS-I32R90-1.5D-N |
| C208 |  | 40 | R | MSS-I32R90-2.5D-N |
| C209 |  | 40 | R | UT40-MSS-I32R90-2D |

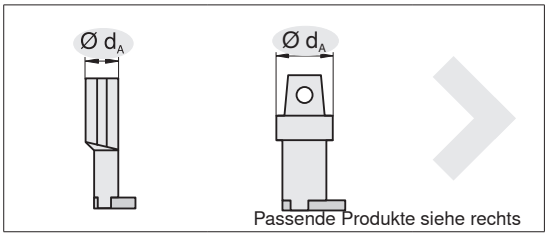
| | | $D_{min}$ [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|
| C211 |  | 40 | 2,00 | 2,75 | 9 | R | MSS-I32R09-GX16-1 | GX16-1.. | C151 |
| | | 40 | 2,76 | 3,75 | 9 | R | MSS-I32R09-GX16-2 | GX16-2.. | C151 |
| | | 40 | 3,76 | 5,00 | 9 | R | MSS-I32R09-GX16-3 | GX16-3.. | C151 |
| | | 40 | 5,01 | 6,50 | 9 | R | MSS-I32R09-GX16-4 | GX16-4.. | C151 |

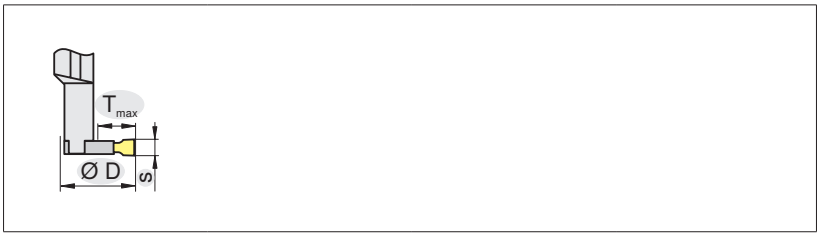
| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 32 | L | MSS-I32L90-1.5D-N |
| C208 |  | 40 | L | MSS-I32L90-2.5D-N |
| C209 |  | 50 | L | UT50-MSS-I32L90-2D |

| | | $D_{min}$ [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|
| C211 |  | 40 | 2,00 | 2,75 | 9 | L | MSS-I32L09-GX16-1 | GX16-1.. | C151 |
| | | 40 | 2,76 | 3,75 | 9 | L | MSS-I32L09-GX16-2 | GX16-2.. | C151 |
| | | 40 | 3,76 | 5,00 | 9 | L | MSS-I32L09-GX16-3 | GX16-3.. | C151 |
| | | 40 | 5,01 | 6,50 | 9 | L | MSS-I32L09-GX16-4 | GX16-4.. | C151 |

# Einstechen und Drehen – innen

Modular – innen, Baugröße 40



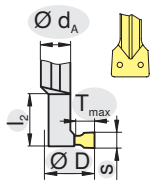




| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | **40** | **R** | MSS-I40R90-1.5D-N |
| C208 |  | **50** | **R** | MSS-I40R90-2.5D-N |

| | | $D_{min}$ [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung |  | |
|---|---|---|---|---|---|---|---|---|---|
| C211 |  | 50 | 2,00 | 2,75 | 10 | R | MSS-I40R10-GX16-1 | GX16-1.. | C151 |
| | | 50 | 2,76 | 3,75 | 10 | R | MSS-I40R10-GX16-2 | GX16-2.. | C151 |
| | | 50 | 3,76 | 5,00 | 10 | R | MSS-I40R10-GX16-3 | GX16-3.. | C151 |
| | | 50 | 5,01 | 6,50 | 10 | R | MSS-I40R10-GX16-4 | GX16-4.. | C151 |
| C212 |  | 60 | 2,76 | 3,75 | 19 | N | MSS-I40N19-GX24-2 | GX24-2.. | C151 |
| | | 60 | 3,76 | 5,00 | 19 | N | MSS-I40N19-GX24-3 | GX24-3.. | C151 |
| | | 60 | 5,01 | 6,50 | 19 | N | MSS-I40N19-GX24-4 | GX24-4.. | C151 |

| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | **40** | **L** | MSS-I40L90-1.5D-N |
| C208 |  | **50** | **L** | MSS-I40L90-2.5D-N |
| C209 |  | **40** | **L** | UT40-MSS-I40L90-2D |

| | | $D_{min}$ [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung |  | |
|---|---|---|---|---|---|---|---|---|---|
| C211 |  | 50 | 2,00 | 2,75 | 10 | L | MSS-I40L10-GX16-1 | GX16-1.. | C151 |
| | | 50 | 2,76 | 3,75 | 10 | L | MSS-I40L10-GX16-2 | GX16-2.. | C151 |
| | | 50 | 3,76 | 5,00 | 10 | L | MSS-I40L10-GX16-3 | GX16-3.. | C151 |
| | | 50 | 5,01 | 6,50 | 10 | L | MSS-I40L10-GX16-4 | GX16-4.. | C151 |
| C212 |  | 60 | 2,76 | 3,75 | 19 | N | MSS-I40N19-GX24-2 | GX24-2.. | C151 |
| | | 60 | 3,76 | 5,00 | 19 | N | MSS-I40N19-GX24-3 | GX24-3.. | C151 |
| | | 60 | 5,01 | 6,50 | 19 | N | MSS-I40N19-GX24-4 | GX24-4.. | C151 |




| | | $d_A$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C215 |  | 16 | 30 | 16 | 2,00 | 3,75 | 3 | R | I12R90-2.5D-GX09 | GX09.. | C151 |
| | | 16 | 30 | 16 | 2,00 | 3,75 | 3 | L | I12L90-2.5D-GX09 | GX09.. | C151 |

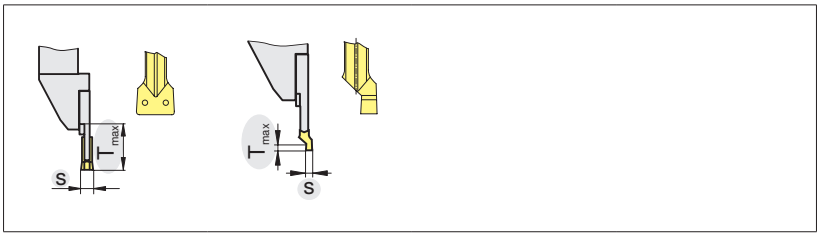
| | | $d_A$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C216 |  | 16 | 32 | 20,5 | 2,00 | 2,75 | 5,0 | R | I16R90-2.0D-GX16-1 | GX16-1.. | C151 |
| | | 16 | 32 | 20,5 | 2,76 | 3,75 | 5,0 | R | I16R90-2.0D-GX16-2 | GX16-2.. | C151 |
| | | 20 | 40 | 25,0 | 2,76 | 3,75 | 5,5 | R | I20R90-2.0D-GX16-2 | GX16-2.. | C151 |
| | | 25 | 50 | 32,0 | 2,76 | 3,75 | 8,0 | R | I25R90-2.0D-GX16-2 | GX16-2.. | C151 |
| | | 25 | 50 | 32,0 | 3,76 | 5,00 | 10,0 | R | I25R90-2.0D-GX16-3 | GX16-3.. | C151 |
| | | 32 | 64 | 42,0 | 2,76 | 3,75 | 11,0 | R | I32R90-2.0D-GX16-2 | GX16-2.. | C151 |
| | | 32 | 64 | 42,0 | 3,76 | 5,00 | 11,0 | R | I32R90-2.0D-GX16-3 | GX16-3.. | C151 |
| | | 16 | 32 | 20,5 | 2,00 | 2,75 | 5,0 | L | I16L90-2.0D-GX16-1 | GX16-1.. | C151 |
| | | 16 | 32 | 20,5 | 2,76 | 3,75 | 5,0 | L | I16L90-2.0D-GX16-2 | GX16-2.. | C151 |
| | | 20 | 40 | 25,0 | 2,76 | 3,75 | 5,5 | L | I20L90-2.0D-GX16-2 | GX16-2.. | C151 |
| | | 25 | 50 | 32,0 | 2,76 | 3,75 | 8,0 | L | I25L90-2.0D-GX16-2 | GX16-2.. | C151 |
| | | 25 | 50 | 32,0 | 3,76 | 5,00 | 10,0 | L | I25L90-2.0D-GX16-3 | GX16-3.. | C151 |
| | | 32 | 64 | 42,0 | 2,76 | 3,75 | 11,0 | L | I32L90-2.0D-GX16-2 | GX16-2.. | C151 |
| | | 32 | 64 | 42,0 | 3,76 | 5,00 | 11,0 | L | I32L90-2.0D-GX16-3 | GX16-3.. | C151 |

| | | $d_A$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C217 |  | 32 | 64 | 42,0 | 2,76 | 3,75 | 11,0 | R | I32R90-2.0D-GX24-2 | GX24-2.. | C151 |
| | | 32 | 64 | 42,0 | 3,76 | 5,00 | 11,0 | R | I32R90-2.0D-GX24-3 | GX24-3.. | C151 |
| | | 32 | 64 | 47,0 | 5,01 | 6,50 | 17,5 | R | I32R90-2.0D-GX24-4 | GX24-4.. | C151 |
| | | 40 | 80 | 53,0 | 3,76 | 5,00 | 12,0 | R | I40R90-2.0D-GX24-3 | GX24-3.. | C151 |
| | | 40 | 80 | 57,0 | 5,01 | 6,50 | 17,5 | R | I40R90-2.0D-GX24-4 | GX24-4.. | C151 |
| | | 32 | 64 | 42,0 | 2,76 | 3,75 | 11,0 | L | I32L90-2.0D-GX24-2 | GX24-2.. | C151 |
| | | 32 | 64 | 42,0 | 3,76 | 5,00 | 11,0 | L | I32L90-2.0D-GX24-3 | GX24-3.. | C151 |
| | | 32 | 64 | 47,0 | 5,01 | 6,50 | 17,5 | L | I32L90-2.0D-GX24-4 | GX24-4.. | C151 |
| | | 40 | 80 | 53,0 | 3,76 | 5,00 | 12,0 | L | I40L90-2.0D-GX24-3 | GX24-3.. | C151 |
| | | 40 | 80 | 57,0 | 5,01 | 6,50 | 17,5 | L | I40L90-2.0D-GX24-4 | GX24-4.. | C151 |

# Sicherungsringeinstechen – außen

Modular – außen, Baugröße 12




| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  | **12** | **R** | MSS-E12R00-1212E |
| | 0 | | | |

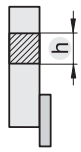
| | | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C176 |  | 1,95 | 7,00 | R | MSS-E12R07-GX09-1 | GX09-1.. | C153 |
| | | 2,25 | 7,00 | R | MSS-E12R07-GX09-1 | GX09-1.. | C153 |
| | | 2,75 | 7,00 | R | MSS-E12R07-GX09-2 | GX09-2.. | C153 |
| | | 3,25 | 7,00 | R | MSS-E12R07-GX09-2 | GX09-2.. | C153 |
| C179 |  | 0,60 | 0,75 | R | MSS-E12R02-GX09-1 | GX09-1..R/L | C153 |
| | | 0,80 | 0,94 | R | MSS-E12R02-GX09-1 | GX09-1..R/L | C153 |
| | | 0,90 | 1,04 | R | MSS-E12R02-GX09-1 | GX09-1..R/L | C153 |
| | | 1,00 | 1,14 | R | MSS-E12R02-GX09-1 | GX09-1..R/L | C153 |
| | | 1,20 | 1,34 | R | MSS-E12R02-GX09-1 | GX09-1..R/L | C153 |
| | | 1,40 | 1,53 | R | MSS-E12R02-GX09-1 | GX09-1..R/L | C153 |
| | | 1,70 | 1,82 | R | MSS-E12R02-GX09-1 | GX09-1..R/L | C153 |

| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  | **12** | **L** | MSS-E12L00-1212E |
| | 0 | | | |

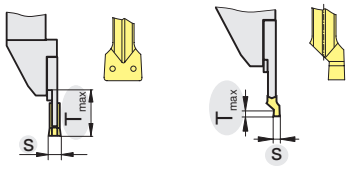
| | | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C176 |  | 1,95 | 7,00 | L | MSS-E12L07-GX09-1 | GX09-1.. | C153 |
| | | 2,25 | 7,00 | L | MSS-E12L07-GX09-1 | GX09-1.. | C153 |
| | | 2,75 | 7,00 | L | MSS-E12L07-GX09-2 | GX09-2.. | C153 |
| | | 3,25 | 7,00 | L | MSS-E12L07-GX09-2 | GX09-2.. | C153 |
| C179 |  | 0,60 | 0,75 | L | MSS-E12L02-GX09-1 | GX09-1..R/L | C153 |
| | | 0,80 | 0,94 | L | MSS-E12L02-GX09-1 | GX09-1..R/L | C153 |
| | | 0,90 | 1,04 | L | MSS-E12L02-GX09-1 | GX09-1..R/L | C153 |
| | | 1,00 | 1,14 | L | MSS-E12L02-GX09-1 | GX09-1..R/L | C153 |
| | | 1,20 | 1,34 | L | MSS-E12L02-GX09-1 | GX09-1..R/L | C153 |
| | | 1,40 | 1,53 | L | MSS-E12L02-GX09-1 | GX09-1..R/L | C153 |
| | | 1,70 | 1,82 | L | MSS-E12L02-GX09-1 | GX09-1..R/L | C153 |

# Sicherungsringeinstechen – außen

Modular – außen, Baugröße 16




Passende Produkte siehe rechts




| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **16** | **R** | MSS-E16R00-1616G |

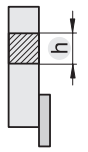
| | | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C176 |  | 1,95 | 7,00 | R | MSS-E16R07-GX09-1 | GX09-1.. | C153 |
| | | 2,25 | 7,00 | R | MSS-E16R07-GX09-1 | GX09-1.. | C153 |
| | | 2,75 | 7,00 | R | MSS-E16R07-GX09-2 | GX09-2.. | C153 |
| | | 3,25 | 7,00 | R | MSS-E16R07-GX09-2 | GX09-2.. | C153 |
| C179 |  | 0,60 | 0,75 | R | MSS-E16R02-GX09-1 | GX09-1..R/L | C153 |
| | | 0,80 | 0,94 | R | MSS-E16R02-GX09-1 | GX09-1..R/L | C153 |
| | | 0,90 | 1,04 | R | MSS-E16R02-GX09-1 | GX09-1..R/L | C153 |
| | | 1,00 | 1,14 | R | MSS-E16R02-GX09-1 | GX09-1..R/L | C153 |
| | | 1,20 | 1,34 | R | MSS-E16R02-GX09-1 | GX09-1..R/L | C153 |
| | | 1,40 | 1,53 | R | MSS-E16R02-GX09-1 | GX09-1..R/L | C153 |
| | | 1,70 | 1,82 | R | MSS-E16R02-GX09-1 | GX09-1..R/L | C153 |

| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **16** | **L** | MSS-E16L00-1616G |

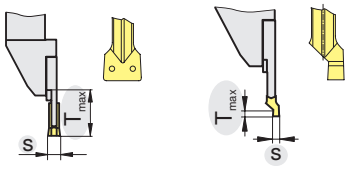
| | | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C176 |  | 1,95 | 7,00 | L | MSS-E16L07-GX09-1 | GX09-1.. | C153 |
| | | 2,25 | 7,00 | L | MSS-E16L07-GX09-1 | GX09-1.. | C153 |
| | | 2,75 | 7,00 | L | MSS-E16L07-GX09-2 | GX09-2.. | C153 |
| | | 3,25 | 7,00 | L | MSS-E16L07-GX09-2 | GX09-2.. | C153 |
| C179 |  | 0,60 | 0,75 | L | MSS-E16L02-GX09-1 | GX09-1..R/L | C153 |
| | | 0,80 | 0,94 | L | MSS-E16L02-GX09-1 | GX09-1..R/L | C153 |
| | | 0,90 | 1,04 | L | MSS-E16L02-GX09-1 | GX09-1..R/L | C153 |
| | | 1,00 | 1,14 | L | MSS-E16L02-GX09-1 | GX09-1..R/L | C153 |
| | | 1,20 | 1,34 | L | MSS-E16L02-GX09-1 | GX09-1..R/L | C153 |
| | | 1,40 | 1,53 | L | MSS-E16L02-GX09-1 | GX09-1..R/L | C153 |
| | | 1,70 | 1,82 | L | MSS-E16L02-GX09-1 | GX09-1..R/L | C153 |

# Sicherungsringeinstechen – außen

Modular – außen, Baugröße 20




Passende Produkte siehe rechts




| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **20** | **R** | MSS-E20R00-2020J |
| | | **16** | **R** | MSS-E20R00-1620G |
| C169 |  90 | **20** | **L** | MSS-E20L90-2020J |

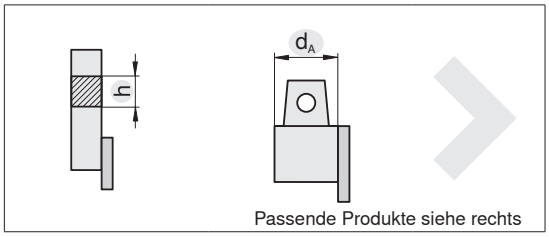
| | | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C177 |  | 2,75 | 12,00 | R | MSS-E20R12-GX16-2 | GX16-2.. | C153 |
| | | 3,25 | 12,00 | R | MSS-E20R12-GX16-2 | GX16-2.. | C153 |
| | | 4,25 | 12,00 | R | MSS-E20R12-GX16-3 | GX16-3.. | C153 |
| C180 |  | 0,60 | 0,75 | R | MSS-E20R03-GX16-2 | GX16-2..R/L | C153 |
| | | 0,80 | 0,94 | R | MSS-E20R03-GX16-2 | GX16-2..R/L | C153 |
| | | 0,90 | 1,04 | R | MSS-E20R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,00 | 1,14 | R | MSS-E20R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,20 | 1,34 | R | MSS-E20R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,40 | 1,53 | R | MSS-E20R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,70 | 1,82 | R | MSS-E20R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,95 | 2,07 | R | MSS-E20R03-GX16-2 | GX16-2..R/L | C153 |
| | | 2,25 | 2,36 | R | MSS-E20R03-GX16-2 | GX16-2..R/L | C153 |

| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **20** | **L** | MSS-E20L00-2020J |
| | | **16** | **L** | MSS-E20L00-1620G |
| C169 |  90 | **20** | **R** | MSS-E20R90-2020J |

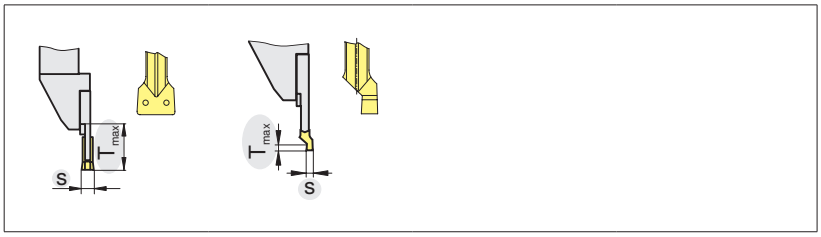
| | | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C177 |  | 2,75 | 12,00 | L | MSS-E20L12-GX16-2 | GX16-2.. | C153 |
| | | 3,25 | 12,00 | L | MSS-E20L12-GX16-2 | GX16-2.. | C153 |
| | | 4,25 | 12,00 | L | MSS-E20L12-GX16-3 | GX16-3.. | C153 |
| C180 |  | 0,60 | 0,75 | L | MSS-E20L03-GX16-2 | GX16-2..R/L | C153 |
| | | 0,80 | 0,94 | L | MSS-E20L03-GX16-2 | GX16-2..R/L | C153 |
| | | 0,90 | 1,04 | L | MSS-E20L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,00 | 1,14 | L | MSS-E20L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,20 | 1,34 | L | MSS-E20L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,40 | 1,53 | L | MSS-E20L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,70 | 1,82 | L | MSS-E20L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,95 | 2,07 | L | MSS-E20L03-GX16-2 | GX16-2..R/L | C153 |
| | | 2,25 | 2,36 | L | MSS-E20L03-GX16-2 | GX16-2..R/L | C153 |

# Sicherungsringeinstechen – außen

Modular – außen, Baugröße 25




Passende Produkte siehe rechts




| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **25** | **R** | MSS-E25R00-2525L |
| C169 |  90 | **25** | **L** | MSS-E25L90-2525L |
| C171 |  0 | **100** | **R** | HSK-T100-MSS-E25R00 |
| | | **63** | **R** | HSK-T63-MSS-E25R00 |
| C173 |  0 | **63** | **R** | UT63-MSS-E25R00 |
| | | **40** | **R** | UT40-MSS-E25R00 |
| | | **50** | **R** | UT50-MSS-E25R00 |
| C174 |  90 | **40** | **L** | UT40-MSS-E25L90 |
| | | **50** | **L** | UT50-MSS-E25L90 |

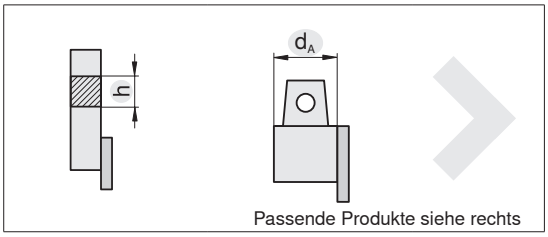
| | | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C177 |  | 2,75 | 12,00 | R | MSS-E25R12-GX16-2 | GX16-2.. | C153 |
| | | 3,25 | 12,00 | R | MSS-E25R12-GX16-2 | GX16-2.. | C153 |
| | | 4,25 | 12,00 | R | MSS-E25R12-GX16-3 | GX16-3.. | C153 |
| | | 5,25 | 12,00 | R | MSS-E25R12-GX16-4 | GX16-4.. | C153 |
| C180 |  | 0,60 | 0,75 | R | MSS-E25R03-GX16-2 | GX16-2..R/L | C153 |
| | | 0,80 | 0,94 | R | MSS-E25R03-GX16-2 | GX16-2..R/L | C153 |
| | | 0,90 | 1,04 | R | MSS-E25R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,00 | 1,14 | R | MSS-E25R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,20 | 1,34 | R | MSS-E25R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,40 | 1,53 | R | MSS-E25R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,70 | 1,82 | R | MSS-E25R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,95 | 2,07 | R | MSS-E25R03-GX16-2 | GX16-2..R/L | C153 |
| | | 2,25 | 2,36 | R | MSS-E25R03-GX16-2 | GX16-2..R/L | C153 |

| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **25** | **L** | MSS-E25L00-2525L |
| C169 |  90 | **25** | **R** | MSS-E25R90-2525L |
| C171 |  0 | **100** | **L** | HSK-T100-MSS-E25L00 |
| | | **63** | **L** | HSK-T63-MSS-E25L00 |
| C173 |  0 | **40** | **L** | UT40-MSS-E25L00 |
| | | **50** | **L** | UT50-MSS-E25L00 |
| | | **63** | **L** | UT63-MSS-E25L00 |
| C174 |  90 | **50** | **R** | UT50-MSS-E25R90 |
| | | **40** | **R** | UT40-MSS-E25R90 |

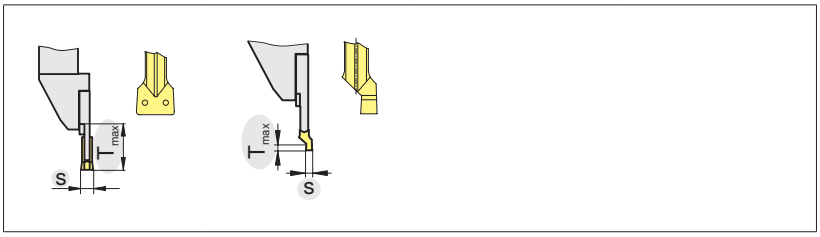
| | | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C177 |  | 2,75 | 12,00 | L | MSS-E25L12-GX16-2 | GX16-2.. | C153 |
| | | 3,25 | 12,00 | L | MSS-E25L12-GX16-2 | GX16-2.. | C153 |
| | | 4,25 | 12,00 | L | MSS-E25L12-GX16-3 | GX16-3.. | C153 |
| | | 5,25 | 12,00 | L | MSS-E25L12-GX16-4 | GX16-4.. | C153 |
| C180 |  | 0,60 | 0,75 | L | MSS-E25L03-GX16-2 | GX16-2..R/L | C153 |
| | | 0,80 | 0,94 | L | MSS-E25L03-GX16-2 | GX16-2..R/L | C153 |
| | | 0,90 | 1,04 | L | MSS-E25L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,00 | 1,14 | L | MSS-E25L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,20 | 1,34 | L | MSS-E25L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,40 | 1,53 | L | MSS-E25L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,70 | 1,82 | L | MSS-E25L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,95 | 2,07 | L | MSS-E25L03-GX16-2 | GX16-2..R/L | C153 |
| | | 2,25 | 2,36 | L | MSS-E25L03-GX16-2 | GX16-2..R/L | C153 |

# Sicherungsringeinstechen – außen

Modular – außen, Baugröße 32




Passende Produkte siehe rechts

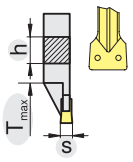



| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **32** | **R** | MSS-E32R00-3232Q |
| | | **32** | **R** | MSS-E32R00-3225N |
| C169 |  90 | **32** | **L** | MSS-E32L90-3225N |
| | | **32** | **L** | MSS-E32L90-3232R |
| C171 |  0 | **100** | **R** | HSK-T100-MSS-E32R00 |
| | | **63** | **R** | HSK-T63-MSS-E32R00 |
| C172 |  90 | **100** | **L** | HSK-T100-MSS-E32L90 |
| | | **63** | **L** | HSK-T63-MSS-E32L90 |
| C173 |  0 | **50** | **R** | UT50-MSS-E32R00 |
| | | **63** | **R** | UT63-MSS-E32R00 |

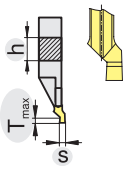
| | | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C177 |  | 2,75 | 12,00 | R | MSS-E32R12-GX16-2 | GX16-2.. | C153 |
| | | 3,25 | 12,00 | R | MSS-E32R12-GX16-2 | GX16-2.. | C153 |
| | | 4,25 | 12,00 | R | MSS-E32R12-GX16-3 | GX16-3.. | C153 |
| | | 5,25 | 12,00 | R | MSS-E32R12-GX16-4 | GX16-4.. | C153 |
| C180 |  | 0,60 | 0,75 | R | MSS-E32R03-GX16-2 | GX16-2..R/L | C153 |
| | | 0,80 | 0,94 | R | MSS-E32R03-GX16-2 | GX16-2..R/L | C153 |
| | | 0,90 | 1,04 | R | MSS-E32R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,00 | 1,14 | R | MSS-E32R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,20 | 1,34 | R | MSS-E32R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,40 | 1,53 | R | MSS-E32R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,70 | 1,82 | R | MSS-E32R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,95 | 2,07 | R | MSS-E32R03-GX16-2 | GX16-2..R/L | C153 |
| | | 2,25 | 2,36 | R | MSS-E32R03-GX16-2 | GX16-2..R/L | C153 |

| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **32** | **L** | MSS-E32L00-3225N |
| | | **32** | **L** | MSS-E32L00-3232Q |
| C169 |  90 | **32** | **R** | MSS-E32R90-3232R |
| | | **32** | **R** | MSS-E32R90-3225N |
| C171 |  0 | **100** | **L** | HSK-T100-MSS-E32L00 |
| | | **63** | **L** | HSK-T63-MSS-E32L00 |
| C172 |  90 | **100** | **R** | HSK-T100-MSS-E32R90 |
| | | **63** | **R** | HSK-T63-MSS-E32R90 |
| C173 |  0 | **63** | **L** | UT63-MSS-E32L00 |

| | | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C177 |  | 2,75 | 12,00 | L | MSS-E32L12-GX16-2 | GX16-2.. | C153 |
| | | 3,25 | 12,00 | L | MSS-E32L12-GX16-2 | GX16-2.. | C153 |
| | | 4,25 | 12,00 | L | MSS-E32L12-GX16-3 | GX16-3.. | C153 |
| | | 5,25 | 12,00 | L | MSS-E32L12-GX16-4 | GX16-4.. | C153 |
| C180 |  | 0,60 | 0,75 | L | MSS-E32L03-GX16-2 | GX16-2..R/L | C153 |
| | | 0,80 | 0,94 | L | MSS-E32L03-GX16-2 | GX16-2..R/L | C153 |
| | | 0,90 | 1,04 | L | MSS-E32L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,00 | 1,14 | L | MSS-E32L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,20 | 1,34 | L | MSS-E32L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,40 | 1,53 | L | MSS-E32L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,70 | 1,82 | L | MSS-E32L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,95 | 2,07 | L | MSS-E32L03-GX16-2 | GX16-2..R/L | C153 |
| | | 2,25 | 2,36 | L | MSS-E32L03-GX16-2 | GX16-2..R/L | C153 |



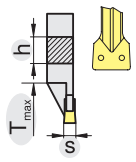

| | | h [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C188 |  | 10 | 1,95 | 7,00 | R | E10R00-1010M-GX09 | GX09.. | C153 |
| | | 10 | 2,25 | 7,00 | R | E10R00-1010M-GX09 | GX09.. | C153 |
| | | 10 | 2,75 | 7,00 | R | E10R00-1010M-GX09 | GX09.. | C153 |
| | | 10 | 3,25 | 7,00 | R | E10R00-1010M-GX09 | GX09.. | C153 |
| | | 10 | 1,95 | 7,00 | L | E10L00-1010M-GX09 | GX09.. | C153 |
| | | 10 | 2,25 | 7,00 | L | E10L00-1010M-GX09 | GX09.. | C153 |
| | | 10 | 2,75 | 7,00 | L | E10L00-1010M-GX09 | GX09.. | C153 |
| | | 10 | 3,25 | 7,00 | L | E10L00-1010M-GX09 | GX09.. | C153 |



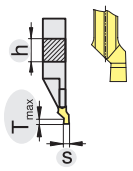

| | | h [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C188 |  | 10 | 0,60 | 0,75 | R | E10R00-1010M-GX09 | GX09-1..R/L | C153 |
| | | 10 | 0,80 | 0,94 | R | E10R00-1010M-GX09 | GX09-1..R/L | C153 |
| | | 10 | 0,90 | 1,04 | R | E10R00-1010M-GX09 | GX09-1..R/L | C153 |
| | | 10 | 1,00 | 1,14 | R | E10R00-1010M-GX09 | GX09-1..R/L | C153 |
| | | 10 | 1,20 | 1,34 | R | E10R00-1010M-GX09 | GX09-1..R/L | C153 |
| | | 10 | 1,40 | 1,53 | R | E10R00-1010M-GX09 | GX09-1..R/L | C153 |
| | | 10 | 1,70 | 1,82 | R | E10R00-1010M-GX09 | GX09-1..R/L | C153 |
| | | 10 | 0,60 | 0,75 | L | E10L00-1010M-GX09 | GX09-1..R/L | C153 |
| | | 10 | 0,80 | 0,94 | L | E10L00-1010M-GX09 | GX09-1..R/L | C153 |
| | | 10 | 0,90 | 1,04 | L | E10L00-1010M-GX09 | GX09-1..R/L | C153 |
| | | 10 | 1,00 | 1,14 | L | E10L00-1010M-GX09 | GX09-1..R/L | C153 |
| | | 10 | 1,20 | 1,34 | L | E10L00-1010M-GX09 | GX09-1..R/L | C153 |
| | | 10 | 1,40 | 1,53 | L | E10L00-1010M-GX09 | GX09-1..R/L | C153 |
| | | 10 | 1,70 | 1,82 | L | E10L00-1010M-GX09 | GX09-1..R/L | C153 |

# Sicherungsringeinstechen – außen

Monowerkzeug – GX




| | | h [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C189 |  | 12 | 2,75 | 12,00 | R | E12R0012-1212K-GX16-2 | GX16-2.. | C153 |
| | | 12 | 3,25 | 12,00 | R | E12R0012-1212K-GX16-2 | GX16-2.. | C153 |
| | | 16 | 2,75 | 12,00 | R | E16R0012-1616K-GX16-2 | GX16-2.. | C153 |
| | | 16 | 3,25 | 12,00 | R | E16R0012-1616K-GX16-2 | GX16-2.. | C153 |
| | | 16 | 4,25 | 12,00 | R | E16R0012-1616K-GX16-3 | GX16-3.. | C153 |
| | | 20 | 2,75 | 12,00 | R | E20R0012-2020K-GX16-2 | GX16-2.. | C153 |
| | | 20 | 3,25 | 12,00 | R | E20R0012-2020K-GX16-2 | GX16-2.. | C153 |
| | | 20 | 4,25 | 12,00 | R | E20R0012-2020K-GX16-3 | GX16-3.. | C153 |
| | | 25 | 2,75 | 12,00 | R | E25R0012-2525M-GX16-2 | GX16-2.. | C153 |
| | | 25 | 3,25 | 12,00 | R | E25R0012-2525M-GX16-2 | GX16-2.. | C153 |
| | | 25 | 4,25 | 12,00 | R | E25R0012-2525M-GX16-3 | GX16-3.. | C153 |
| | | 12 | 2,75 | 12,00 | L | E12L0012-1212K-GX16-2 | GX16-2.. | C153 |
| | | 12 | 3,25 | 12,00 | L | E12L0012-1212K-GX16-2 | GX16-2.. | C153 |
| | | 16 | 2,75 | 12,00 | L | E16L0012-1616K-GX16-2 | GX16-2.. | C153 |
| | | 16 | 3,25 | 12,00 | L | E16L0012-1616K-GX16-2 | GX16-2.. | C153 |
| | | 16 | 4,25 | 12,00 | L | E16L0012-1616K-GX16-3 | GX16-3.. | C153 |
| | | 20 | 2,75 | 12,00 | L | E20L0012-2020K-GX16-2 | GX16-2.. | C153 |
| | | 20 | 3,25 | 12,00 | L | E20L0012-2020K-GX16-2 | GX16-2.. | C153 |
| | | 20 | 4,25 | 12,00 | L | E20L0012-2020K-GX16-3 | GX16-3.. | C153 |
| | | 25 | 2,75 | 12,00 | L | E25L0012-2525M-GX16-2 | GX16-2.. | C153 |
| | | 25 | 3,25 | 12,00 | L | E25L0012-2525M-GX16-2 | GX16-2.. | C153 |
| | | 25 | 4,25 | 12,00 | L | E25L0012-2525M-GX16-3 | GX16-3.. | C153 |

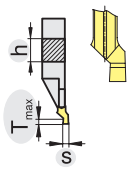



| | | h [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C189 |  | 12 | 0,60 | 0,75 | R | E12R0012-1212K-GX16-2 | GX16-2..R/L | C153 |
| | | 12 | 0,80 | 0,94 | R | E12R0012-1212K-GX16-2 | GX16-2..R/L | C153 |
| | | 12 | 0,90 | 1,04 | R | E12R0012-1212K-GX16-2 | GX16-2..R/L | C153 |
| | | 12 | 1,00 | 1,14 | R | E12R0012-1212K-GX16-2 | GX16-2..R/L | C153 |
| | | 12 | 1,20 | 1,34 | R | E12R0012-1212K-GX16-2 | GX16-2..R/L | C153 |
| | | 12 | 1,40 | 1,53 | R | E12R0012-1212K-GX16-2 | GX16-2..R/L | C153 |
| | | 12 | 1,70 | 1,82 | R | E12R0012-1212K-GX16-2 | GX16-2..R/L | C153 |
| | | 12 | 1,95 | 2,07 | R | E12R0012-1212K-GX16-2 | GX16-2..R/L | C153 |
| | | 12 | 2,25 | 2,36 | R | E12R0012-1212K-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 0,60 | 0,75 | R | E16R0012-1616K-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 0,80 | 0,94 | R | E16R0012-1616K-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 0,90 | 1,04 | R | E16R0012-1616K-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 1,00 | 1,14 | R | E16R0012-1616K-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 1,20 | 1,34 | R | E16R0012-1616K-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 1,40 | 1,53 | R | E16R0012-1616K-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 1,70 | 1,82 | R | E16R0012-1616K-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 1,95 | 2,07 | R | E16R0012-1616K-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 2,25 | 2,36 | R | E16R0012-1616K-GX16-2 | GX16-2..R/L | C153 |
| | | 12 | 0,60 | 0,75 | L | E12L0012-1212K-GX16-2 | GX16-2..R/L | C153 |
| | | 12 | 0,80 | 0,94 | L | E12L0012-1212K-GX16-2 | GX16-2..R/L | C153 |
| | | 12 | 0,90 | 1,04 | L | E12L0012-1212K-GX16-2 | GX16-2..R/L | C153 |
| | | 12 | 1,00 | 1,14 | L | E12L0012-1212K-GX16-2 | GX16-2..R/L | C153 |
| | | 12 | 1,20 | 1,34 | L | E12L0012-1212K-GX16-2 | GX16-2..R/L | C153 |
| | | 12 | 1,40 | 1,53 | L | E12L0012-1212K-GX16-2 | GX16-2..R/L | C153 |
| | | 12 | 1,70 | 1,82 | L | E12L0012-1212K-GX16-2 | GX16-2..R/L | C153 |
| | | 12 | 1,95 | 2,07 | L | E12L0012-1212K-GX16-2 | GX16-2..R/L | C153 |
| | | 12 | 2,25 | 2,36 | L | E12L0012-1212K-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 0,60 | 0,75 | L | E16L0012-1616K-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 0,80 | 0,94 | L | E16L0012-1616K-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 0,90 | 1,04 | L | E16L0012-1616K-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 1,00 | 1,14 | L | E16L0012-1616K-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 1,20 | 1,34 | L | E16L0012-1616K-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 1,40 | 1,53 | L | E16L0012-1616K-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 1,70 | 1,82 | L | E16L0012-1616K-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 1,95 | 2,07 | L | E16L0012-1616K-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 2,25 | 2,36 | L | E16L0012-1616K-GX16-2 | GX16-2..R/L | C153 |

# Sicherungsringeinstechen – außen

Monowerkzeug – GX

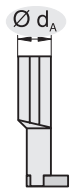




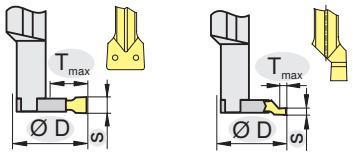

| | | h [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C189 |  | 20 | 0,60 | 0,75 | R | E20R0012-2020K-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 0,80 | 0,94 | R | E20R0012-2020K-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 0,90 | 1,04 | R | E20R0012-2020K-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 1,00 | 1,14 | R | E20R0012-2020K-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 1,20 | 1,34 | R | E20R0012-2020K-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 1,40 | 1,53 | R | E20R0012-2020K-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 1,70 | 1,82 | R | E20R0012-2020K-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 1,95 | 2,07 | R | E20R0012-2020K-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 2,25 | 2,36 | R | E20R0012-2020K-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 0,60 | 0,75 | R | E25R0012-2525M-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 0,80 | 0,94 | R | E25R0012-2525M-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 0,90 | 1,04 | R | E25R0012-2525M-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 1,00 | 1,14 | R | E25R0012-2525M-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 1,20 | 1,34 | R | E25R0012-2525M-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 1,40 | 1,53 | R | E25R0012-2525M-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 1,70 | 1,82 | R | E25R0012-2525M-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 1,95 | 2,07 | R | E25R0012-2525M-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 2,25 | 2,36 | R | E25R0012-2525M-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 0,60 | 0,75 | L | E20L0012-2020K-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 0,80 | 0,94 | L | E20L0012-2020K-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 0,90 | 1,04 | L | E20L0012-2020K-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 1,00 | 1,14 | L | E20L0012-2020K-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 1,20 | 1,34 | L | E20L0012-2020K-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 1,40 | 1,53 | L | E20L0012-2020K-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 1,70 | 1,82 | L | E20L0012-2020K-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 1,95 | 2,07 | L | E20L0012-2020K-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 2,25 | 2,36 | L | E20L0012-2020K-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 0,60 | 0,75 | L | E25L0012-2525M-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 0,80 | 0,94 | L | E25L0012-2525M-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 0,90 | 1,04 | L | E25L0012-2525M-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 1,00 | 1,14 | L | E25L0012-2525M-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 1,20 | 1,34 | L | E25L0012-2525M-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 1,40 | 1,53 | L | E25L0012-2525M-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 1,70 | 1,82 | L | E25L0012-2525M-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 1,95 | 2,07 | L | E25L0012-2525M-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 2,25 | 2,36 | L | E25L0012-2525M-GX16-2 | GX16-2..R/L | C153 |

# Sicherungsringeinstechen – innen

Modular – innen, Baugröße 16




Passende Produkte siehe rechts




| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 20 | R | MSS-I16R90-1.5D-N |
| C208 |  | 20 | R | MSS-I16R90-2.5D-N |

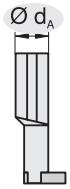
| | | $D_{min}$ [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C210 |  | 20 | 1,95 | 4,00 | R | MSS-I16R04-GX09-1 | GX09-1.. | C153 |
| | | 20 | 2,25 | 4,00 | R | MSS-I16R04-GX09-1 | GX09-1.. | C153 |
| | | 20 | 2,75 | 4,00 | R | MSS-I16R04-GX09-2 | GX09-2.. | C153 |
| | | 20 | 3,25 | 4,00 | R | MSS-I16R04-GX09-2 | GX09-2.. | C153 |
| C213 |  | 20 | 0,60 | 0,75 | R | MSS-I16R02-GX09-1 | GX09-1..R/L | C153 |
| | | 20 | 0,80 | 0,94 | R | MSS-I16R02-GX09-1 | GX09-1..R/L | C153 |
| | | 20 | 0,90 | 1,04 | R | MSS-I16R02-GX09-1 | GX09-1..R/L | C153 |
| | | 20 | 1,00 | 1,14 | R | MSS-I16R02-GX09-1 | GX09-1..R/L | C153 |
| | | 20 | 1,20 | 1,34 | R | MSS-I16R02-GX09-1 | GX09-1..R/L | C153 |
| | | 20 | 1,40 | 1,53 | R | MSS-I16R02-GX09-1 | GX09-1..R/L | C153 |
| | | 20 | 1,70 | 1,82 | R | MSS-I16R02-GX09-1 | GX09-1..R/L | C153 |

| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 20 | L | MSS-I16L90-1.5D-N |
| C208 |  | 20 | L | MSS-I16L90-2.5D-N |

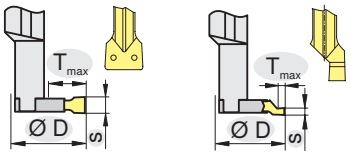
| | | $D_{min}$ [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C210 |  | 20 | 1,95 | 4,00 | L | MSS-I16L04-GX09-1 | GX09-1.. | C153 |
| | | 20 | 2,25 | 4,00 | L | MSS-I16L04-GX09-1 | GX09-1.. | C153 |
| | | 20 | 2,75 | 4,00 | L | MSS-I16L04-GX09-2 | GX09-2.. | C153 |
| | | 20 | 3,25 | 4,00 | L | MSS-I16L04-GX09-2 | GX09-2.. | C153 |
| C213 |  | 20 | 0,60 | 0,75 | L | MSS-I16L02-GX09-1 | GX09-1..R/L | C153 |
| | | 20 | 0,80 | 0,94 | L | MSS-I16L02-GX09-1 | GX09-1..R/L | C153 |
| | | 20 | 0,90 | 1,04 | L | MSS-I16L02-GX09-1 | GX09-1..R/L | C153 |
| | | 20 | 1,00 | 1,14 | L | MSS-I16L02-GX09-1 | GX09-1..R/L | C153 |
| | | 20 | 1,20 | 1,34 | L | MSS-I16L02-GX09-1 | GX09-1..R/L | C153 |
| | | 20 | 1,40 | 1,53 | L | MSS-I16L02-GX09-1 | GX09-1..R/L | C153 |
| | | 20 | 1,70 | 1,82 | L | MSS-I16L02-GX09-1 | GX09-1..R/L | C153 |

# Sicherungsringeinstechen – innen

Modular – innen, Baugröße 20




Passende Produkte siehe rechts




| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 20 | R | MSS-I20R90-1.5D-N |
| C208 |  | 25 | R | MSS-I20R90-2.5D-N |

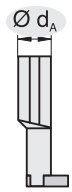
| | | $D_{min}$ [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C210 |  | 25 | 1,95 | 5,00 | R | MSS-I20R05-GX09-1 | GX09-1.. | C153 |
| | | 25 | 2,25 | 5,00 | R | MSS-I20R05-GX09-1 | GX09-1.. | C153 |
| | | 25 | 2,75 | 5,00 | R | MSS-I20R05-GX09-2 | GX09-2.. | C153 |
| | | 25 | 3,25 | 5,00 | R | MSS-I20R05-GX09-2 | GX09-2.. | C153 |
| C213 |  | 25 | 0,60 | 0,75 | R | MSS-I20R02-GX09-1 | GX09-1..R/L | C153 |
| | | 25 | 0,80 | 0,94 | R | MSS-I20R02-GX09-1 | GX09-1..R/L | C153 |
| | | 25 | 0,90 | 1,04 | R | MSS-I20R02-GX09-1 | GX09-1..R/L | C153 |
| | | 25 | 1,00 | 1,14 | R | MSS-I20R02-GX09-1 | GX09-1..R/L | C153 |
| | | 25 | 1,20 | 1,34 | R | MSS-I20R02-GX09-1 | GX09-1..R/L | C153 |
| | | 25 | 1,40 | 1,53 | R | MSS-I20R02-GX09-1 | GX09-1..R/L | C153 |
| | | 25 | 1,70 | 1,82 | R | MSS-I20R02-GX09-1 | GX09-1..R/L | C153 |

| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 20 | L | MSS-I20L90-1.5D-N |
| C208 |  | 25 | L | MSS-I20L90-2.5D-N |

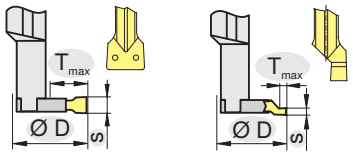
| | | $D_{min}$ [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C210 |  | 25 | 1,95 | 5,00 | L | MSS-I20L05-GX09-1 | GX09-1.. | C153 |
| | | 25 | 2,25 | 5,00 | L | MSS-I20L05-GX09-1 | GX09-1.. | C153 |
| | | 25 | 2,75 | 5,00 | L | MSS-I20L05-GX09-2 | GX09-2.. | C153 |
| | | 25 | 3,25 | 5,00 | L | MSS-I20L05-GX09-2 | GX09-2.. | C153 |
| C213 |  | 25 | 0,60 | 0,75 | L | MSS-I20L02-GX09-1 | GX09-1..R/L | C153 |
| | | 25 | 0,80 | 0,94 | L | MSS-I20L02-GX09-1 | GX09-1..R/L | C153 |
| | | 25 | 0,90 | 1,04 | L | MSS-I20L02-GX09-1 | GX09-1..R/L | C153 |
| | | 25 | 1,00 | 1,14 | L | MSS-I20L02-GX09-1 | GX09-1..R/L | C153 |
| | | 25 | 1,20 | 1,34 | L | MSS-I20L02-GX09-1 | GX09-1..R/L | C153 |
| | | 25 | 1,40 | 1,53 | L | MSS-I20L02-GX09-1 | GX09-1..R/L | C153 |
| | | 25 | 1,70 | 1,82 | L | MSS-I20L02-GX09-1 | GX09-1..R/L | C153 |

# Sicherungsringeinstechen – innen

Modular – innen, Baugröße 25




Passende Produkte siehe rechts




| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 25 | R | MSS-I25R90-1.5D-N |
| C208 |  | 32 | R | MSS-I25R90-2.5D-N |

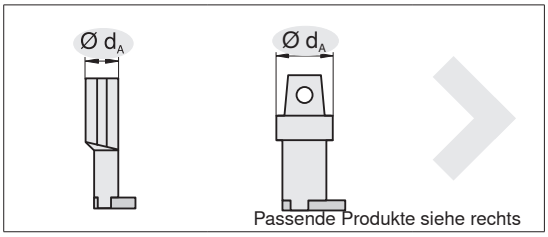
| | | $D_{min}$ [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C210 |  | 32 | 1,95 | 6,00 | R | MSS-I25R06-GX09-1 | GX09-1.. | C153 |
| | | 32 | 2,25 | 6,00 | R | MSS-I25R06-GX09-1 | GX09-1.. | C153 |
| | | 32 | 2,75 | 6,00 | R | MSS-I25R06-GX09-2 | GX09-2.. | C153 |
| | | 32 | 3,25 | 6,00 | R | MSS-I25R06-GX09-2 | GX09-2.. | C153 |
| C213 |  | 32 | 0,60 | 0,75 | R | MSS-I25R02-GX09-1 | GX09-1..R/L | C153 |
| | | 32 | 0,80 | 0,94 | R | MSS-I25R02-GX09-1 | GX09-1..R/L | C153 |
| | | 32 | 0,90 | 1,04 | R | MSS-I25R02-GX09-1 | GX09-1..R/L | C153 |
| | | 32 | 1,00 | 1,14 | R | MSS-I25R02-GX09-1 | GX09-1..R/L | C153 |
| | | 32 | 1,20 | 1,34 | R | MSS-I25R02-GX09-1 | GX09-1..R/L | C153 |
| | | 32 | 1,40 | 1,53 | R | MSS-I25R02-GX09-1 | GX09-1..R/L | C153 |
| | | 32 | 1,70 | 1,82 | R | MSS-I25R02-GX09-1 | GX09-1..R/L | C153 |

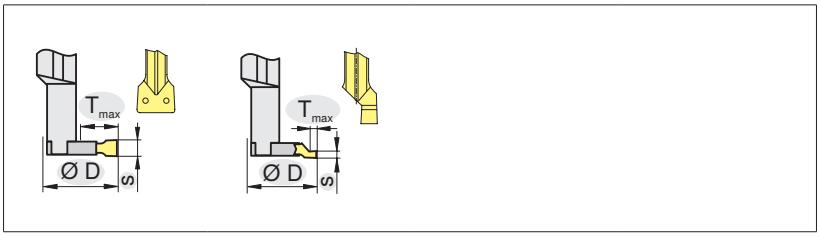
| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 25 | L | MSS-I25L90-1.5D-N |
| C208 |  | 32 | L | MSS-I25L90-2.5D-N |

| | | $D_{min}$ [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C210 |  | 32 | 1,95 | 6,00 | L | MSS-I25L06-GX09-1 | GX09-1.. | C153 |
| | | 32 | 2,25 | 6,00 | L | MSS-I25L06-GX09-1 | GX09-1.. | C153 |
| | | 32 | 2,75 | 6,00 | L | MSS-I25L06-GX09-2 | GX09-2.. | C153 |
| | | 32 | 3,25 | 6,00 | L | MSS-I25L06-GX09-2 | GX09-2.. | C153 |
| C213 |  | 32 | 0,60 | 0,75 | L | MSS-I25L02-GX09-1 | GX09-1..R/L | C153 |
| | | 32 | 0,80 | 0,94 | L | MSS-I25L02-GX09-1 | GX09-1..R/L | C153 |
| | | 32 | 0,90 | 1,04 | L | MSS-I25L02-GX09-1 | GX09-1..R/L | C153 |
| | | 32 | 1,00 | 1,14 | L | MSS-I25L02-GX09-1 | GX09-1..R/L | C153 |
| | | 32 | 1,20 | 1,34 | L | MSS-I25L02-GX09-1 | GX09-1..R/L | C153 |
| | | 32 | 1,40 | 1,53 | L | MSS-I25L02-GX09-1 | GX09-1..R/L | C153 |
| | | 32 | 1,70 | 1,82 | L | MSS-I25L02-GX09-1 | GX09-1..R/L | C153 |

# Sicherungsringeinstechen – innen

Modular – innen, Baugröße 32




| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 32 | R | MSS-I32R90-1.5D-N |
| C208 |  | 40 | R | MSS-I32R90-2.5D-N |
| C209 |  | 40 | R | UT40-MSS-I32R90-2D |

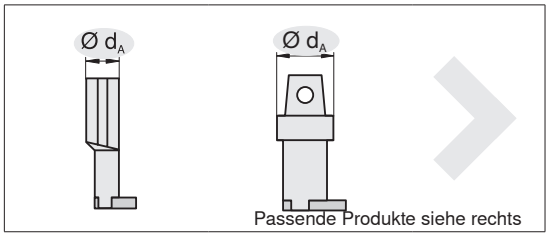
| | | $D_{min}$ [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C211 |  | 40 | 2,75 | 9,00 | R | MSS-I32R09-GX16-2 | GX16-2.. | C153 |
| | | 40 | 3,25 | 9,00 | R | MSS-I32R09-GX16-2 | GX16-2.. | C153 |
| | | 40 | 4,25 | 9,00 | R | MSS-I32R09-GX16-3 | GX16-3.. | C153 |
| | | 40 | 5,25 | 9,00 | R | MSS-I32R09-GX16-4 | GX16-4.. | C153 |
| C214 |  | 40 | 0,60 | 0,75 | R | MSS-I32R03-GX16-2 | GX16-2..R/L | C153 |
| | | 40 | 0,80 | 0,94 | R | MSS-I32R03-GX16-2 | GX16-2..R/L | C153 |
| | | 40 | 0,90 | 1,04 | R | MSS-I32R03-GX16-2 | GX16-2..R/L | C153 |
| | | 40 | 1,00 | 1,14 | R | MSS-I32R03-GX16-2 | GX16-2..R/L | C153 |
| | | 40 | 1,20 | 1,34 | R | MSS-I32R03-GX16-2 | GX16-2..R/L | C153 |
| | | 40 | 1,40 | 1,53 | R | MSS-I32R03-GX16-2 | GX16-2..R/L | C153 |
| | | 40 | 1,70 | 1,82 | R | MSS-I32R03-GX16-2 | GX16-2..R/L | C153 |
| | | 40 | 1,95 | 2,07 | R | MSS-I32R03-GX16-2 | GX16-2..R/L | C153 |
| | | 40 | 2,25 | 2,36 | R | MSS-I32R03-GX16-2 | GX16-2..R/L | C153 |

| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 32 | L | MSS-I32L90-1.5D-N |
| C208 |  | 40 | L | MSS-I32L90-2.5D-N |
| C209 |  | 50 | L | UT50-MSS-I32L90-2D |

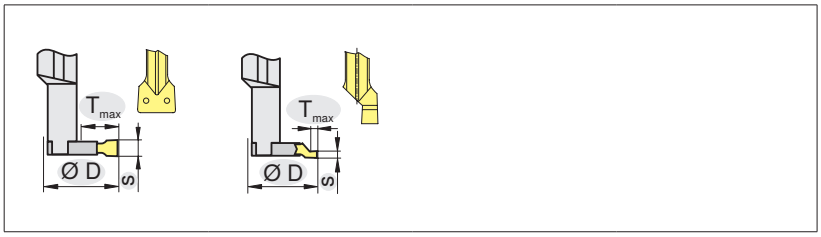
| | | $D_{min}$ [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C211 |  | 40 | 2,75 | 9,00 | L | MSS-I32L09-GX16-2 | GX16-2.. | C153 |
| | | 40 | 3,25 | 9,00 | L | MSS-I32L09-GX16-2 | GX16-2.. | C153 |
| | | 40 | 4,25 | 9,00 | L | MSS-I32L09-GX16-3 | GX16-3.. | C153 |
| | | 40 | 5,25 | 9,00 | L | MSS-I32L09-GX16-4 | GX16-4.. | C153 |
| C214 |  | 40 | 0,60 | 0,75 | L | MSS-I32L03-GX16-2 | GX16-2..R/L | C153 |
| | | 40 | 0,80 | 0,94 | L | MSS-I32L03-GX16-2 | GX16-2..R/L | C153 |
| | | 40 | 0,90 | 1,04 | L | MSS-I32L03-GX16-2 | GX16-2..R/L | C153 |
| | | 40 | 1,00 | 1,14 | L | MSS-I32L03-GX16-2 | GX16-2..R/L | C153 |
| | | 40 | 1,20 | 1,34 | L | MSS-I32L03-GX16-2 | GX16-2..R/L | C153 |
| | | 40 | 1,40 | 1,53 | L | MSS-I32L03-GX16-2 | GX16-2..R/L | C153 |
| | | 40 | 1,70 | 1,82 | L | MSS-I32L03-GX16-2 | GX16-2..R/L | C153 |
| | | 40 | 1,95 | 3,00 | L | MSS-I32L03-GX16-2 | GX16-2..R/L | C153 |
| | | 40 | 2,25 | 2,36 | L | MSS-I32L03-GX16-2 | GX16-2..R/L | C153 |

# Sicherungsringeinstechen – innen

Modular – innen, Baugröße 40




Passende Produkte siehe rechts




| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 40 | R | MSS-I40R90-1.5D-N |
| C208 |  | 50 | R | MSS-I40R90-2.5D-N |

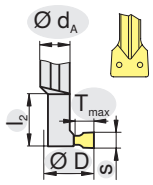
| | | $D_{min}$ [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C211 |  | 50 | 2,75 | 10,00 | R | MSS-I40R10-GX16-2 | GX16-2.. | C153 |
| | | 50 | 3,25 | 10,00 | R | MSS-I40R10-GX16-2 | GX16-2.. | C153 |
| | | 50 | 4,25 | 10,00 | R | MSS-I40R10-GX16-3 | GX16-3.. | C153 |
| | | 50 | 5,25 | 10,00 | R | MSS-I40R10-GX16-4 | GX16-4.. | C153 |
| C214 |  | 50 | 0,60 | 0,75 | R | MSS-I40R03-GX16-2 | GX16-2..R/L | C153 |
| | | 50 | 0,80 | 0,94 | R | MSS-I40R03-GX16-2 | GX16-2..R/L | C153 |
| | | 50 | 0,90 | 1,04 | R | MSS-I40R03-GX16-2 | GX16-2..R/L | C153 |
| | | 50 | 1,00 | 1,14 | R | MSS-I40R03-GX16-2 | GX16-2..R/L | C153 |
| | | 50 | 1,20 | 1,34 | R | MSS-I40R03-GX16-2 | GX16-2..R/L | C153 |
| | | 50 | 1,40 | 1,53 | R | MSS-I40R03-GX16-2 | GX16-2..R/L | C153 |
| | | 50 | 1,70 | 1,82 | R | MSS-I40R03-GX16-2 | GX16-2..R/L | C153 |
| | | 50 | 1,95 | 2,07 | R | MSS-I40R03-GX16-2 | GX16-2..R/L | C153 |
| | | 50 | 2,25 | 2,36 | R | MSS-I40R03-GX16-2 | GX16-2..R/L | C153 |

| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 40 | L | MSS-I40L90-1.5D-N |
| C208 |  | 50 | L | MSS-I40L90-2.5D-N |
| C209 |  | 40 | L | UT40-MSS-I40L90-2D |

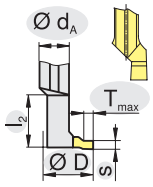
| | | $D_{min}$ [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C211 |  | 50 | 2,75 | 10,00 | L | MSS-I40L10-GX16-2 | GX16-2.. | C153 |
| | | 50 | 3,25 | 10,00 | L | MSS-I40L10-GX16-2 | GX16-2.. | C153 |
| | | 50 | 4,25 | 10,00 | L | MSS-I40L10-GX16-3 | GX16-3.. | C153 |
| | | 50 | 5,25 | 10,00 | L | MSS-I40L10-GX16-4 | GX16-4.. | C153 |
| C214 |  | 50 | 0,60 | 0,75 | L | MSS-I40L03-GX16-2 | GX16-2..R/L | C153 |
| | | 50 | 0,80 | 0,94 | L | MSS-I40L03-GX16-2 | GX16-2..R/L | C153 |
| | | 50 | 0,90 | 1,04 | L | MSS-I40L03-GX16-2 | GX16-2..R/L | C153 |
| | | 50 | 1,00 | 1,14 | L | MSS-I40L03-GX16-2 | GX16-2..R/L | C153 |
| | | 50 | 1,20 | 1,34 | L | MSS-I40L03-GX16-2 | GX16-2..R/L | C153 |
| | | 50 | 1,40 | 1,53 | L | MSS-I40L03-GX16-2 | GX16-2..R/L | C153 |
| | | 50 | 1,70 | 1,82 | L | MSS-I40L03-GX16-2 | GX16-2..R/L | C153 |
| | | 50 | 1,95 | 2,07 | L | MSS-I40L03-GX16-2 | GX16-2..R/L | C153 |
| | | 50 | 2,25 | 2,36 | L | MSS-I40L03-GX16-2 | GX16-2..R/L | C153 |

# Sicherungsringeinstechen – innen

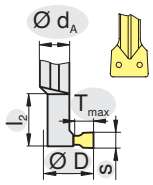
Monobohrstange – GX




| | | $d_A$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C215 |  | 16 | 30 | 16 | 1,95 | 7,00 | R | I12R90-2.5D-GX09 | GX09.. | C153 |
| | | 16 | 30 | 16 | 2,25 | 7,00 | R | I12R90-2.5D-GX09 | GX09.. | C153 |
| | | 16 | 30 | 16 | 2,75 | 7,00 | R | I12R90-2.5D-GX09 | GX09.. | C153 |
| | | 16 | 30 | 16 | 3,25 | 7,00 | R | I12R90-2.5D-GX09 | GX09.. | C153 |
| | | 16 | 30 | 16 | 1,95 | 7,00 | L | I12L90-2.5D-GX09 | GX09.. | C153 |
| | | 16 | 30 | 16 | 2,25 | 7,00 | L | I12L90-2.5D-GX09 | GX09.. | C153 |
| | | 16 | 30 | 16 | 2,75 | 7,00 | L | I12L90-2.5D-GX09 | GX09.. | C153 |
| | | 16 | 30 | 16 | 3,25 | 7,00 | L | I12L90-2.5D-GX09 | GX09.. | C153 |



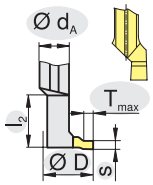

| | | $d_A$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C215 |  | 16 | 30 | 16 | 0,60 | 0,75 | R | I12R90-2.5D-GX09 | GX09-1..R/L | C153 |
| | | 16 | 30 | 16 | 0,80 | 0,94 | R | I12R90-2.5D-GX09 | GX09-1..R/L | C153 |
| | | 16 | 30 | 16 | 0,90 | 1,04 | R | I12R90-2.5D-GX09 | GX09-1..R/L | C153 |
| | | 16 | 30 | 16 | 1,00 | 1,14 | R | I12R90-2.5D-GX09 | GX09-1..R/L | C153 |
| | | 16 | 30 | 16 | 1,20 | 1,34 | R | I12R90-2.5D-GX09 | GX09-1..R/L | C153 |
| | | 16 | 30 | 16 | 1,40 | 1,53 | R | I12R90-2.5D-GX09 | GX09-1..R/L | C153 |
| | | 16 | 30 | 16 | 1,70 | 1,82 | R | I12R90-2.5D-GX09 | GX09-1..R/L | C153 |
| | | 16 | 30 | 16 | 0,60 | 0,75 | L | I12L90-2.5D-GX09 | GX09-1..R/L | C153 |
| | | 16 | 30 | 16 | 0,80 | 0,94 | L | I12L90-2.5D-GX09 | GX09-1..R/L | C153 |
| | | 16 | 30 | 16 | 0,90 | 1,04 | L | I12L90-2.5D-GX09 | GX09-1..R/L | C153 |
| | | 16 | 30 | 16 | 1,00 | 1,14 | L | I12L90-2.5D-GX09 | GX09-1..R/L | C153 |
| | | 16 | 30 | 16 | 1,20 | 1,34 | L | I12L90-2.5D-GX09 | GX09-1..R/L | C153 |
| | | 16 | 30 | 16 | 1,40 | 1,53 | L | I12L90-2.5D-GX09 | GX09-1..R/L | C153 |
| | | 16 | 30 | 16 | 1,70 | 1,82 | L | I12L90-2.5D-GX09 | GX09-1..R/L | C153 |



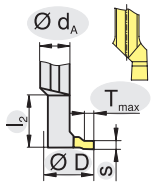

| | | $d_A$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C216 |  | 16 | 32 | 20,5 | 2,75 | 12,00 | R | I16R90-2.0D-GX16-2 | GX16-2.. | C153 |
| | | 16 | 32 | 20,5 | 3,25 | 12,00 | R | I16R90-2.0D-GX16-2 | GX16-2.. | C153 |
| | | 20 | 40 | 25,0 | 2,75 | 12,00 | R | I20R90-2.0D-GX16-2 | GX16-2.. | C153 |
| | | 20 | 40 | 25,0 | 3,25 | 12,00 | R | I20R90-2.0D-GX16-2 | GX16-2.. | C153 |
| | | 25 | 50 | 32,0 | 2,75 | 12,00 | R | I25R90-2.0D-GX16-2 | GX16-2.. | C153 |
| | | 25 | 50 | 32,0 | 3,25 | 12,00 | R | I25R90-2.0D-GX16-2 | GX16-2.. | C153 |
| | | 25 | 50 | 32,0 | 4,25 | 12,00 | R | I25R90-2.0D-GX16-3 | GX16-3.. | C153 |
| | | 32 | 64 | 42,0 | 2,75 | 12,00 | R | I32R90-2.0D-GX16-2 | GX16-2.. | C153 |
| | | 32 | 64 | 42,0 | 3,25 | 12,00 | R | I32R90-2.0D-GX16-2 | GX16-2.. | C153 |
| | | 32 | 64 | 42,0 | 4,25 | 12,00 | R | I32R90-2.0D-GX16-3 | GX16-3.. | C153 |
| | | 16 | 32 | 20,5 | 2,75 | 12,00 | L | I16L90-2.0D-GX16-2 | GX16-2.. | C153 |
| | | 16 | 32 | 20,5 | 3,25 | 12,00 | L | I16L90-2.0D-GX16-2 | GX16-2.. | C153 |
| | | 20 | 40 | 25,0 | 2,75 | 12,00 | L | I20L90-2.0D-GX16-2 | GX16-2.. | C153 |
| | | 20 | 40 | 25,0 | 3,25 | 12,00 | L | I20L90-2.0D-GX16-2 | GX16-2.. | C153 |
| | | 25 | 50 | 32,0 | 2,75 | 12,00 | L | I25L90-2.0D-GX16-2 | GX16-2.. | C153 |
| | | 25 | 50 | 32,0 | 3,25 | 12,00 | L | I25L90-2.0D-GX16-2 | GX16-2.. | C153 |
| | | 25 | 50 | 32,0 | 4,25 | 12,00 | L | I25L90-2.0D-GX16-3 | GX16-3.. | C153 |
| | | 32 | 64 | 42,0 | 2,75 | 12,00 | L | I32L90-2.0D-GX16-2 | GX16-2.. | C153 |
| | | 32 | 64 | 42,0 | 3,25 | 12,00 | L | I32L90-2.0D-GX16-2 | GX16-2.. | C153 |
| | | 32 | 64 | 42,0 | 4,25 | 12,00 | L | I32L90-2.0D-GX16-3 | GX16-3.. | C153 |

# Sicherungsringeinstechen – innen

Monobohrstange – GX




| | | $d_A$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C216 |  | 16 | 32 | 20,5 | 0,60 | 0,75 | R | I16R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 32 | 20,5 | 0,80 | 0,94 | R | I16R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 32 | 20,5 | 0,90 | 1,04 | R | I16R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 32 | 20,5 | 1,00 | 1,14 | R | I16R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 32 | 20,5 | 1,20 | 1,34 | R | I16R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 32 | 20,5 | 1,40 | 1,53 | R | I16R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 32 | 20,5 | 1,70 | 1,82 | R | I16R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 32 | 20,5 | 1,95 | 2,07 | R | I16R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 32 | 20,5 | 2,25 | 2,36 | R | I16R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 40 | 25,0 | 0,60 | 0,75 | R | I20R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 40 | 25,0 | 0,80 | 0,94 | R | I20R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 40 | 25,0 | 0,90 | 1,04 | R | I20R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 40 | 25,0 | 1,00 | 1,14 | R | I20R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 40 | 25,0 | 1,20 | 1,34 | R | I20R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 40 | 25,0 | 1,40 | 1,53 | R | I20R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 40 | 25,0 | 1,70 | 1,82 | R | I20R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 40 | 25,0 | 1,95 | 2,07 | R | I20R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 40 | 25,0 | 2,25 | 2,36 | R | I20R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 32 | 20,5 | 0,60 | 0,75 | L | I16L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 32 | 20,5 | 0,80 | 0,94 | L | I16L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 32 | 20,5 | 0,90 | 1,04 | L | I16L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 32 | 20,5 | 1,00 | 1,14 | L | I16L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 32 | 20,5 | 1,20 | 1,34 | L | I16L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 32 | 20,5 | 1,40 | 1,53 | L | I16L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 32 | 20,5 | 1,70 | 1,82 | L | I16L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 32 | 20,5 | 1,95 | 2,07 | L | I16L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 16 | 32 | 20,5 | 2,25 | 2,36 | L | I16L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 40 | 25,0 | 0,60 | 0,75 | L | I20L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 40 | 25,0 | 0,80 | 0,94 | L | I20L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 40 | 25,0 | 0,90 | 1,04 | L | I20L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 40 | 25,0 | 1,00 | 1,14 | L | I20L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 40 | 25,0 | 1,20 | 1,34 | L | I20L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 40 | 25,0 | 1,40 | 1,53 | L | I20L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 40 | 25,0 | 1,70 | 1,82 | L | I20L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 40 | 25,0 | 1,95 | 2,07 | L | I20L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 20 | 40 | 25,0 | 2,25 | 2,36 | L | I20L90-2.0D-GX16-2 | GX16-2..R/L | C153 |

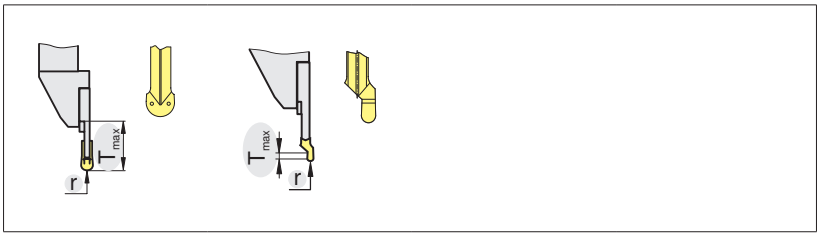



| | | $d_A$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C216 |  | 25 | 50 | 32,0 | 0,60 | 0,75 | R | I25R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 50 | 32,0 | 0,80 | 0,94 | R | I25R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 50 | 32,0 | 0,90 | 1,04 | R | I25R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 50 | 32,0 | 1,00 | 1,14 | R | I25R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 50 | 32,0 | 1,20 | 1,34 | R | I25R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 50 | 32,0 | 1,40 | 1,53 | R | I25R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 50 | 32,0 | 1,70 | 1,82 | R | I25R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 50 | 32,0 | 1,95 | 2,07 | R | I25R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 50 | 32,0 | 2,25 | 2,36 | R | I25R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 32 | 64 | 42,0 | 0,60 | 0,75 | R | I32R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 32 | 64 | 42,0 | 0,80 | 0,94 | R | I32R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 32 | 64 | 42,0 | 0,90 | 1,04 | R | I32R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 32 | 64 | 42,0 | 1,00 | 1,14 | R | I32R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 32 | 64 | 42,0 | 1,20 | 1,34 | R | I32R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 32 | 64 | 42,0 | 1,40 | 1,53 | R | I32R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 32 | 64 | 42,0 | 1,70 | 1,82 | R | I32R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 32 | 64 | 42,0 | 1,95 | 2,07 | R | I32R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 32 | 64 | 42,0 | 2,25 | 2,36 | R | I32R90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 50 | 32,0 | 0,60 | 0,75 | L | I25L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 50 | 32,0 | 0,80 | 0,94 | L | I25L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 50 | 32,0 | 0,90 | 1,04 | L | I25L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 50 | 32,0 | 1,00 | 1,14 | L | I25L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 50 | 32,0 | 1,20 | 1,34 | L | I25L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 50 | 32,0 | 1,40 | 1,53 | L | I25L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 50 | 32,0 | 1,70 | 1,82 | L | I25L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 50 | 32,0 | 1,95 | 2,07 | L | I25L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 25 | 50 | 32,0 | 2,25 | 2,36 | L | I25L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 32 | 64 | 42,0 | 0,60 | 0,75 | L | I32L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 32 | 64 | 42,0 | 0,80 | 0,94 | L | I32L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 32 | 64 | 42,0 | 0,90 | 1,04 | L | I32L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 32 | 64 | 42,0 | 1,00 | 1,14 | L | I32L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 32 | 64 | 42,0 | 1,20 | 1,34 | L | I32L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 32 | 64 | 42,0 | 1,40 | 1,53 | L | I32L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 32 | 64 | 42,0 | 1,70 | 1,82 | L | I32L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 32 | 64 | 42,0 | 1,95 | 2,07 | L | I32L90-2.0D-GX16-2 | GX16-2..R/L | C153 |
| | | 32 | 64 | 42,0 | 2,25 | 2,36 | L | I32L90-2.0D-GX16-2 | GX16-2..R/L | C153 |

# Radieneinstechen – außen

Modular – außen, Baugröße 12




| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | 12 | R | MSS-E12R00-1212E |

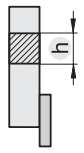
| | | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C176 |  | 1,00 | 7,00 | R | MSS-E12R07-GX09-1 | GX09-1.. | C154 |
| | | 1,20 | 7,00 | R | MSS-E12R07-GX09-1 | GX09-1.. | C154 |
| C179 |  | 0,80 | 1,78 | R | MSS-E12R02-GX09-1 | GX09-1..R/L | C154 |

| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | 12 | L | MSS-E12L00-1212E |

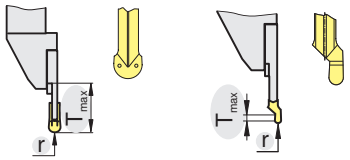
| | | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C176 |  | 1,00 | 7,00 | L | MSS-E12L07-GX09-1 | GX09-1.. | C154 |
| | | 1,20 | 7,00 | L | MSS-E12L07-GX09-1 | GX09-1.. | C154 |
| C179 |  | 0,80 | 1,78 | L | MSS-E12L02-GX09-1 | GX09-1..R/L | C154 |

# Radieneinstechen – außen

Modular – außen, Baugröße 16




Passende Produkte siehe rechts




| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | 16 | R | MSS-E16R00-1616G |

| | | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C176 |  | 1,00 | 7,00 | R | MSS-E16R07-GX09-1 | GX09-1.. | C154 |
| | | 1,20 | 7,00 | R | MSS-E16R07-GX09-1 | GX09-1.. | C154 |
| C179 |  | 0,80 | 1,78 | R | MSS-E16R02-GX09-1 | GX09-1..R/L | C154 |

| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | 16 | L | MSS-E16L00-1616G |

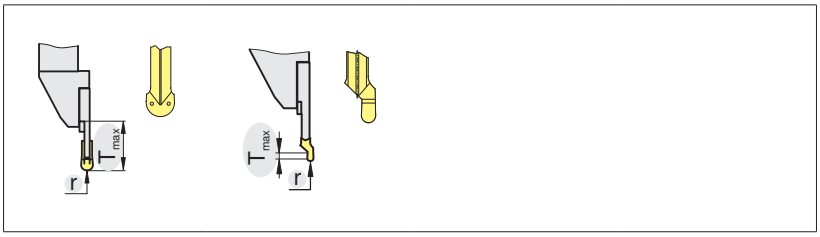
| | | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C176 |  | 1,00 | 7,00 | L | MSS-E16L07-GX09-1 | GX09-1.. | C154 |
| | | 1,20 | 7,00 | L | MSS-E16L07-GX09-1 | GX09-1.. | C154 |
| C179 |  | 0,80 | 1,78 | L | MSS-E16L02-GX09-1 | GX09-1..R/L | C154 |

# Radieneinstechen – außen

Modular – außen, Baugröße 20




Passende Produkte siehe rechts




| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | 20 | R | MSS-E20R00-2020J |
| | | 16 | R | MSS-E20R00-1620G |
| C169 |  90 | 20 | L | MSS-E20L90-2020J |

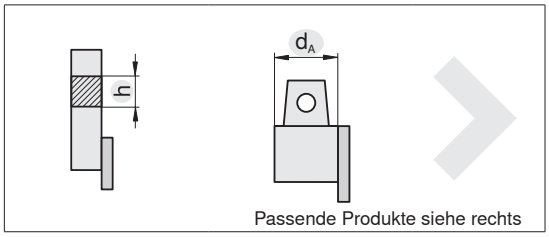
| | | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C177 |  | 1,50 | 12,00 | R | MSS-E20R12-GX16-2 | GX16-2.. | C154 |
| | | 2,00 | 12,00 | R | MSS-E20R12-GX16-3 | GX16-3.. | C154 |
| | | 2,50 | 12,00 | R | MSS-E20R12-GX16-3 | GX16-3.. | C154 |
| C178 |  | 1,50 | 21,00 | R | MSS-E20R21-GX24-2 | GX24-2.. | C154 |
| | | 2,00 | 21,00 | R | MSS-E20R21-GX24-3 | GX24-3.. | C154 |
| | | 2,50 | 21,00 | R | MSS-E20R21-GX24-3 | GX24-3.. | C154 |
| C180 |  | 0,80 | 1,78 | R | MSS-E20R03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,00 | 2,18 | R | MSS-E20R03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,20 | 2,58 | R | MSS-E20R03-GX16-2 | GX16-2..R/L | C154 |
| C184 |  | 1,50 | 20,00 | R | MSS-E20R20-SX3 | SX..3 | C156 |

| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | 20 | L | MSS-E20L00-2020J |
| | | 16 | L | MSS-E20L00-1620G |
| C169 |  90 | 20 | R | MSS-E20R90-2020J |

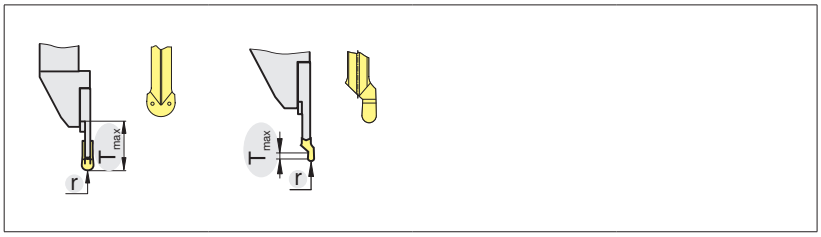
| | | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C177 |  | 1,50 | 12,00 | L | MSS-E20L12-GX16-2 | GX16-2.. | C154 |
| | | 2,00 | 12,00 | L | MSS-E20L12-GX16-3 | GX16-3.. | C154 |
| | | 2,50 | 12,00 | L | MSS-E20L12-GX16-3 | GX16-3.. | C154 |
| C178 |  | 1,50 | 21,00 | L | MSS-E20L21-GX24-2 | GX24-2.. | C154 |
| | | 2,00 | 21,00 | L | MSS-E20L21-GX24-3 | GX24-3.. | C154 |
| | | 2,50 | 21,00 | L | MSS-E20L21-GX24-3 | GX24-3.. | C154 |
| C180 |  | 0,80 | 1,78 | L | MSS-E20L03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,00 | 2,18 | L | MSS-E20L03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,20 | 2,58 | L | MSS-E20L03-GX16-2 | GX16-2..R/L | C154 |
| C184 |  | 1,50 | 20,00 | L | MSS-E20L20-SX3 | SX..3 | C156 |

# Radieneinstechen – außen

Modular – außen, Baugröße 25




Passende Produkte siehe rechts




| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | 25 | R | MSS-E25R00-2525L |
| C169 |  90 | 25 | L | MSS-E25L90-2525L |
| C171 |  0 | 100 | R | HSK-T100-MSS-E25R00 |
| | | 63 | R | HSK-T63-MSS-E25R00 |
| C173 |  0 | 63 | R | UT63-MSS-E25R00 |
| | | 40 | R | UT40-MSS-E25R00 |
| | | 50 | R | UT50-MSS-E25R00 |
| C174 |  90 | 40 | L | UT40-MSS-E25L90 |
| | | 50 | L | UT50-MSS-E25L90 |

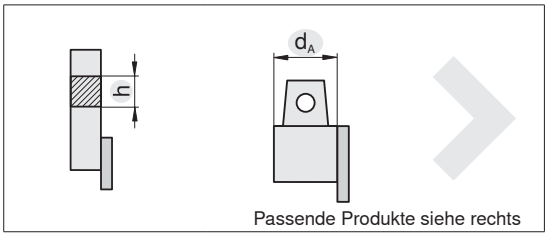
| | | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C177 |  | 1,50 | 12,00 | R | MSS-E25R12-GX16-2 | GX16-2.. | C154 |
| | | 2,00 | 12,00 | R | MSS-E25R12-GX16-3 | GX16-3.. | C154 |
| | | 2,50 | 12,00 | R | MSS-E25R12-GX16-3 | GX16-3.. | C154 |
| | | 3,00 | 12,00 | R | MSS-E25R12-GX16-4 | GX16-4.. | C154 |
| C178 |  | 1,50 | 21,00 | R | MSS-E25R21-GX24-2 | GX24-2.. | C154 |
| | | 2,00 | 21,00 | R | MSS-E25R21-GX24-3 | GX24-3.. | C154 |
| | | 2,50 | 21,00 | R | MSS-E25R21-GX24-3 | GX24-3.. | C154 |
| | | 3,00 | 21,00 | R | MSS-E25R21-GX24-4 | GX24-4.. | C154 |
| C180 |  | 0,80 | 1,78 | R | MSS-E25R03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,00 | 2,18 | R | MSS-E25R03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,20 | 2,58 | R | MSS-E25R03-GX16-2 | GX16-2..R/L | C154 |
| C184 |  | 1,50 | 25,00 | R | MSS-E25R25-SX3 | SX..3 | C156 |
| | | 1,50 | 35,00 | R | MSS-E25R35-SX3 | SX..3 | C156 |
| | | 2,00 | 25,00 | R | MSS-E25R25-SX4 | SX..4 | C156 |
| | | 2,00 | 35,00 | R | MSS-E25R35-SX4 | SX..4 | C156 |

| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | 25 | L | MSS-E25L00-2525L |
| C169 |  90 | 25 | R | MSS-E25R90-2525L |
| C171 |  0 | 100 | L | HSK-T100-MSS-E25L00 |
| | | 63 | L | HSK-T63-MSS-E25L00 |
| C173 |  0 | 40 | L | UT40-MSS-E25L00 |
| | | 50 | L | UT50-MSS-E25L00 |
| | | 63 | L | UT63-MSS-E25L00 |
| C174 |  90 | 50 | R | UT50-MSS-E25R90 |
| | | 40 | R | UT40-MSS-E25R90 |

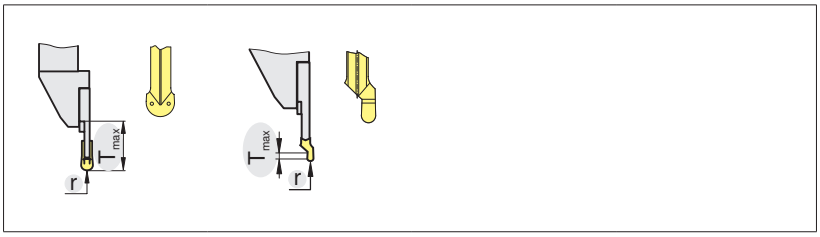
| | | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C177 |  | 1,50 | 12,00 | L | MSS-E25L12-GX16-2 | GX16-2.. | C154 |
| | | 2,00 | 12,00 | L | MSS-E25L12-GX16-3 | GX16-3.. | C154 |
| | | 2,50 | 12,00 | L | MSS-E25L12-GX16-3 | GX16-3.. | C154 |
| | | 3,00 | 12,00 | L | MSS-E25L12-GX16-4 | GX16-4.. | C154 |
| C178 |  | 1,50 | 21,00 | L | MSS-E25L21-GX24-2 | GX24-2.. | C154 |
| | | 2,00 | 21,00 | L | MSS-E25L21-GX24-3 | GX24-3.. | C154 |
| | | 2,50 | 21,00 | L | MSS-E25L21-GX24-3 | GX24-3.. | C154 |
| | | 3,00 | 21,00 | L | MSS-E25L21-GX24-4 | GX24-4.. | C154 |
| C180 |  | 0,80 | 1,78 | L | MSS-E25L03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,00 | 2,18 | L | MSS-E25L03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,20 | 2,58 | L | MSS-E25L03-GX16-2 | GX16-2..R/L | C154 |
| C184 |  | 1,50 | 25,00 | L | MSS-E25L25-SX3 | SX..3 | C156 |
| | | 1,50 | 35,00 | L | MSS-E25L35-SX3 | SX..3 | C156 |
| | | 2,00 | 25,00 | L | MSS-E25L25-SX4 | SX..4 | C156 |
| | | 2,00 | 35,00 | L | MSS-E25L35-SX4 | SX..4 | C156 |

# Radieneinstechen – außen

Modular – außen, Baugröße 32




Passende Produkte siehe rechts




| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | 32 | R | MSS-E32R00-3232Q |
| | | 32 | R | MSS-E32R00-3225N |
| C169 |  90 | 32 | L | MSS-E32L90-3225N |
| | | 32 | L | MSS-E32L90-3232R |
| C171 |  0 | 100 | R | HSK-T100-MSS-E32R00 |
| | | 63 | R | HSK-T63-MSS-E32R00 |
| C172 |  90 | 100 | L | HSK-T100-MSS-E32L90 |
| | | 63 | L | HSK-T63-MSS-E32L90 |
| C173 |  0 | 50 | R | UT50-MSS-E32R00 |
| | | 63 | R | UT63-MSS-E32R00 |

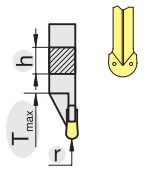
| | | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C177 |  | 1,50 | 12,00 | R | MSS-E32R12-GX16-2 | GX16-2.. | C154 |
| | | 2,00 | 12,00 | R | MSS-E32R12-GX16-3 | GX16-3.. | C154 |
| | | 2,50 | 12,00 | R | MSS-E32R12-GX16-3 | GX16-3.. | C154 |
| | | 3,00 | 12,00 | R | MSS-E32R12-GX16-4 | GX16-4.. | C154 |
| C178 |  | 1,50 | 21,00 | R | MSS-E32R21-GX24-2 | GX24-2.. | C154 |
| | | 2,00 | 21,00 | R | MSS-E32R21-GX24-3 | GX24-3.. | C154 |
| | | 2,50 | 21,00 | R | MSS-E32R21-GX24-3 | GX24-3.. | C154 |
| | | 3,00 | 21,00 | R | MSS-E32R21-GX24-4 | GX24-4.. | C154 |
| C180 |  | 0,80 | 1,78 | R | MSS-E32R03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,00 | 2,18 | R | MSS-E32R03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,20 | 2,58 | R | MSS-E32R03-GX16-2 | GX16-2..R/L | C154 |
| C184 |  | 1,50 | 35,00 | R | MSS-E32R35-SX3 | SX..3 | C156 |
| | | 2,00 | 35,00 | R | MSS-E32R35-SX4 | SX..4 | C156 |
| C185 |  | 4,00 | 25,00 | N | MSS-E32N25-LX | LX.. | C157 |
| | | 4,00 | 32,00 | N | MSS-E32N32-LX | LX.. | C157 |
| | | 4,00 | 45,00 | N | MSS-E32N45-LX | LX.. | C157 |

| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | 32 | L | MSS-E32L00-3225N |
| | | 32 | L | MSS-E32L00-3232Q |
| C169 |  90 | 32 | R | MSS-E32R90-3232R |
| | | 32 | R | MSS-E32R90-3225N |
| C171 |  0 | 100 | L | HSK-T100-MSS-E32L00 |
| | | 63 | L | HSK-T63-MSS-E32L00 |
| C172 |  90 | 100 | R | HSK-T100-MSS-E32R90 |
| | | 63 | R | HSK-T63-MSS-E32R90 |
| C173 |  0 | 63 | L | UT63-MSS-E32L00 |

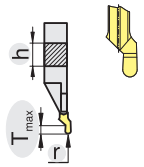
| | | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C177 |  | 1,50 | 12,00 | L | MSS-E32L12-GX16-2 | GX16-2.. | C154 |
| | | 2,00 | 12,00 | L | MSS-E32L12-GX16-3 | GX16-3.. | C154 |
| | | 2,50 | 12,00 | L | MSS-E32L12-GX16-3 | GX16-3.. | C154 |
| | | 3,00 | 12,00 | L | MSS-E32L12-GX16-4 | GX16-4.. | C154 |
| C178 |  | 1,50 | 21,00 | L | MSS-E32L21-GX24-2 | GX24-2.. | C154 |
| | | 2,00 | 21,00 | L | MSS-E32L21-GX24-3 | GX24-3.. | C154 |
| | | 2,50 | 21,00 | L | MSS-E32L21-GX24-3 | GX24-3.. | C154 |
| | | 3,00 | 21,00 | L | MSS-E32L21-GX24-4 | GX24-4.. | C154 |
| C180 |  | 0,80 | 1,78 | L | MSS-E32L03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,00 | 2,18 | L | MSS-E32L03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,20 | 2,58 | L | MSS-E32L03-GX16-2 | GX16-2..R/L | C154 |
| C184 |  | 1,50 | 35,00 | L | MSS-E32L35-SX3 | SX..3 | C156 |
| | | 2,00 | 35,00 | L | MSS-E32L35-SX4 | SX..4 | C156 |
| C185 |  | 4,00 | 25,00 | N | MSS-E32N25-LX | LX.. | C157 |
| | | 4,00 | 32,00 | N | MSS-E32N32-LX | LX.. | C157 |
| | | 4,00 | 45,00 | N | MSS-E32N45-LX | LX.. | C157 |

# Radieneinstechen – außen

Monowerkzeug – GX




| | | h [mm] | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C188 |  | 10 | 1,00 | 7,00 | R | E10R00-1010M-GX09 | GX09-1.. | C154 |
| | | 10 | 1,20 | 7,00 | R | E10R00-1010M-GX09 | GX09-1.. | C154 |
| | | 10 | 1,00 | 7,00 | L | E10L00-1010M-GX09 | GX09-1.. | C154 |
| | | 10 | 1,20 | 7,00 | L | E10L00-1010M-GX09 | GX09-1.. | C154 |

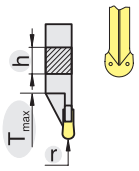



| | | h [mm] | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C188 |  | 10 | 0,80 | 1,78 | R | E10R00-1010M-GX09 | GX09-1..R/L | C154 |
| | | 10 | 0,80 | 1,78 | L | E10L00-1010M-GX09 | GX09-1..R/L | C154 |
| | | | | | | | | |
| | | | | | | | | |

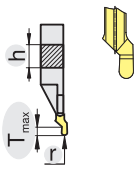
# Radieneinstechen – außen

Monowerkzeug – GX

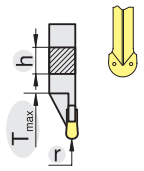





| | | h [mm] | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C189 |  | 16 | 1,50 | 12,00 | R | E16R0012-1616K-GX16-2 | GX16-2.. | C154 |
| | | 16 | 2,00 | 12,00 | R | E16R0012-1616K-GX16-3 | GX16-3.. | C154 |
| | | 16 | 2,50 | 12,00 | R | E16R0012-1616K-GX16-3 | GX16-3.. | C154 |
| | | 20 | 1,50 | 12,00 | R | E20R0012-2020K-GX16-2 | GX16-2.. | C154 |
| | | 20 | 2,00 | 12,00 | R | E20R0012-2020K-GX16-3 | GX16-3.. | C154 |
| | | 20 | 2,50 | 12,00 | R | E20R0012-2020K-GX16-3 | GX16-3.. | C154 |
| | | 25 | 1,50 | 12,00 | R | E25R0012-2525M-GX16-2 | GX16-2.. | C154 |
| | | 25 | 2,00 | 12,00 | R | E25R0012-2525M-GX16-3 | GX16-3.. | C154 |
| | | 25 | 2,50 | 12,00 | R | E25R0012-2525M-GX16-3 | GX16-3.. | C154 |
| | | 16 | 1,50 | 12,00 | L | E16L0012-1616K-GX16-2 | GX16-2.. | C154 |
| | | 16 | 2,00 | 12,00 | L | E16L0012-1616K-GX16-3 | GX16-3.. | C154 |
| | | 16 | 2,50 | 12,00 | L | E16L0012-1616K-GX16-3 | GX16-3.. | C154 |
| | | 20 | 1,50 | 12,00 | L | E20L0012-2020K-GX16-2 | GX16-2.. | C154 |
| | | 20 | 2,00 | 12,00 | L | E20L0012-2020K-GX16-3 | GX16-3.. | C154 |
| | | 20 | 2,50 | 12,00 | L | E20L0012-2020K-GX16-3 | GX16-3.. | C154 |
| | | 25 | 1,50 | 12,00 | L | E25L0012-2525M-GX16-2 | GX16-2.. | C154 |
| | | 25 | 2,00 | 12,00 | L | E25L0012-2525M-GX16-3 | GX16-3.. | C154 |
| | | 25 | 2,50 | 12,00 | L | E25L0012-2525M-GX16-3 | GX16-3.. | C154 |



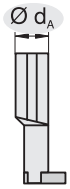

| | | h [mm] | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C189 |  | 12 | 0,80 | 1,78 | R | E12R0012-1212K-GX16-2 | GX16-2..R/L | C154 |
| | | 12 | 1,00 | 2,18 | R | E12R0012-1212K-GX16-2 | GX16-2..R/L | C154 |
| | | 12 | 1,20 | 2,58 | R | E12R0012-1212K-GX16-2 | GX16-2..R/L | C154 |
| | | 12 | 1,50 | 12,00 | R | E12R0012-1212K-GX16-2 | GX16-2..R/L | C154 |
| | | 16 | 0,80 | 1,78 | R | E16R0012-1616K-GX16-2 | GX16-2..R/L | C154 |
| | | 16 | 1,00 | 2,18 | R | E16R0012-1616K-GX16-2 | GX16-2..R/L | C154 |
| | | 16 | 1,20 | 2,58 | R | E16R0012-1616K-GX16-2 | GX16-2..R/L | C154 |
| | | 20 | 0,80 | 1,78 | R | E20R0012-2020K-GX16-2 | GX16-2..R/L | C154 |
| | | 20 | 1,00 | 2,18 | R | E20R0012-2020K-GX16-2 | GX16-2..R/L | C154 |
| | | 20 | 1,20 | 2,58 | R | E20R0012-2020K-GX16-2 | GX16-2..R/L | C154 |
| | | 25 | 0,80 | 1,78 | R | E25R0012-2525M-GX16-2 | GX16-2..R/L | C154 |
| | | 25 | 1,00 | 2,18 | R | E25R0012-2525M-GX16-2 | GX16-2..R/L | C154 |
| | | 25 | 1,20 | 2,58 | R | E25R0012-2525M-GX16-2 | GX16-2..R/L | C154 |
| | | 12 | 0,80 | 1,78 | L | E12L0012-1212K-GX16-2 | GX16-2..R/L | C154 |
| | | 12 | 1,00 | 2,18 | L | E12L0012-1212K-GX16-2 | GX16-2..R/L | C154 |
| | | 12 | 1,20 | 2,58 | L | E12L0012-1212K-GX16-2 | GX16-2..R/L | C154 |
| | | 12 | 1,50 | 12,00 | L | E12L0012-1212K-GX16-2 | GX16-2..R/L | C154 |
| | | 16 | 0,80 | 1,78 | L | E16L0012-1616K-GX16-2 | GX16-2..R/L | C154 |
| | | 16 | 1,00 | 2,18 | L | E16L0012-1616K-GX16-2 | GX16-2..R/L | C154 |
| | | 16 | 1,20 | 2,58 | L | E16L0012-1616K-GX16-2 | GX16-2..R/L | C154 |
| | | 20 | 0,80 | 1,78 | L | E20L0012-2020K-GX16-2 | GX16-2..R/L | C154 |
| | | 20 | 1,00 | 2,18 | L | E20L0012-2020K-GX16-2 | GX16-2..R/L | C154 |
| | | 20 | 1,20 | 2,58 | L | E20L0012-2020K-GX16-2 | GX16-2..R/L | C154 |
| | | 25 | 0,80 | 1,78 | L | E25L0012-2525M-GX16-2 | GX16-2..R/L | C154 |
| | | 25 | 1,00 | 2,18 | L | E25L0012-2525M-GX16-2 | GX16-2..R/L | C154 |
| | | 25 | 1,20 | 2,58 | L | E25L0012-2525M-GX16-2 | GX16-2..R/L | C154 |



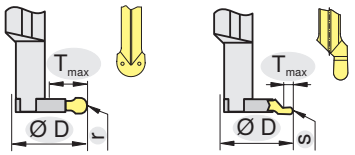

| | | h [mm] | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C190 |  | 16 | 1,50 | 21,00 | R | E16R0021-1616K-GX24-2 | GX24-2.. | C154 |
| | | 20 | 1,50 | 21,00 | R | E20R0021-2020K-GX24-2 | GX24-2.. | C154 |
| | | 20 | 2,00 | 21,00 | R | E20R0021-2020K-GX24-3 | GX24-3.. | C154 |
| | | 20 | 2,50 | 21,00 | R | E20R0021-2020K-GX24-3 | GX24-3.. | C154 |
| | | 25 | 1,50 | 21,00 | R | E25R0021-2525M-GX24-2 | GX24-2.. | C154 |
| | | 25 | 2,00 | 21,00 | R | E25R0021-2525M-GX24-3 | GX24-3.. | C154 |
| | | 25 | 2,50 | 21,00 | R | E25R0021-2525M-GX24-3 | GX24-3.. | C154 |
| | | 25 | 3,00 | 21,00 | R | E25R0021-2525M-GX24-4 | GX24-4.. | C154 |
| | | 32 | 1,50 | 21,00 | R | E32R0021-3225P-GX24-2 | GX24-2.. | C154 |
| | | 32 | 2,00 | 21,00 | R | E32R0021-3225P-GX24-3 | GX24-3.. | C154 |
| | | 32 | 2,50 | 21,00 | R | E32R0021-3225P-GX24-3 | GX24-3.. | C154 |
| | | 32 | 3,00 | 21,00 | R | E32R0021-3225P-GX24-4 | GX24-4.. | C154 |
| | | 16 | 1,50 | 21,00 | L | E16L0021-1616K-GX24-2 | GX24-2.. | C154 |
| | | 20 | 1,50 | 21,00 | L | E20L0021-2020K-GX24-2 | GX24-2.. | C154 |
| | | 20 | 2,00 | 21,00 | L | E20L0021-2020K-GX24-3 | GX24-3.. | C154 |
| | | 20 | 2,50 | 21,00 | L | E20L0021-2020K-GX24-3 | GX24-3.. | C154 |
| | | 25 | 1,50 | 21,00 | L | E25L0021-2525M-GX24-2 | GX24-2.. | C154 |
| | | 25 | 2,00 | 21,00 | L | E25L0021-2525M-GX24-3 | GX24-3.. | C154 |
| | | 25 | 2,50 | 21,00 | L | E25L0021-2525M-GX24-3 | GX24-3.. | C154 |
| | | 25 | 3,00 | 21,00 | L | E25L0021-2525M-GX24-4 | GX24-4.. | C154 |
| | | 32 | 1,50 | 21,00 | L | E32L0021-3225P-GX24-2 | GX24-2.. | C154 |
| | | 32 | 2,00 | 21,00 | L | E32L0021-3225P-GX24-3 | GX24-3.. | C154 |
| | | 32 | 2,50 | 21,00 | L | E32L0021-3225P-GX24-3 | GX24-3.. | C154 |
| | | 32 | 3,00 | 21,00 | L | E32L0021-3225P-GX24-4 | GX24-4.. | C154 |

# Radieneinstechen – innen

Modular – innen, Baugröße 16




Passende Produkte siehe rechts




| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 20 | R | MSS-I16R90-1.5D-N |
| C208 |  | 20 | R | MSS-I16R90-2.5D-N |

| | | $D_{min}$ [mm] | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C210 |  | 20 | 1,00 | 4,00 | R | MSS-I16R04-GX09-1 | GX09-1.. | C154 |
| | | 20 | 1,20 | 4,00 | R | MSS-I16R04-GX09-1 | GX09-1.. | C154 |
| C213 |  | 20 | 0,80 | 1,78 | R | MSS-I16R02-GX09-1 | GX09-1..R/L | C154 |

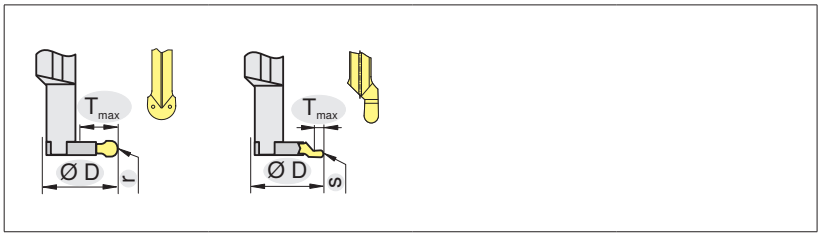
| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 20 | L | MSS-I16L90-1.5D-N |
| C208 |  | 20 | L | MSS-I16L90-2.5D-N |

| | | $D_{min}$ [mm] | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C210 |  | 20 | 1,00 | 4,00 | L | MSS-I16L04-GX09-1 | GX09-1.. | C154 |
| | | 20 | 1,20 | 4,00 | L | MSS-I16L04-GX09-1 | GX09-1.. | C154 |
| C213 |  | 20 | 0,80 | 1,78 | L | MSS-I16L02-GX09-1 | GX09-1..R/L | C154 |

# Radieneinstechen – innen

Modular – innen, Baugröße 20




| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 20 | R | MSS-I20R90-1.5D-N |
| C208 |  | 25 | R | MSS-I20R90-2.5D-N |

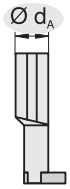
| | | $D_{min}$ [mm] | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C210 |  | 25 | 1,00 | 5,00 | R | MSS-I20R05-GX09-1 | GX09-1.. | C154 |
| | | 25 | 1,20 | 5,00 | R | MSS-I20R05-GX09-1 | GX09-1.. | C154 |
| C213 |  | 25 | 0,80 | 1,78 | R | MSS-I20R02-GX09-1 | GX09-1..R/L | C154 |

| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 20 | L | MSS-I20L90-1.5D-N |
| C208 |  | 25 | L | MSS-I20L90-2.5D-N |

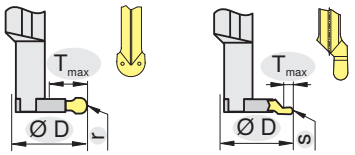
| | | $D_{min}$ [mm] | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C210 |  | 25 | 1,00 | 5,00 | L | MSS-I20L05-GX09-1 | GX09-1.. | C154 |
| | | 25 | 1,20 | 5,00 | L | MSS-I20L05-GX09-1 | GX09-1.. | C154 |
| C213 |  | 25 | 0,80 | 1,78 | L | MSS-I20L02-GX09-1 | GX09-1..R/L | C154 |

# Radieneinstechen – innen

Modular – innen, Baugröße 25




Passende Produkte siehe rechts




| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | **25** | **R** | MSS-I25R90-1.5D-N |
| C208 |  | **32** | **R** | MSS-I25R90-2.5D-N |

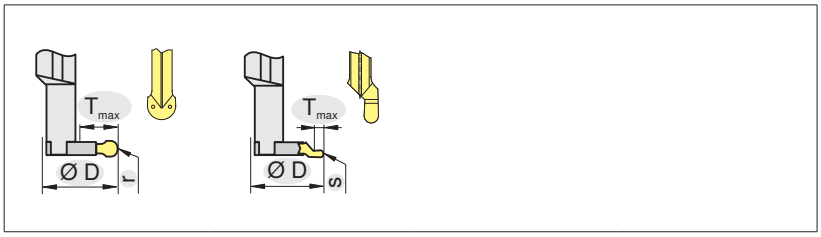
| | | $D_{min}$ [mm] | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C210 |  | 32 | 1,00 | 6,00 | R | MSS-I25R06-GX09-1 | GX09-1.. | C154 |
| | | 32 | 1,20 | 6,00 | R | MSS-I25R06-GX09-1 | GX09-1.. | C154 |
| C213 |  | 32 | 0,80 | 1,78 | R | MSS-I25R02-GX09-1 | GX09-1..R/L | C154 |

| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | **25** | **L** | MSS-I25L90-1.5D-N |
| C208 |  | **32** | **L** | MSS-I25L90-2.5D-N |

| | | $D_{min}$ [mm] | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C210 |  | 32 | 1,00 | 6,00 | L | MSS-I25L06-GX09-1 | GX09-1.. | C154 |
| | | 32 | 1,20 | 6,00 | L | MSS-I25L06-GX09-1 | GX09-1.. | C154 |
| C213 |  | 32 | 0,80 | 1,78 | L | MSS-I25L02-GX09-1 | GX09-1..R/L | C154 |




Passende Produkte siehe rechts




| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 32 | R | MSS-I32R90-1.5D-N |
| C208 |  | 40 | R | MSS-I32R90-2.5D-N |
| C209 |  | 40 | R | UT40-MSS-I32R90-2D |

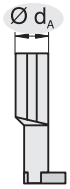
| | | $D_{min}$ [mm] | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C211 |  | 40 | 1,50 | 9,00 | R | MSS-I32R09-GX16-2 | GX16-2.. | C154 |
| | | 40 | 2,00 | 9,00 | R | MSS-I32R09-GX16-3 | GX16-3.. | C154 |
| | | 40 | 2,50 | 9,00 | R | MSS-I32R09-GX16-3 | GX16-3.. | C154 |
| | | 40 | 3,00 | 9,00 | R | MSS-I32R09-GX16-4 | GX16-4.. | C154 |
| C214 |  | 40 | 0,80 | 1,78 | R | MSS-I32R03-GX16-2 | GX16-2..R/L | C154 |
| | | 40 | 1,00 | 2,18 | R | MSS-I32R03-GX16-2 | GX16-2..R/L | C154 |
| | | 40 | 1,20 | 2,58 | R | MSS-I32R03-GX16-2 | GX16-2..R/L | C154 |

| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 32 | L | MSS-I32L90-1.5D-N |
| C208 |  | 40 | L | MSS-I32L90-2.5D-N |
| C209 |  | 50 | L | UT50-MSS-I32L90-2D |

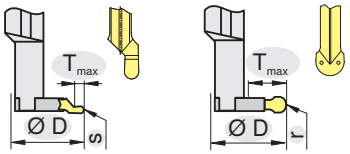
| | | $D_{min}$ [mm] | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C211 |  | 40 | 1,50 | 9,00 | L | MSS-I32L09-GX16-2 | GX16-2.. | C154 |
| | | 40 | 2,00 | 9,00 | L | MSS-I32L09-GX16-3 | GX16-3.. | C154 |
| | | 40 | 2,50 | 9,00 | L | MSS-I32L09-GX16-3 | GX16-3.. | C154 |
| | | 40 | 3,00 | 9,00 | L | MSS-I32L09-GX16-4 | GX16-4.. | C154 |
| C214 |  | 40 | 0,80 | 1,78 | L | MSS-I32L03-GX16-2 | GX16-2..R/L | C154 |
| | | 40 | 1,00 | 2,18 | L | MSS-I32L03-GX16-2 | GX16-2..R/L | C154 |
| | | 40 | 1,20 | 2,58 | L | MSS-I32L03-GX16-2 | GX16-2..R/L | C154 |

# Radieneinstechen – innen

Modular – innen, Baugröße 40




Passende Produkte siehe rechts




| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 40 | R | MSS-I40R90-1.5D-N |
| C208 |  | 50 | R | MSS-I40R90-2.5D-N |

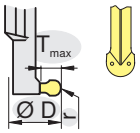
| | | $D_{min}$ [mm] | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C211 |  | 50 | 1,50 | 10,00 | R | MSS-I40R10-GX16-2 | GX16-2.. | C154 |
| | | 50 | 2,00 | 10,00 | R | MSS-I40R10-GX16-3 | GX16-3.. | C154 |
| | | 50 | 2,50 | 10,00 | R | MSS-I40R10-GX16-3 | GX16-3.. | C154 |
| | | 50 | 3,00 | 10,00 | R | MSS-I40R10-GX16-4 | GX16-4.. | C154 |
| C212 |  | 60 | 1,50 | 19,00 | N | MSS-I40N19-GX24-2 | GX24-2.. | C154 |
| | | 60 | 2,00 | 19,00 | N | MSS-I40N19-GX24-3 | GX24-3.. | C154 |
| | | 60 | 2,50 | 19,00 | N | MSS-I40N19-GX24-3 | GX24-3.. | C154 |
| | | 60 | 3,00 | 19,00 | N | MSS-I40N19-GX24-4 | GX24-4.. | C154 |
| C214 |  | 50 | 0,80 | 1,78 | R | MSS-I40R03-GX16-2 | GX16-2..R/L | C154 |
| | | 50 | 1,00 | 2,18 | R | MSS-I40R03-GX16-2 | GX16-2..R/L | C154 |
| | | 50 | 1,20 | 2,58 | R | MSS-I40R03-GX16-2 | GX16-2..R/L | C154 |

| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 40 | L | MSS-I40L90-1.5D-N |
| C208 |  | 50 | L | MSS-I40L90-2.5D-N |
| C209 |  | 40 | L | UT40-MSS-I40L90-2D |

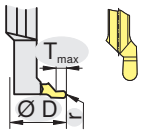
| | | $D_{min}$ [mm] | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C211 |  | 50 | 1,50 | 10,00 | L | MSS-I40L10-GX16-2 | GX16-2.. | C154 |
| | | 50 | 2,00 | 10,00 | L | MSS-I40L10-GX16-3 | GX16-3.. | C154 |
| | | 50 | 2,50 | 10,00 | L | MSS-I40L10-GX16-3 | GX16-3.. | C154 |
| | | 50 | 3,00 | 10,00 | L | MSS-I40L10-GX16-4 | GX16-4.. | C154 |
| C212 |  | 60 | 1,50 | 19,00 | N | MSS-I40N19-GX24-2 | GX24-2.. | C154 |
| | | 60 | 2,00 | 19,00 | N | MSS-I40N19-GX24-3 | GX24-3.. | C154 |
| | | 60 | 2,50 | 19,00 | N | MSS-I40N19-GX24-3 | GX24-3.. | C154 |
| | | 60 | 3,00 | 19,00 | N | MSS-I40N19-GX24-4 | GX24-4.. | C154 |
| C214 |  | 50 | 0,80 | 1,78 | L | MSS-I40L03-GX16-2 | GX16-2..R/L | C154 |
| | | 50 | 1,00 | 2,18 | L | MSS-I40L03-GX16-2 | GX16-2..R/L | C154 |
| | | 50 | 1,20 | 2,58 | L | MSS-I40L03-GX16-2 | GX16-2..R/L | C154 |

# Radieneinstechen – innen

Monobohrstange – GX09




| | | $d_A$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C215 |  | 16 | 30 | 16 | 1,00 | 7,00 | R | I12R90-2.5D-GX09 | GX09-1.. | C154 |
| | | 16 | 30 | 16 | 1,20 | 7,00 | R | I12R90-2.5D-GX09 | GX09-1.. | C154 |
| | | 16 | 30 | 16 | 1,00 | 7,00 | L | I12L90-2.5D-GX09 | GX09-1.. | C154 |
| | | 16 | 30 | 16 | 1,20 | 7,00 | L | I12L90-2.5D-GX09 | GX09-1.. | C154 |

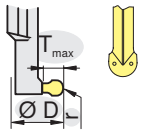



| | | $d_A$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C215 |  | 16 | 30 | 16 | 0,80 | 1,78 | R | I12R90-2.5D-GX09 | GX09-1..R/L | C154 |
| | | 16 | 30 | 16 | 0,80 | 1,78 | L | I12L90-2.5D-GX09 | GX09-1..R/L | C154 |
| | | | | | | | | | | |
| | | | | | | | | | | |

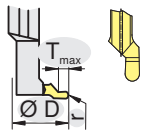
# Radieneinstechen – innen

Monobohrstange – GX16





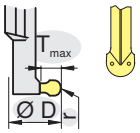

| | | $d_A$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C216 |  | 16 | 32 | 20,5 | 1,50 | 12,00 | R | I16R90-2.0D-GX16-2 | GX16-2.. | C154 |
| | | 20 | 40 | 25,0 | 1,50 | 12,00 | R | I20R90-2.0D-GX16-2 | GX16-2.. | C154 |
| | | 25 | 50 | 32,0 | 1,50 | 12,00 | R | I25R90-2.0D-GX16-2 | GX16-2.. | C154 |
| | | 25 | 50 | 32,0 | 2,00 | 12,00 | R | I25R90-2.0D-GX16-3 | GX16-3.. | C154 |
| | | 25 | 50 | 32,0 | 2,50 | 12,00 | R | I25R90-2.0D-GX16-3 | GX16-3.. | C154 |
| | | 32 | 64 | 42,0 | 1,50 | 12,00 | R | I32R90-2.0D-GX16-2 | GX16-2.. | C154 |
| | | 32 | 64 | 42,0 | 2,00 | 12,00 | R | I32R90-2.0D-GX16-3 | GX16-3.. | C154 |
| | | 32 | 64 | 42,0 | 2,50 | 12,00 | R | I32R90-2.0D-GX16-3 | GX16-3.. | C154 |
| | | 16 | 32 | 20,5 | 1,50 | 12,00 | L | I16L90-2.0D-GX16-2 | GX16-2.. | C154 |
| | | 20 | 40 | 25,0 | 1,50 | 12,00 | L | I20L90-2.0D-GX16-2 | GX16-2.. | C154 |
| | | 25 | 50 | 32,0 | 1,50 | 12,00 | L | I25L90-2.0D-GX16-2 | GX16-2.. | C154 |
| | | 25 | 50 | 32,0 | 2,00 | 12,00 | L | I25L90-2.0D-GX16-3 | GX16-3.. | C154 |
| | | 25 | 50 | 32,0 | 2,50 | 12,00 | L | I25L90-2.0D-GX16-3 | GX16-3.. | C154 |
| | | 32 | 64 | 42,0 | 1,50 | 12,00 | L | I32L90-2.0D-GX16-2 | GX16-2.. | C154 |
| | | 32 | 64 | 42,0 | 2,00 | 12,00 | L | I32L90-2.0D-GX16-3 | GX16-3.. | C154 |
| | | 32 | 64 | 42,0 | 2,50 | 12,00 | L | I32L90-2.0D-GX16-3 | GX16-3.. | C154 |




| | | $d_A$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C216 |  | 16 | 32 | 20,5 | 0,80 | 1,78 | R | I16R90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 16 | 32 | 20,5 | 1,00 | 2,18 | R | I16R90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 16 | 32 | 20,5 | 1,20 | 2,58 | R | I16R90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 20 | 40 | 25,0 | 0,80 | 1,78 | R | I20R90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 20 | 40 | 25,0 | 1,00 | 2,18 | R | I20R90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 20 | 40 | 25,0 | 1,20 | 2,58 | R | I20R90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 25 | 50 | 32,0 | 0,80 | 1,78 | R | I25R90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 25 | 50 | 32,0 | 1,00 | 2,18 | R | I25R90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 25 | 50 | 32,0 | 1,20 | 2,58 | R | I25R90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 32 | 64 | 42,0 | 0,80 | 1,78 | R | I32R90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 32 | 64 | 42,0 | 1,00 | 2,18 | R | I32R90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 32 | 64 | 42,0 | 1,20 | 2,58 | R | I32R90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 16 | 32 | 20,5 | 0,80 | 1,78 | L | I16L90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 16 | 32 | 20,5 | 1,00 | 2,18 | L | I16L90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 16 | 32 | 20,5 | 1,20 | 2,58 | L | I16L90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 20 | 40 | 25,0 | 0,80 | 1,78 | L | I20L90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 20 | 40 | 25,0 | 1,00 | 2,18 | L | I20L90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 20 | 40 | 25,0 | 1,20 | 2,58 | L | I20L90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 25 | 50 | 32,0 | 0,80 | 1,78 | L | I25L90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 25 | 50 | 32,0 | 1,00 | 2,18 | L | I25L90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 25 | 50 | 32,0 | 1,20 | 2,58 | L | I25L90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 32 | 64 | 42,0 | 0,80 | 1,78 | L | I32L90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 32 | 64 | 42,0 | 1,00 | 2,18 | L | I32L90-2.0D-GX16-2 | GX16-2..R/L | C154 |
| | | 32 | 64 | 42,0 | 1,20 | 2,58 | L | I32L90-2.0D-GX16-2 | GX16-2..R/L | C154 |

# Radieneinstechen – innen

Monobohrstange – GX24

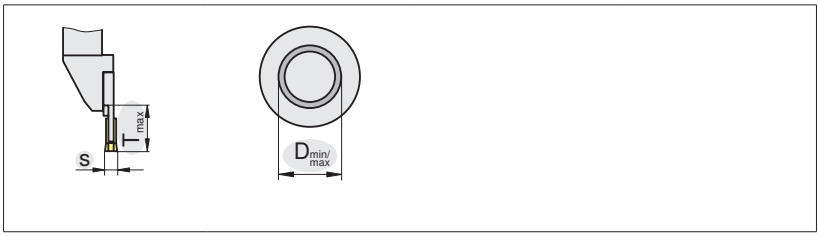



| | | $d_A$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C217 |  | 32 | 64 | 42,0 | 1,50 | 21,00 | R | I32R90-2.0D-GX24-2 | GX24-2.. | C154 |
| | | 32 | 64 | 42,0 | 2,00 | 21,00 | R | I32R90-2.0D-GX24-3 | GX24-3.. | C154 |
| | | 32 | 64 | 42,0 | 2,50 | 21,00 | R | I32R90-2.0D-GX24-3 | GX24-3.. | C154 |
| | | 32 | 64 | 47,0 | 3,00 | 21,00 | R | I32R90-2.0D-GX24-4 | GX24-4.. | C154 |
| | | 40 | 80 | 53,0 | 2,00 | 21,00 | R | I40R90-2.0D-GX24-3 | GX24-3.. | C154 |
| | | 40 | 80 | 53,0 | 2,50 | 21,00 | R | I40R90-2.0D-GX24-3 | GX24-3.. | C154 |
| | | 40 | 80 | 57,0 | 3,00 | 21,00 | R | I40R90-2.0D-GX24-4 | GX24-4.. | C154 |
| | | 32 | 64 | 42,0 | 1,50 | 21,00 | L | I32L90-2.0D-GX24-2 | GX24-2.. | C154 |
| | | 32 | 64 | 42,0 | 2,00 | 21,00 | L | I32L90-2.0D-GX24-3 | GX24-3.. | C154 |
| | | 32 | 64 | 42,0 | 2,50 | 21,00 | L | I32L90-2.0D-GX24-3 | GX24-3.. | C154 |
| | | 32 | 64 | 47,0 | 3,00 | 21,00 | L | I32L90-2.0D-GX24-4 | GX24-4.. | C154 |
| | | 40 | 80 | 53,0 | 2,00 | 21,00 | L | I40L90-2.0D-GX24-3 | GX24-3.. | C154 |
| | | 40 | 80 | 53,0 | 2,50 | 21,00 | L | I40L90-2.0D-GX24-3 | GX24-3.. | C154 |
| | | 40 | 80 | 57,0 | 3,00 | 21,00 | L | I40L90-2.0D-GX24-4 | GX24-4.. | C154 |

# Axialstechen

Modular – außen, Baugröße 16




| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **16** | **R** | MSS-E16R00-1616G |

| | | $s/s_{min}$ | $D_{min}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C183 |  | 3,00 | 10 | 5 | R | MSS-E16R05-AX05 | AX05.. | C155 |

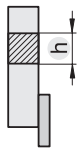
| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **16** | **L** | MSS-E16L00-1616G |

| | | $s/s_{min}$ | $D_{min}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|
| C183 |  | 3,00 | 10 | 5 | L | MSS-E16L05-AX05 | AX05.. | C155 |

# Notizen

# Axialstechen

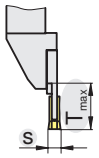
Modular – außen, Baugröße 20




Passende Produkte siehe rechts

| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **16** | **R** | MSS-E20R00-1620G |
| | | **20** | **R** | MSS-E20R00-2020J |
| C169 |  90 | **20** | **L** | MSS-E20L90-2020J |

| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **16** | **L** | MSS-E20L00-1620G |
| | | **20** | **L** | MSS-E20L00-2020J |
| C169 |  90 | **20** | **R** | MSS-E20R90-2020J |





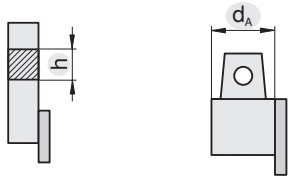


| | | $s/s_{min}$ | $s_{max}$ [mm] | $D_{min}$ [mm] | $D_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C181 |  | 2,76 | 3,75 | 50 | 70 | 14 | R | MSS-E20R14-GX24-2 A50-70 | GX24-2.. | C151 |
| | | 2,76 | 3,75 | 70 | 100 | 14 | R | MSS-E20R14-GX24-2 A70-100 | GX24-2.. | C151 |
| | | 2,76 | 3,75 | 100 | 150 | 14 | R | MSS-E20R14-GX24-2 A100-150 | GX24-2.. | C151 |
| C183 |  | 3,00 | 3,00 | 10 | | 5 | R | MSS-E20R05-AX05 | AX05.. | C155 |
| | | 3,00 | 3,00 | 20 | | 10 | R | MSS-E20R10-AX10 | AX10.. | C155 |
| | | 3,00 | 3,00 | 30 | | 15 | R | MSS-E20R15-AX15 | AX15.. | C155 |

| | | $s/s_{min}$ | $s_{max}$ [mm] | $D_{min}$ [mm] | $D_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C181 |  | 2,76 | 3,75 | 50 | 70 | 14 | L | MSS-E20L14-GX24-2 A50-70 | GX24-2.. | C151 |
| | | 2,76 | 3,75 | 70 | 100 | 14 | L | MSS-E20L14-GX24-2 A70-100 | GX24-2.. | C151 |
| | | 2,76 | 3,75 | 100 | 150 | 14 | L | MSS-E20L14-GX24-2 A100-150 | GX24-2.. | C151 |
| C183 |  | 3,00 | 3,00 | 10 | | 5 | L | MSS-E20L05-AX05 | AX05.. | C155 |
| | | 3,00 | 3,00 | 20 | | 10 | L | MSS-E20L10-AX10 | AX10.. | C155 |
| | | 3,00 | 3,00 | 30 | | 15 | L | MSS-E20L15-AX15 | AX15.. | C155 |

# Axialstechen

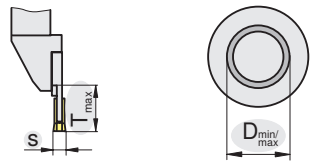
Modular – außen, Baugröße 25




Passende Produkte siehe rechts

| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **25** | **R** | MSS-E25R00-2525L |
| C169 |  90 | **25** | **L** | MSS-E25L90-2525L |
| C171 |  0 | **100** | **R** | HSK-T100-MSS-E25R00 |
| | | **63** | **R** | HSK-T63-MSS-E25R00 |
| C173 |  0 | **40** | **R** | UT40-MSS-E25R00 |
| | | **50** | **R** | UT50-MSS-E25R00 |
| | | **63** | **R** | UT63-MSS-E25R00 |
| C174 |  90 | **40** | **L** | UT40-MSS-E25L90 |
| | | **50** | **L** | UT50-MSS-E25L90 |

| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **25** | **L** | MSS-E25L00-2525L |
| C169 |  90 | **25** | **R** | MSS-E25R90-2525L |
| C171 |  0 | **100** | **L** | HSK-T100-MSS-E25L00 |
| | | **63** | **L** | HSK-T63-MSS-E25L00 |
| C173 |  0 | **40** | **L** | UT40-MSS-E25L00 |
| | | **50** | **L** | UT50-MSS-E25L00 |
| | | **63** | **L** | UT63-MSS-E25L00 |
| C174 |  90 | **40** | **R** | UT40-MSS-E25R90 |
| | | **50** | **R** | UT50-MSS-E25R90 |

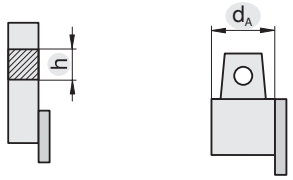



| | | $s/s_{min}$ | $s_{max}$ [mm] | $D_{min}$ [mm] | $D_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C181 |  | 2,76 | 3,75 | 50 | 70 | 15 | R | MSS-E25R15-GX24-2 A50-70 | GX24-2.. | C151 |
| | | 2,76 | 3,75 | 70 | 100 | 15 | R | MSS-E25R15-GX24-2 A70-100 | GX24-2.. | C151 |
| | | 2,76 | 3,75 | 100 | 150 | 15 | R | MSS-E25R15-GX24-2 A100-150 | GX24-2.. | C151 |
| | | 3,76 | 5,00 | 50 | 70 | 15 | R | MSS-E25R15-GX24-3 A50-70 | GX24-3.. | C151 |
| | | 3,76 | 5,00 | 70 | 100 | 15 | R | MSS-E25R15-GX24-3 A70-100 | GX24-3.. | C151 |
| | | 3,76 | 5,00 | 100 | 150 | 15 | R | MSS-E25R15-GX24-3 A100-150 | GX24-3.. | C151 |
| | | 3,76 | 5,00 | 150 | 300 | 15 | R | MSS-E25R15-GX24-3 A150-300 | GX24-3.. | C151 |
| | | 5,01 | 6,50 | 50 | 70 | 15 | R | MSS-E25R15-GX24-4 A50-70 | GX24-4.. | C151 |
| | | 5,01 | 6,50 | 70 | 100 | 15 | R | MSS-E25R15-GX24-4 A70-100 | GX24-4.. | C151 |
| | | 5,01 | 6,50 | 100 | 150 | 15 | R | MSS-E25R15-GX24-4 A100-150 | GX24-4.. | C151 |
| | | 5,01 | 6,50 | 150 | 300 | 15 | R | MSS-E25R15-GX24-4 A150-300 | GX24-4.. | C151 |
| C182 |  | 3,76 | 5,00 | 50 | 70 | 21 | R | MSS-E25R21-GX24-3 AS50-70 | GX24-3.. | C151 |
| | | 3,76 | 5,00 | 70 | 100 | 21 | R | MSS-E25R21-GX24-3 AS70-100 | GX24-3.. | C151 |
| | | 3,76 | 5,00 | 100 | 150 | 21 | R | MSS-E25R21-GX24-3 AS100-150 | GX24-3.. | C151 |
| | | 3,76 | 5,00 | 150 | 300 | 21 | R | MSS-E25R21-GX24-3 AS150-300 | GX24-3.. | C151 |
| | | 5,01 | 6,50 | 50 | 70 | 25 | R | MSS-E25R25-GX24-4 AS50-70 | GX24-4.. | C151 |
| | | 5,01 | 6,50 | 70 | 100 | 25 | R | MSS-E25R25-GX24-4 AS70-100 | GX24-4.. | C151 |
| | | 5,01 | 6,50 | 100 | 150 | 25 | R | MSS-E25R25-GX24-4 AS100-150 | GX24-4.. | C151 |
| | | 5,01 | 6,50 | 150 | 300 | 25 | R | MSS-E25R25-GX24-4 AS150-300 | GX24-4.. | C151 |
| C183 |  | 3,00 | 3,00 | 10 | | 5 | R | MSS-E25R05-AX05 | AX05.. | C155 |
| | | 3,00 | 3,00 | 20 | | 10 | R | MSS-E25R10-AX10 | AX10.. | C155 |
| | | 3,00 | 3,00 | 30 | | 15 | R | MSS-E25R15-AX15 | AX15.. | C155 |

| | | $s/s_{min}$ | $s_{max}$ [mm] | $D_{min}$ [mm] | $D_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C181 |  | 2,76 | 3,75 | 50 | 70 | 15 | L | MSS-E25L15-GX24-2 A50-70 | GX24-2.. | C151 |
| | | 2,76 | 3,75 | 70 | 100 | 15 | L | MSS-E25L15-GX24-2 A70-100 | GX24-2.. | C151 |
| | | 2,76 | 3,75 | 100 | 150 | 15 | L | MSS-E25L15-GX24-2 A100-150 | GX24-2.. | C151 |
| | | 3,76 | 5,00 | 50 | 70 | 15 | L | MSS-E25L15-GX24-3 A50-70 | GX24-3.. | C151 |
| | | 3,76 | 5,00 | 70 | 100 | 15 | L | MSS-E25L15-GX24-3 A70-100 | GX24-3.. | C151 |
| | | 3,76 | 5,00 | 100 | 150 | 15 | L | MSS-E25L15-GX24-3 A100-150 | GX24-3.. | C151 |
| | | 3,76 | 5,00 | 150 | 300 | 15 | L | MSS-E25L15-GX24-3 A150-300 | GX24-3.. | C151 |
| | | 5,01 | 6,50 | 50 | 70 | 15 | L | MSS-E25L15-GX24-4 A50-70 | GX24-4.. | C151 |
| | | 5,01 | 6,50 | 70 | 100 | 15 | L | MSS-E25L15-GX24-4 A70-100 | GX24-4.. | C151 |
| | | 5,01 | 6,50 | 100 | 150 | 15 | L | MSS-E25L15-GX24-4 A100-150 | GX24-4.. | C151 |
| | | 5,01 | 6,50 | 150 | 300 | 15 | L | MSS-E25L15-GX24-4 A150-300 | GX24-4.. | C151 |
| C182 |  | 3,76 | 5,00 | 50 | 70 | 21 | L | MSS-E25L21-GX24-3 AS50-70 | GX24-3.. | C151 |
| | | 3,76 | 5,00 | 70 | 100 | 21 | L | MSS-E25L21-GX24-3 AS70-100 | GX24-3.. | C151 |
| | | 3,76 | 5,00 | 100 | 150 | 21 | L | MSS-E25L21-GX24-3 AS100-150 | GX24-3.. | C151 |
| | | 3,76 | 5,00 | 150 | 300 | 21 | L | MSS-E25L21-GX24-3 AS150-300 | GX24-3.. | C151 |
| | | 5,01 | 6,50 | 50 | 70 | 25 | L | MSS-E25L25-GX24-4 AS50-70 | GX24-4.. | C151 |
| | | 5,01 | 6,50 | 70 | 100 | 25 | L | MSS-E25L25-GX24-4 AS70-100 | GX24-4.. | C151 |
| | | 5,01 | 6,50 | 100 | 150 | 25 | L | MSS-E25L25-GX24-4 AS100-150 | GX24-4.. | C151 |
| | | 5,01 | 6,50 | 150 | 300 | 25 | L | MSS-E25L25-GX24-4 AS150-300 | GX24-4.. | C151 |
| C183 |  | 3,00 | 3,00 | 10 | | 5 | L | MSS-E25L05-AX05 | AX05.. | C155 |
| | | 3,00 | 3,00 | 20 | | 10 | L | MSS-E25L10-AX10 | AX10.. | C155 |
| | | 3,00 | 3,00 | 30 | | 15 | L | MSS-E25L15-AX15 | AX15.. | C155 |

# Axialstechen

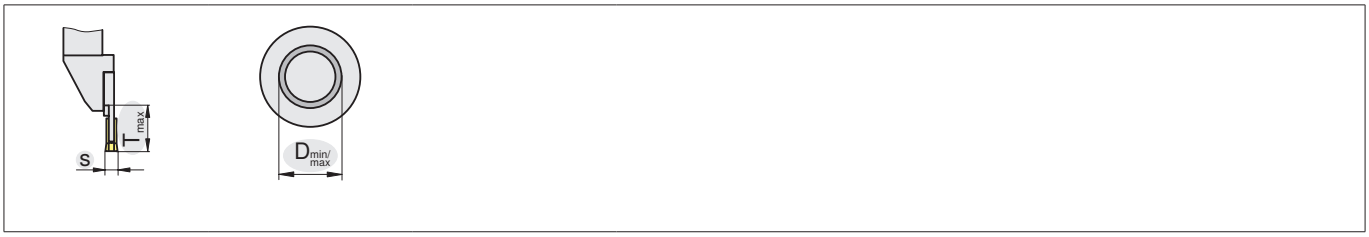
Modular – außen, Baugröße 32




Passende Produkte siehe rechts

| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | 32 | R | MSS-E32R00-3232Q |
| | | 32 | R | MSS-E32R00-3225N |
| C169 |  90 | 32 | L | MSS-E32L90-3225N |
| | | 32 | L | MSS-E32L90-3232R |
| C171 |  0 | 100 | R | HSK-T100-MSS-E32R00 |
| | | 63 | R | HSK-T63-MSS-E32R00 |
| C172 |  90 | 100 | L | HSK-T100-MSS-E32L90 |
| | | 63 | L | HSK-T63-MSS-E32L90 |
| C173 |  0 | 50 | R | UT50-MSS-E32R00 |
| | | 63 | R | UT63-MSS-E32R00 |

| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | 32 | L | MSS-E32L00-3232Q |
| | | 32 | L | MSS-E32L00-3225N |
| C169 |  90 | 32 | R | MSS-E32R90-3232R |
| | | 32 | R | MSS-E32R90-3225N |
| C171 |  0 | 100 | L | HSK-T100-MSS-E32L00 |
| | | 63 | L | HSK-T63-MSS-E32L00 |
| C172 |  90 | 100 | R | HSK-T100-MSS-E32R90 |
| | | 63 | R | HSK-T63-MSS-E32R90 |
| C173 |  0 | 63 | L | UT63-MSS-E32L00 |

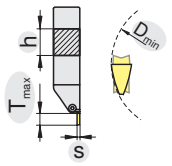



| | | s/s$_{min}$ | s$_{max}$ [mm] | D$_{min}$ [mm] | D$_{max}$ [mm] | T$_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C181 |  | 3,76 | 5,00 | 70 | 100 | 15 | R | MSS-E32R15-GX24-3 A70-100 | GX24-3.. | C151 |
| | | 3,76 | 5,00 | 100 | 150 | 15 | R | MSS-E32R15-GX24-3 A100-150 | GX24-3.. | C151 |
| | | 3,76 | 5,00 | 150 | 300 | 15 | R | MSS-E32R15-GX24-3 A150-300 | GX24-3.. | C151 |
| | | 5,01 | 6,50 | 70 | 100 | 15 | R | MSS-E32R15-GX24-4 A70-100 | GX24-4.. | C151 |
| | | 5,01 | 6,50 | 100 | 150 | 15 | R | MSS-E32R15-GX24-4 A100-150 | GX24-4.. | C151 |
| | | 5,01 | 6,50 | 150 | 300 | 15 | R | MSS-E32R15-GX24-4 A150-300 | GX24-4.. | C151 |
| | | 5,01 | 6,50 | 300 | 900 | 15 | R | MSS-E32R15-GX24-4 A300-900 | GX24-4.. | C151 |

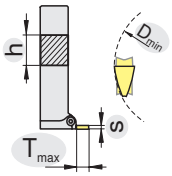
| | | s/s$_{min}$ | s$_{max}$ [mm] | D$_{min}$ [mm] | D$_{max}$ [mm] | T$_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C181 |  | 3,76 | 5,00 | 70 | 100 | 15 | L | MSS-E32L15-GX24-3 A70-100 | GX24-3.. | C151 |
| | | 3,76 | 5,00 | 100 | 150 | 15 | L | MSS-E32L15-GX24-3 A100-150 | GX24-3.. | C151 |
| | | 3,76 | 5,00 | 150 | 300 | 15 | L | MSS-E32L15-GX24-3 A150-300 | GX24-3.. | C151 |
| | | 5,01 | 6,50 | 70 | 100 | 15 | L | MSS-E32L15-GX24-4 A70-100 | GX24-4.. | C151 |
| | | 5,01 | 6,50 | 100 | 150 | 15 | L | MSS-E32L15-GX24-4 A100-150 | GX24-4.. | C151 |
| | | 5,01 | 6,50 | 150 | 300 | 15 | L | MSS-E32L15-GX24-4 A150-300 | GX24-4.. | C151 |
| | | 5,01 | 6,50 | 300 | 900 | 15 | L | MSS-E32L15-GX24-4 A300-900 | GX24-4.. | C151 |

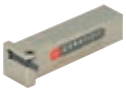
# Axialstechen

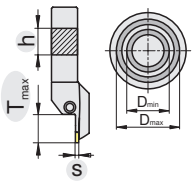
Monowerkzeug – AX




| | | h [mm] | s [mm] | $D_{min}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|
| C192 |  | 16 | 3,0 | 10 | 5 | R | E16R0005-1616L-AX05 | AX05.. | C155 |
| | | 16 | 3,0 | 20 | 10 | R | E16R0010-1616L-AX10 | AX10.. | C155 |
| | | 20 | 3,0 | 10 | 5 | R | E20R0005-2020L-AX05 | AX05.. | C155 |
| | | 20 | 3,0 | 20 | 10 | R | E20R0010-2020L-AX10 | AX10.. | C155 |
| | | 20 | 3,0 | 30 | 15 | R | E20R0015-2020L-AX15 | AX15.. | C155 |
| | | 25 | 3,0 | 10 | 5 | R | E25R0005-2525N-AX05 | AX05.. | C155 |
| | | 25 | 3,0 | 20 | 10 | R | E25R0010-2525N-AX10 | AX10.. | C155 |
| | | 25 | 3,0 | 30 | 15 | R | E25R0015-2525N-AX15 | AX15.. | C155 |
| | | 16 | 3,0 | 10 | 5 | L | E16L0005-1616L-AX05 | AX05.. | C155 |
| | | 16 | 3,0 | 20 | 10 | L | E16L0010-1616L-AX10 | AX10.. | C155 |
| | | 20 | 3,0 | 10 | 5 | L | E20L0005-2020L-AX05 | AX05.. | C155 |
| | | 20 | 3,0 | 20 | 10 | L | E20L0010-2020L-AX10 | AX10.. | C155 |
| | | 20 | 3,0 | 30 | 15 | L | E20L0015-2020L-AX15 | AX15.. | C155 |
| | | 25 | 3,0 | 10 | 5 | L | E25L0005-2525N-AX05 | AX05.. | C155 |
| | | 25 | 3,0 | 20 | 10 | L | E25L0010-2525N-AX10 | AX10.. | C155 |
| | | 25 | 3,0 | 30 | 15 | L | E25L0015-2525N-AX15 | AX15.. | C155 |




| | | h [mm] | s [mm] | $D_{min}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|
| C193 |  | 16 | 3,0 | 10 | 5 | R | E16R9005-1616J-AX05 | AX05.. | C155 |
| | | 16 | 3,0 | 20 | 10 | R | E16R9010-1616J-AX10 | AX10.. | C155 |
| | | 20 | 3,0 | 10 | 5 | R | E20R9005-2020J-AX05 | AX05.. | C155 |
| | | 20 | 3,0 | 20 | 10 | R | E20R9010-2020J-AX10 | AX10.. | C155 |
| | | 20 | 3,0 | 30 | 15 | R | E20R9015-2020J-AX15 | AX15.. | C155 |
| | | 25 | 3,0 | 10 | 5 | R | E25R9005-2525L-AX05 | AX05.. | C155 |
| | | 25 | 3,0 | 20 | 10 | R | E25R9010-2525J-AX10 | AX10.. | C155 |
| | | 25 | 3,0 | 30 | 15 | R | E25R9015-2525L-AX15 | AX15.. | C155 |
| | | 16 | 3,0 | 10 | 5 | L | E16L9005-1616J-AX05 | AX05.. | C155 |
| | | 16 | 3,0 | 20 | 10 | L | E16L9010-1616J-AX10 | AX10.. | C155 |
| | | 20 | 3,0 | 10 | 5 | L | E20L9005-2020J-AX05 | AX05.. | C155 |
| | | 20 | 3,0 | 20 | 10 | L | E20L9010-2020J-AX10 | AX10.. | C155 |
| | | 20 | 3,0 | 30 | 15 | L | E20L9015-2020J-AX15 | AX15.. | C155 |
| | | 25 | 3,0 | 10 | 5 | L | E25L9005-2525L-AX05 | AX05.. | C155 |
| | | 25 | 3,0 | 20 | 10 | L | E25L9010-2525J-AX10 | AX10.. | C155 |
| | | 25 | 3,0 | 30 | 15 | L | E25L9015-2525L-AX15 | AX15.. | C155 |

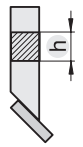



| | | h [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $D_{min}$ [mm] | $D_{max}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C191 |  | 25 | 2,76 | 3,75 | 40 | 45 | 12 | R | E25R0012-2525X-GX24-2 AS40-45 | GX24-2.. | C151 |
| | | 25 | 2,76 | 3,75 | 45 | 50 | 12 | R | E25R0012-2525X-GX24-2 AS45-50 | GX24-2.. | C151 |
| | | 25 | 2,76 | 3,75 | 50 | 60 | 16 | R | E25R0016-2525X-GX24-2 AS50-60 | GX24-2.. | C151 |
| | | 25 | 2,76 | 3,75 | 60 | 75 | 19 | R | E25R0019-2525X-GX24-2 AS60-75 | GX24-2.. | C151 |
| | | 25 | 2,76 | 3,75 | 75 | 100 | 19 | R | E25R0019-2525X-GX24-2 AS75-100 | GX24-2.. | C151 |
| | | 25 | 2,76 | 3,75 | 100 | 130 | 22 | R | E25R0022-2525X-GX24-2 AS100-130 | GX24-2.. | C151 |
| | | 25 | 2,76 | 3,75 | 130 | 180 | 22 | R | E25R0022-2525X-GX24-2 AS130-180 | GX24-2.. | C151 |
| | | 25 | 2,76 | 3,75 | 180 | 300 | 22 | R | E25R0022-2525X-GX24-2 AS180-300 | GX24-2.. | C151 |
| | | 25 | 3,76 | 5,00 | 40 | 45 | 12 | R | E25R0012-2525X-GX24-3 AS40-45 | GX24-3.. | C151 |
| | | 25 | 3,76 | 5,00 | 45 | 50 | 12 | R | E25R0012-2525X-GX24-3 AS45-50 | GX24-3.. | C151 |
| | | 25 | 3,76 | 5,00 | 50 | 60 | 20 | R | E25R0020-2525X-GX24-3 AS50-60 | GX24-3.. | C151 |
| | | 25 | 3,76 | 5,00 | 60 | 75 | 20 | R | E25R0020-2525X-GX24-3 AS60-75 | GX24-3.. | C151 |
| | | 25 | 3,76 | 5,00 | 75 | 100 | 22 | R | E25R0022-2525X-GX24-3 AS75-100 | GX24-3.. | C151 |
| | | 25 | 3,76 | 5,00 | 100 | 150 | 22 | R | E25R0022-2525X-GX24-3 AS100-150 | GX24-3.. | C151 |
| | | 25 | 3,76 | 5,00 | 150 | 300 | 22 | R | E25R0022-2525X-GX24-3 AS150-300 | GX24-3.. | C151 |
| | | 25 | 5,01 | 6,50 | 40 | 50 | 20 | R | E25R0020-2525X-GX24-4 AS40-50 | GX24-4.. | C151 |
| | | 25 | 5,01 | 6,50 | 50 | 70 | 22 | R | E25R0022-2525X-GX24-4 AS50-70 | GX24-4.. | C151 |
| | | 25 | 5,01 | 6,50 | 70 | 100 | 25 | R | E25R0025-2525X-GX24-4 AS70-100 | GX24-4.. | C151 |
| | | 25 | 5,01 | 6,50 | 100 | 150 | 25 | R | E25R0025-2525X-GX24-4 AS100-150 | GX24-4.. | C151 |
| | | 25 | 5,01 | 6,50 | 150 | 300 | 25 | R | E25R0025-2525X-GX24-4 AS150-300 | GX24-4.. | C151 |
| | | 25 | 2,76 | 3,75 | 40 | 45 | 12 | L | E25L0012-2525X-GX24-2 AS40-45 | GX24-2.. | C151 |
| | | 25 | 2,76 | 3,75 | 45 | 50 | 12 | L | E25L0012-2525X-GX24-2 AS45-50 | GX24-2.. | C151 |
| | | 25 | 2,76 | 3,75 | 50 | 60 | 16 | L | E25L0016-2525X-GX24-2 AS50-60 | GX24-2.. | C151 |
| | | 25 | 2,76 | 3,75 | 60 | 75 | 19 | L | E25L0019-2525X-GX24-2 AS60-75 | GX24-2.. | C151 |
| | | 25 | 2,76 | 3,75 | 75 | 100 | 19 | L | E25L0019-2525X-GX24-2 AS75-100 | GX24-2.. | C151 |
| | | 25 | 2,76 | 3,75 | 100 | 130 | 22 | L | E25L0022-2525X-GX24-2 AS100-130 | GX24-2.. | C151 |
| | | 25 | 2,76 | 3,75 | 130 | 180 | 22 | L | E25L0022-2525X-GX24-2 AS130-180 | GX24-2.. | C151 |
| | | 25 | 2,76 | 3,75 | 180 | 300 | 22 | L | E25L0022-2525X-GX24-2 AS180-300 | GX24-2.. | C151 |
| | | 25 | 3,76 | 5,00 | 40 | 45 | 12 | L | E25L0012-2525X-GX24-3 AS40-45 | GX24-3.. | C151 |
| | | 25 | 3,76 | 5,00 | 45 | 50 | 12 | L | E25L0012-2525X-GX24-3 AS45-50 | GX24-3.. | C151 |
| | | 25 | 3,76 | 5,00 | 50 | 60 | 20 | L | E25L0020-2525X-GX24-3 AS50-60 | GX24-3.. | C151 |
| | | 25 | 3,76 | 5,00 | 60 | 75 | 20 | L | E25L0020-2525X-GX24-3 AS60-75 | GX24-3.. | C151 |
| | | 25 | 3,76 | 5,00 | 75 | 100 | 22 | L | E25L0022-2525X-GX24-3 AS75-100 | GX24-3.. | C151 |
| | | 25 | 3,76 | 5,00 | 100 | 150 | 22 | L | E25L0022-2525X-GX24-3 AS100-150 | GX24-3.. | C151 |
| | | 25 | 3,76 | 5,00 | 150 | 300 | 22 | L | E25L0022-2525X-GX24-3 AS150-300 | GX24-3.. | C151 |
| | | 25 | 5,01 | 6,50 | 40 | 50 | 20 | L | E25L0020-2525X-GX24-4 AS40-50 | GX24-4.. | C151 |
| | | 25 | 5,01 | 6,50 | 50 | 70 | 22 | L | E25L0022-2525X-GX24-4 AS50-70 | GX24-4.. | C151 |
| | | 25 | 5,01 | 6,50 | 70 | 100 | 25 | L | E25L0025-2525X-GX24-4 AS70-100 | GX24-4.. | C151 |
| | | 25 | 5,01 | 6,50 | 100 | 150 | 25 | L | E25L0025-2525X-GX24-4 AS100-150 | GX24-4.. | C151 |
| | | 25 | 5,01 | 6,50 | 150 | 300 | 25 | L | E25L0025-2525X-GX24-4 AS150-300 | GX24-4.. | C151 |

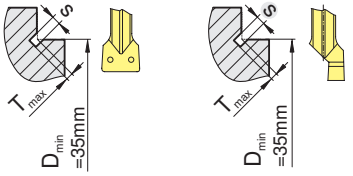
# Eckenfreistechen – außen

Modular – außen, Baugröße 20






Passende Produkte siehe rechts




| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C170 |  | **20** | **R** | MSS-E20R45-2020J |
| | 45 | | | |

| | | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C180 |  | 1,00 | 1,14 | L | MSS-E20L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,20 | 1,34 | L | MSS-E20L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,40 | 1,53 | L | MSS-E20L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,70 | 1,82 | L | MSS-E20L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,95 | 2,00 | L | MSS-E20L03-GX16-2 | GX16-2..R/L | C153 |
| | | 2,25 | 2,00 | L | MSS-E20L03-GX16-2 | GX16-2..R/L | C153 |
| | | 3,00 | 2,00 | L | MSS-E20L03-GX16-2 | GX16-2.. | C151 |
| | | 3,25 | 2,00 | L | MSS-E20L03-GX16-2 | GX16-2.. | C151 |
| | | 3,50 | 2,00 | L | MSS-E20L03-GX16-2 | GX16-2.. | C151 |
| | | 4,00 | 2,00 | L | MSS-E20L03-GX16-2 | GX16-3.. | C151 |
| | | 4,25 | 2,00 | L | MSS-E20L03-GX16-2 | GX16-3.. | C151 |
| | | 4,50 | 2,00 | L | MSS-E20L03-GX16-2 | GX16-3.. | C151 |
| | | 5,00 | 2,00 | L | MSS-E20L03-GX16-2 | GX16-3.. | C151 |

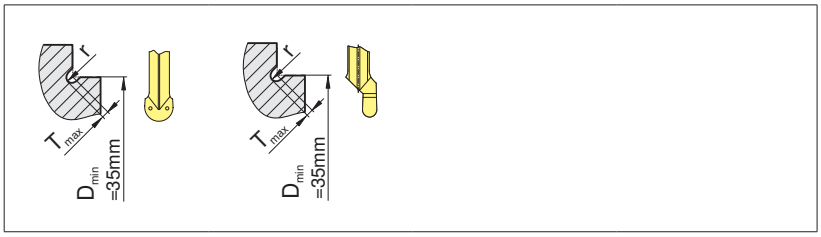
| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C170 |  | **20** | **L** | MSS-E20L45-2020J |
| | 45 | | | |

| | | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C180 |  | 1,00 | 1,14 | R | MSS-E20R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,20 | 1,34 | R | MSS-E20R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,40 | 1,53 | R | MSS-E20R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,70 | 1,82 | R | MSS-E20R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,95 | 2,00 | R | MSS-E20R03-GX16-2 | GX16-2..R/L | C153 |
| | | 2,25 | 2,00 | R | MSS-E20R03-GX16-2 | GX16-2..R/L | C153 |
| | | 3,00 | 2,00 | R | MSS-E20R03-GX16-2 | GX16-2.. | C151 |
| | | 3,25 | 2,00 | R | MSS-E20R03-GX16-2 | GX16-2.. | C151 |
| | | 3,50 | 2,00 | R | MSS-E20R03-GX16-2 | GX16-2.. | C151 |
| | | 4,00 | 2,00 | R | MSS-E20R03-GX16-2 | GX16-3.. | C151 |
| | | 4,25 | 2,00 | R | MSS-E20R03-GX16-2 | GX16-3.. | C151 |
| | | 4,50 | 2,00 | R | MSS-E20R03-GX16-2 | GX16-3.. | C151 |
| | | 5,00 | 2,00 | R | MSS-E20R03-GX16-2 | GX16-3.. | C151 |

# Eckenfreistechen – außen

Modular – außen, Baugröße 20




| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C170 |  45 | 20 | R | MSS-E20R45-2020J |

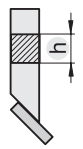
| | | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C180 |  | 0,80 | 1,78 | L | MSS-E20L03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,00 | 2,00 | L | MSS-E20L03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,20 | 2,00 | L | MSS-E20L03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,50 | 2,00 | L | MSS-E20L03-GX16-2 | GX16-2.. | C154 |
| | | 2,00 | 2,00 | L | MSS-E20L03-GX16-2 | GX16-3.. | C154 |
| | | 2,50 | 2,00 | L | MSS-E20L03-GX16-2 | GX16-3.. | C154 |

| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C170 |  45 | 20 | L | MSS-E20L45-2020J |

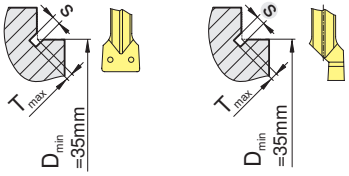
| | | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C180 |  | 0,80 | 1,78 | R | MSS-E20R03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,00 | 2,00 | R | MSS-E20R03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,20 | 2,00 | R | MSS-E20R03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,50 | 2,00 | R | MSS-E20R03-GX16-2 | GX16-2.. | C154 |
| | | 2,00 | 2,00 | R | MSS-E20R03-GX16-2 | GX16-3.. | C154 |
| | | 2,50 | 2,00 | R | MSS-E20R03-GX16-2 | GX16-3.. | C154 |

# Eckenfreistechen – außen

Modular – außen, Baugröße 25




Passende Produkte siehe rechts




| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C170 |  | **25** | **R** | MSS-E25R45-2525L |

| | | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C180 |  | 1,00 | 1,14 | L | MSS-E25L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,20 | 1,34 | L | MSS-E25L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,40 | 1,53 | L | MSS-E25L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,70 | 1,82 | L | MSS-E25L03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,95 | 2,00 | L | MSS-E25L03-GX16-2 | GX16-2..R/L | C153 |
| | | 2,25 | 2,00 | L | MSS-E25L03-GX16-2 | GX16-2..R/L | C153 |
| | | 3,00 | 2,00 | L | MSS-E25L03-GX16-2 | GX16-2.. | C151 |
| | | 3,25 | 2,00 | L | MSS-E25L03-GX16-2 | GX16-2.. | C151 |
| | | 3,50 | 2,00 | L | MSS-E25L03-GX16-2 | GX16-2.. | C151 |
| | | 4,00 | 2,00 | L | MSS-E25L03-GX16-2 | GX16-3.. | C151 |
| | | 4,25 | 2,00 | L | MSS-E25L03-GX16-2 | GX16-3.. | C151 |
| | | 4,50 | 2,00 | L | MSS-E25L03-GX16-2 | GX16-3.. | C151 |
| | | 5,00 | 2,00 | L | MSS-E25L03-GX16-2 | GX16-3.. | C151 |
| | | 5,25 | 2,00 | L | MSS-E25L03-GX16-2 | GX16-4.. | C151 |
| | | 6,00 | 2,00 | L | MSS-E25L03-GX16-2 | GX16-4.. | C151 |

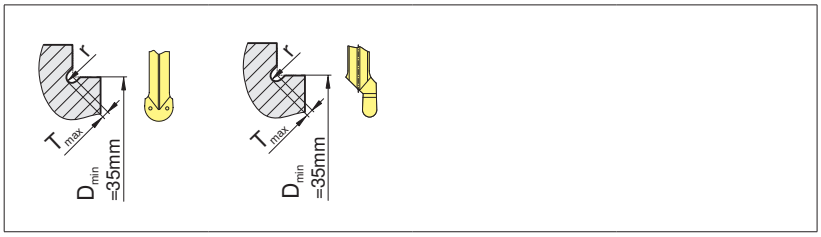
| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C170 |  | **25** | **L** | MSS-E25L45-2525L |

| | | s [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C180 |  | 1,00 | 1,14 | R | MSS-E25R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,20 | 1,34 | R | MSS-E25R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,40 | 1,53 | R | MSS-E25R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,70 | 1,82 | R | MSS-E25R03-GX16-2 | GX16-2..R/L | C153 |
| | | 1,95 | 2,00 | R | MSS-E25R03-GX16-2 | GX16-2..R/L | C153 |
| | | 2,25 | 2,00 | R | MSS-E25R03-GX16-2 | GX16-2..R/L | C153 |
| | | 3,00 | 2,00 | R | MSS-E25R03-GX16-2 | GX16-2.. | C151 |
| | | 3,25 | 2,00 | R | MSS-E25R03-GX16-2 | GX16-2.. | C151 |
| | | 3,50 | 2,00 | R | MSS-E25R03-GX16-2 | GX16-2.. | C151 |
| | | 4,00 | 2,00 | R | MSS-E25R03-GX16-2 | GX16-3.. | C151 |
| | | 4,25 | 2,00 | R | MSS-E25R03-GX16-2 | GX16-3.. | C151 |
| | | 4,50 | 2,00 | R | MSS-E25R03-GX16-2 | GX16-3.. | C151 |
| | | 5,00 | 2,00 | R | MSS-E25R03-GX16-2 | GX16-3.. | C151 |
| | | 5,25 | 2,00 | R | MSS-E25R03-GX16-2 | GX16-4.. | C151 |
| | | 6,00 | 2,00 | R | MSS-E25R03-GX16-2 | GX16-4.. | C151 |

# Eckenfreistechen – außen

Modular – außen, Baugröße 25




| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C170 |  45 | 25 | R | MSS-E25R45-2525L |

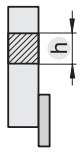
| | | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C180 |  | 0,80 | 1,78 | L | MSS-E25L03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,00 | 2,00 | L | MSS-E25L03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,20 | 2,00 | L | MSS-E25L03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,50 | 2,00 | L | MSS-E25L03-GX16-2 | GX16-2.. | C154 |
| | | 2,00 | 2,00 | L | MSS-E25L03-GX16-2 | GX16-3.. | C154 |
| | | 2,50 | 2,00 | L | MSS-E25L03-GX16-2 | GX16-3.. | C154 |
| | | 3,00 | 2,00 | L | MSS-E25L03-GX16-2 | GX16-4.. | C154 |

| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C170 |  45 | 25 | L | MSS-E25L45-2525L |

| | | r [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|
| C180 |  | 0,80 | 1,78 | R | MSS-E25R03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,00 | 2,00 | R | MSS-E25R03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,20 | 2,00 | R | MSS-E25R03-GX16-2 | GX16-2..R/L | C154 |
| | | 1,50 | 2,00 | R | MSS-E25R03-GX16-2 | GX16-2.. | C154 |
| | | 2,00 | 2,00 | R | MSS-E25R03-GX16-2 | GX16-3.. | C154 |
| | | 2,50 | 2,00 | R | MSS-E25R03-GX16-2 | GX16-3.. | C154 |
| | | 3,00 | 2,00 | R | MSS-E25R03-GX16-2 | GX16-4.. | C154 |

# Gewindedrehen – außen

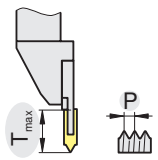
Modular – außen, Baugröße 20




Passende Produkte siehe rechts

| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | 20 | R | MSS-E20R00-2020J |
| | | 16 | R | MSS-E20R00-1620G |
| C169 |  90 | 20 | L | MSS-E20L90-2020J |

| | | h/$d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | 20 | L | MSS-E20L00-2020J |
| | | 16 | L | MSS-E20L00-1620G |
| C169 |  90 | 20 | R | MSS-E20R90-2020J |

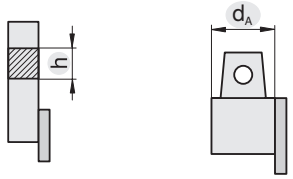



| | | $P_{min}$ [mm] | $P_{max}$ [mm] | $P_{min}$ [G/Zoll] | $P_{max}$ [G/Zoll] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C218 |  | 0,50 | 1,50 | 48 | 16 | 8 | R | MSS-E20R-TC16-1 | TC16-1.. | C161 |
| | | 1,75 | 3,00 | 14 | 8 | 12 | N | MSS-E20N-TC16-2 | TC16-2.. | C161 |
| | | | | | | | | | | |
| | | | | | | | | | | |

| | | $P_{min}$ [mm] | $P_{max}$ [mm] | $P_{min}$ [G/Zoll] | $P_{max}$ [G/Zoll] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C218 |  | 0,50 | 1,50 | 48 | 16 | 8 | L | MSS-E20L-TC16-1 | TC16-1.. | C161 |
| | | 1,75 | 3,00 | 14 | 8 | 12 | N | MSS-E20N-TC16-2 | TC16-2.. | C161 |
| | | | | | | | | | | |
| | | | | | | | | | | |

# Gewindedrehen – außen

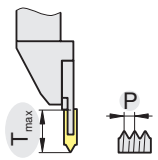
Modular – außen, Baugröße 25




Passende Produkte siehe rechts

| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **25** | **R** | MSS-E25R00-2525L |
| C169 |  90 | **25** | **L** | MSS-E25L90-2525L |
| C171 |  0 | **100** | **R** | HSK-T100-MSS-E25R00 |
| | | **63** | **R** | HSK-T63-MSS-E25R00 |
| C173 |  0 | **63** | **R** | UT63-MSS-E25R00 |
| | | **40** | **R** | UT40-MSS-E25R00 |
| | | **50** | **R** | UT50-MSS-E25R00 |
| C174 |  90 | **40** | **L** | UT40-MSS-E25L90 |
| | | **50** | **L** | UT50-MSS-E25L90 |

| | | $h/d_A$ | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C168 |  0 | **25** | **L** | MSS-E25L00-2525L |
| C169 |  90 | **25** | **R** | MSS-E25R90-2525L |
| C171 |  0 | **100** | **L** | HSK-T100-MSS-E25L00 |
| | | **63** | **L** | HSK-T63-MSS-E25L00 |
| C173 |  0 | **40** | **L** | UT40-MSS-E25L00 |
| | | **50** | **L** | UT50-MSS-E25L00 |
| | | **63** | **L** | UT63-MSS-E25L00 |
| C174 |  90 | **50** | **R** | UT50-MSS-E25R90 |
| | | **40** | **R** | UT40-MSS-E25R90 |

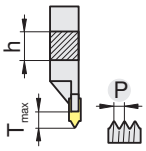



| | | $P_{min}$ [mm] | $P_{max}$ [mm] | $P_{min}$ [G/Zoll] | $P_{max}$ [G/Zoll] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C218 |  | 0,50 | 1,50 | 48 | 16 | 8 | R | MSS-E25R-TC16-1 | TC16-1.. | C161 |
| | | 1,75 | 3,00 | 14 | 8 | 10 | R | MSS-E25R-TC16-2 | TC16-2.. | C161 |
| | | 3,50 | 5,00 | 7 | 5 | 12 | N | MSS-E25N-TC16-3 | TC16-3.. | C161 |

| | | $P_{min}$ [mm] | $P_{max}$ [mm] | $P_{min}$ [G/Zoll] | $P_{max}$ [G/Zoll] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C218 |  | 0,50 | 1,50 | 48 | 16 | 8 | L | MSS-E25L-TC16-1 | TC16-1.. | C161 |
| | | 1,75 | 3,00 | 14 | 8 | 10 | L | MSS-E25L-TC16-2 | TC16-2.. | C161 |
| | | 3,50 | 5,00 | 7 | 5 | 12 | N | MSS-E25N-TC16-3 | TC16-3.. | C161 |

# Gewindedrehen – außen

Monowerkzeug – TC

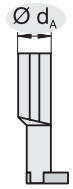



| | | h [mm] | $P_{min}$ [mm] | $P_{max}$ [mm] | $P_{min}$ [G/Zoll] | $P_{max}$ [G/Zoll] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C219 |  | 12 | 0,50 | 3,00 | 48 | 8 | 10 | R | E12R00-1212-TC16 | TC16-1/2.. | C161 |
| | | 12 | 0,50 | 3,00 | 48 | 8 | 10 | L | E12L00-1212-TC16 | TC16-1/2.. | C161 |
| | | | | | | | | | | | |
| | | | | | | | | | | | |


CERA

# Gewindedrehen – innen

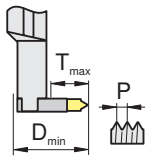
Modular – innen, Baugröße 32




Passende Produkte siehe rechts

| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 32 | R | MSS-I32R90-1.5D-N |
| C208 |  | 40 | R | MSS-I32R90-2.5D-N |
| C209 |  | 40 | R | UT40-MSS-I32R90-2D |

| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 32 | L | MSS-I32L90-1.5D-N |
| C208 |  | 40 | L | MSS-I32L90-2.5D-N |
| C209 |  | 50 | L | UT50-MSS-I32L90-2D |

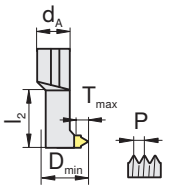



| | | $P_{min}$ [mm] | $P_{max}$ [mm] | $P_{min}$ [G/Zoll] | $P_{max}$ [G/Zoll] | $D_{min}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C220 |  | 0,50 | 1,50 | 48 | 16 | 40 | 7 | R | MSS-I32R-TC16-1 | TC16-1.. | C161 |
| | | 1,75 | 3,00 | 14 | 8 | 40 | 7 | R | MSS-I32R-TC16-2 | TC16-2.. | C161 |
| | | 3,50 | 5,00 | 7 | 5 | 40 | 7 | N | MSS-I32N-TC16-3 | TC16-3.. | C161 |

| | | $P_{min}$ [mm] | $P_{max}$ [mm] | $P_{min}$ [G/Zoll] | $P_{max}$ [G/Zoll] | $D_{min}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C220 |  | 0,50 | 1,50 | 48 | 16 | 40 | 7 | L | MSS-I32L-TC16-1 | TC16-1.. | C161 |
| | | 1,75 | 3,00 | 14 | 8 | 40 | 7 | L | MSS-I32L-TC16-2 | TC16-2.. | C161 |
| | | 3,50 | 5,00 | 7 | 5 | 40 | 7 | N | MSS-I32N-TC16-3 | TC16-3.. | C161 |

# Gewindedrehen – innen

Monobohrstange – TC



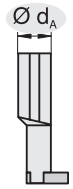

| | | $P_{min}$ [mm] | $P_{max}$ [mm] | $P_{min}$ [G/Zoll] | $P_{max}$ [G/Zoll] | $d_A$ [mm] | $l_2$ [mm] | $D_{min}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C221 |  | 0,50 | 3,00 | 48 | 8 | 20 | 32 | 20 | 4 | R | I16R90-2D-TC16 | TC16-1/2.. | C161 |
| | | 0,50 | 5,00 | 48 | 5 | 25 | 40 | 25 | 5 | R | I20R90-2D-TC16 | TC16-.. | C161 |
| | | 0,50 | 5,00 | 48 | 5 | 32 | 50 | 32 | 6 | R | I25R90-2D-TC16 | TC16-.. | C161 |
| | | 0,50 | 3,00 | 48 | 8 | 20 | 32 | 20 | 4 | L | I16L90-2D-TC16 | TC16-1/2.. | C161 |
| | | 0,50 | 5,00 | 48 | 5 | 25 | 40 | 25 | 5 | L | I20L90-2D-TC16 | TC16-.. | C161 |
| | | 0,50 | 5,00 | 48 | 5 | 32 | 50 | 32 | 6 | L | I25L90-2D-TC16 | TC16-.. | C161 |



# Gewindefräsen – außen / innen

Bohrstange – TC

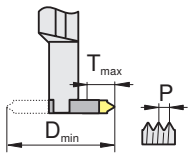





Passende Produkte siehe rechts

| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C207 |  | 32 | R | MSS-I32R90-1.5D-N |

| | | $d_A$ [mm] | L R | Type, Bezeichnung |
|---|---|---|---|---|
| C208 |  | 40 | R | MSS-I32R90-2.5D-N |



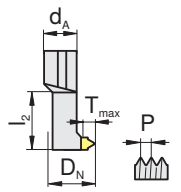

| | | $P_{min}$ [mm] | $P_{max}$ [mm] | $P_{min}$ [G/Zoll] | $P_{max}$ [G/Zoll] | $D_{min}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C220 |  | 1,75 | 3,00 | 14 | 8 | 44 | 7 | R | MSS-I32R-TC16-2 | TC16-2.. | C161 |
| | | 3,50 | 5,00 | 7 | 5 | 44 | 7 | N | MSS-I32N-TC16-3 | TC16-3.. | C161 |

| | | $P_{min}$ [mm] | $P_{max}$ [mm] | $P_{min}$ [G/Zoll] | $P_{max}$ [G/Zoll] | $D_{min}$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C220 |  | 1,75 | 3,00 | 14 | 8 | 59 | 7 | R | MSS-I32R-TC16-2 | TC16-2.. | C161 |
| | | 3,50 | 5,00 | 7 | 5 | 59 | 7 | N | MSS-I32N-TC16-3 | TC16-3.. | C161 |

# Gewindefräsen – außen / innen

Gewindefräser – TC



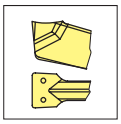
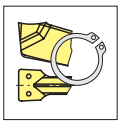
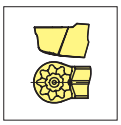
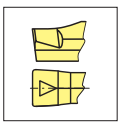
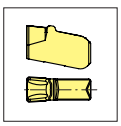
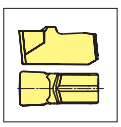
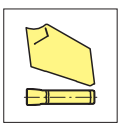
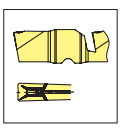



| | | $P_{min}$ [mm] | $P_{max}$ [mm] | $P_{min}$ [G/Zoll] | $P_{max}$ [G/Zoll] | $d_A$ [mm] | $l_2$ [mm] | $D_N$ [mm] | $T_{max}$ [mm] | L R | Type, Bezeichnung | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C222 |  | 0,50 | 5,00 | 28 | 5 | 25 | 54 | 25 | 3,0 | R | I25R90-2D-TC16-W | TC16-.. | C161 |
| | | 0,50 | 5,00 | 28 | 5 | 32 | 68 | 32 | 3,5 | R | I32R90-2D-TC16-W | TC16-.. | C161 |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

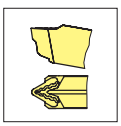




## Wendeplatten zum Stechen

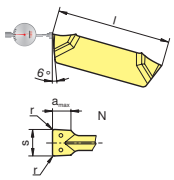

| | | |
|---|---|---|
|  | System GX-E | C151-C152 |
|  | System GX-S | C153 |
|  | System GX-R | C154 |
|  | System AX | C155 |
|  | System SX | C156 |
|  | System LX | C157 |
|  | System FX | C158 |
|  | System MaxiClick | C159 |


## Wendeplatten zum Gewindeschneiden


| | | |
|---|---|---|
|  | Teilprofil 60° / 55° | C160-C161 |
|  | Vollprofil 60° / 55° | C162-C163 |

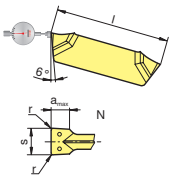
# System GX-E

| | | | CTCP325 | CTP1340 | CTCP335 | CTPP345 | H216T | LNR | s [mm] | l [mm] | r [mm] | $a_{max}$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -F2 |  | GX09-1E2.00N0.20-F2 | | ● | | | | N | 2,00 | 9,0 | 0,20 | 2,0 |
| | | GX09-1E2.50N0.20-F2 | | ● | | | | N | 2,50 | 9,0 | 0,20 | 2,0 |
| | | GX09-2E3.00N0.30-F2 | | ● | | | | N | 3,00 | 9,0 | 0,30 | 2,5 |
| | | GX16-1E2.00N0.20-F2 | | ● | | | | N | 2,00 | 16,0 | 0,20 | 2,0 |
| | | GX16-2E3.00N0.30-F2 | | ● | | | | N | 3,00 | 16,0 | 0,30 | 2,5 |
| | | GX16-3E4.00N0.40-F2 | | ● | | | | N | 4,00 | 16,0 | 0,40 | 3,0 |
| | | GX16-3E5.00N0.40-F2 | | ● | | | | N | 5,00 | 16,0 | 0,40 | 3,0 |
| | | GX24-2E3.00N0.30-F2 | ● | ● | | ● | | N | 3,00 | 24,0 | 0,30 | 2,5 |
| | | GX24-2E3.50N0.30-F2 | | | | ● | | N | 3,50 | 24,0 | 0,30 | 2,5 |
| | | GX24-3E4.00N0.40-F2 | ● | ● | | ● | | N | 4,00 | 24,0 | 0,40 | 3,0 |
| | | GX24-3E5.00N0.40-F2 | ● | ● | | ● | | N | 5,00 | 24,0 | 0,40 | 3,0 |
| | | GX24-4E6.00N0.50-F2 | | ● | | ● | | N | 6,00 | 24,0 | 0,50 | 3,5 |
| EN |  | GX09-1E2.00N0.20 | ● | ● | | | | N | 2,00 | 9,0 | 0,20 | 1,5 |
| | | GX09-1E2.50N0.20 | ● | ● | | | | N | 2,50 | 9,0 | 0,20 | 1,5 |
| | | GX09-2E3.00N0.30 | ● | ● | | | | N | 3,00 | 9,0 | 0,30 | 2,0 |
| | | GX16-1E2.00N0.20 | ● | ● | ● | | | N | 2,00 | 16,0 | 0,20 | 2,0 |
| | | GX16-1E2.50N0.20 | ● | ● | ● | | | N | 2,50 | 16,0 | 0,20 | 2,0 |
| | | GX16-2E3.00N0.30 | ● | ● | ● | | | N | 3,00 | 16,0 | 0,30 | 2,5 |
| | | GX16-2E3.00N0.50 | ● | | | | | N | 3,00 | 16,0 | 0,50 | 2,5 |
| | | GX16-2E3.50N0.30 | ● | ● | ● | | | N | 3,50 | 16,0 | 0,30 | 2,5 |
| | | GX16-3E4.00N0.40 | ● | ● | ● | | | N | 4,00 | 16,0 | 0,40 | 3,0 |
| | | GX16-3E4.00N0.60 | ● | | | | | N | 4,00 | 16,0 | 0,60 | 3,0 |
| | | GX16-3E5.00N0.40 | ● | ● | ● | | | N | 5,00 | 16,0 | 0,40 | 3,0 |
| | | GX16-4E6.00N0.50 | ● | ● | | | | N | 6,00 | 16,0 | 0,50 | 3,5 |
| | | GX16-4E6.00N0.80 | ● | | | | | N | 6,00 | 16,0 | 0,80 | 3,5 |
| | | GX24-2E3.00N0.30 | ● | ● | ● | ● | | N | 3,00 | 24,0 | 0,30 | 2,5 |
| | | GX24-3E4.00N0.40 | ● | ● | ● | ● | | N | 4,00 | 24,0 | 0,40 | 3,0 |
| | | GX24-3E5.00N0.40 | ● | ● | ● | ● | | N | 5,00 | 24,0 | 0,40 | 3,0 |
| | | GX24-4E6.00N0.50 | ● | ● | ● | ● | | N | 6,00 | 24,0 | 0,50 | 3,5 |
| -M40 |  | GX09-1E2.00N0.20-M40 | ● | ● | | ● | | N | 2,00 | 9,0 | 0,20 | 1,5 |
| | | GX09-2E3.00N0.30-M40 | ● | ● | | ● | | N | 3,00 | 9,0 | 0,30 | 2,0 |
| | | GX16-1E2.00N0.20-M40 | ● | ● | | ● | | N | 2,00 | 16,0 | 0,20 | 2,0 |
| | | GX16-2E3.00N0.30-M40 | ● | ● | | ● | | N | 3,00 | 16,0 | 0,30 | 3,0 |
| | | GX16-3E4.00N0.40-M40 | ● | ● | | ● | | N | 4,00 | 16,0 | 0,40 | 3,5 |
| | | GX16-3E5.00N0.40-M40 | ● | ● | | ● | | N | 5,00 | 16,0 | 0,40 | 3,5 |
| | | GX16-4E6.00N0.50-M40 | ● | ● | | ● | | N | 6,00 | 16,0 | 0,50 | 4,0 |
| | | GX24-2E3.00N0.30-M40 | ● | ● | | ● | | N | 3,00 | 24,0 | 0,30 | 3,5 |
| | | GX24-3E4.00N0.40-M40 | ● | ● | | ● | | N | 4,00 | 24,0 | 0,40 | 4,0 |
| | | GX24-3E5.00N0.40-M40 | ● | ● | | ● | | N | 5,00 | 24,0 | 0,40 | 4,0 |
| | | GX24-4E6.00N0.50-M40 | ● | ● | | ● | | N | 6,00 | 24,0 | 0,50 | 4,0 |
| | | | CTCP325 | CTP1340 | CTCP335 | CTPP345 | H216T | LNR | s | l | r | $a_{max}$ |




C47-C62 C63-C64 C239 C227 GX C176-C178 GX-A C181-C182 GX C188-C190 GX C198 GX C210-C212 GX C215-C217

| | | | CTCP325 | CTP1340 | CTCP335 | CTPP345 | H216T | LNR | s [mm] | l [mm] | r [mm] | $a_{max}$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -M1 |  | GX16-1E2.00N0.20-M1 | | ● | | ● | | N | 2,00 | 16,0 | 0,20 | 2,0 |
| | | GX16-2E3.00N0.20-M1 | ● | ● | | ● | | N | 3,00 | 16,0 | | 2,5 |
| | | GX16-3E4.00N0.30-M1 | ● | ● | | | | N | 4,00 | 16,0 | 0,30 | 3,0 |
| | | GX24-1E2.00N0.20-M1 | ● | ● | | ● | | N | 2,00 | 24,0 | 0,20 | 2,5 |
| | | GX24-2E3.00N0.20-M1 | ● | ● | | ● | | N | 3,00 | 24,0 | 0,20 | 2,5 |
| | | GX24-3E4.00N0.30-M1 | ● | ● | | ● | | N | 4,00 | 24,0 | 0,30 | 3,0 |
| -27P |  | GX16-1E2.00N0.20-27P | | | | | ● | N | 2,00 | 16,0 | 0,20 | 2,0 |
| | | GX16-2E3.00N0.30-27P | | | | | ● | N | 3,00 | 16,0 | 0,30 | 2,5 |
| | | GX16-3E4.00N0.40-27P | | | | | ● | N | 4,00 | 16,0 | 0,40 | 3,0 |
| | | GX16-4E6.00N0.50-27P | | | | | ● | N | 6,00 | 16,0 | 0,50 | 3,5 |
| | | GX24-2E3.00N0.30-27P | | | | | ● | N | 3,00 | 24,0 | 0,30 | 2,5 |
| | | GX24-3E4.00N0.40-27P | | | | | ● | N | 4,00 | 24,0 | 0,40 | 3,0 |
| | | GX24-3E5.00N0.40-27P | | | | | ● | N | 5,00 | 24,0 | 0,40 | 3,0 |
| | | GX24-4E6.00N0.50-27P | | | | | ● | N | 6,00 | 24,0 | 0,50 | 3,5 |
| | | | CTCP325 | CTP1340 | CTCP335 | CTPP345 | H216T | LNR | s | l | r | $a_{max}$ |

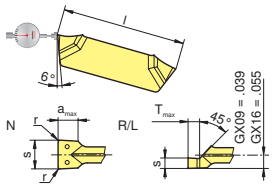


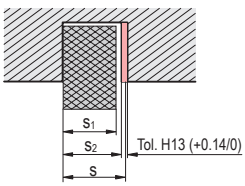

C47-C62 | C63-C64 | C239 | C227 | GX C176-C178 | GX-A C181-C182 | GX C188-C190 | GX C198 | GX C210-C212 | GX C215-C217

# System GX-S



| | | | CTCP325 | CTP1340 | CTCP335 | CTPP345 | H216T | LNR | s [mm] | $s_1$ [mm] | $s_2$ [mm] | l [mm] | r [mm] | $T_{max}$ [mm] | $a_{max}$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ER-EL |  | GX09-1S0.60L | | ● | | | | L | 0,60 | 0,40 | 0,50 | 9,0 | | 0,75 | |
| | | GX09-1S0.60R | | ● | | | | R | 0,60 | 0,40 | 0,50 | 9,0 | | 0,75 | |
| | | GX09-1S0.80L | | ● | | | | L | 0,80 | 0,60 | 0,70 | 9,0 | | 0,94 | |
| | | GX09-1S0.80R | | ● | | | | R | 0,80 | 0,60 | 0,70 | 9,0 | | 0,94 | |
| | | GX09-1S0.90L | | ● | | | | L | 0,90 | 0,70 | 0,80 | 9,0 | | 1,04 | |
| | | GX09-1S0.90R | | ● | | | | R | 0,90 | 0,70 | 0,80 | 9,0 | | 1,04 | |
| | | GX09-1S1.00L | | ● | | | | L | 1,00 | 0,80 | 0,90 | 9,0 | | 1,14 | |
| | | GX09-1S1.00R | | ● | | | | R | 1,00 | 0,80 | 0,90 | 9,0 | | 1,14 | |
| | | GX09-1S1.20L | | ● | | | | L | 1,20 | 1,00 | 1,10 | 9,0 | | 1,34 | |
| | | GX09-1S1.20R | | ● | | | | R | 1,20 | 1,00 | 1,10 | 9,0 | | 1,34 | |
| | | GX09-1S1.40L | | ● | | | | L | 1,40 | 1,20 | 1,30 | 9,0 | | 1,53 | |
| | | GX09-1S1.40R | | ● | | | | R | 1,40 | 1,20 | 1,30 | 9,0 | | 1,53 | |
| | | GX09-1S1.70L | | ● | | | | L | 1,70 | 1,50 | 1,60 | 9,0 | | 1,82 | |
| | | GX09-1S1.70R | | ● | | | | R | 1,70 | 1,50 | 1,60 | 9,0 | | 1,82 | |
| | | GX16-2S0.60L | | ● | | | | L | 0,60 | 0,40 | 0,50 | 16,0 | | 0,75 | |
| | | GX16-2S0.60R | | ● | | | | R | 0,60 | 0,40 | 0,50 | 16,0 | | 0,75 | |
| | | GX16-2S0.80L | | ● | | | | L | 0,80 | 0,60 | 0,70 | 16,0 | | 0,94 | |
| | | GX16-2S0.80R | | ● | | | | R | 0,80 | 0,60 | 0,70 | 16,0 | | 0,94 | |
| | | GX16-2S0.90L | | ● | | | | L | 0,90 | 0,70 | 0,80 | 16,0 | | 1,04 | |
| | | GX16-2S0.90R | | ● | | | | R | 0,90 | 0,70 | 0,80 | 16,0 | | 1,04 | |
| | | GX16-2S1.00L | | ● | | | | L | 1,00 | 0,80 | 0,90 | 16,0 | | 1,14 | |
| | | GX16-2S1.00R | | ● | | | | R | 1,00 | 0,80 | 0,90 | 16,0 | | 1,14 | |
| | | GX16-2S1.20L | | ● | | | | L | 1,20 | 1,00 | 1,10 | 16,0 | | 1,34 | |
| | | GX16-2S1.20R | | ● | | | | R | 1,20 | 1,00 | 1,10 | 16,0 | | 1,34 | |
| | | GX16-2S1.40L | | ● | | | | L | 1,40 | 1,20 | 1,30 | 16,0 | | 1,53 | |
| | | GX16-2S1.40R | | ● | | | | R | 1,40 | 1,20 | 1,30 | 16,0 | | 1,53 | |
| | | GX16-2S1.70L | | ● | | | | L | 1,70 | 1,50 | 1,60 | 16,0 | | 1,82 | |
| | | GX16-2S1.70R | | ● | | | | R | 1,70 | 1,50 | 1,60 | 16,0 | | 1,82 | |
| | | GX16-2S1.95L | | ● | | | | L | 1,95 | 1,75 | 1,85 | 16,0 | | 2,07 | |
| | | GX16-2S1.95R | | ● | | | | R | 1,95 | 1,75 | 1,85 | 16,0 | | 2,07 | |
| | | GX16-2S2.25L | | ● | | | | L | 2,25 | 2,00 | 2,15 | 16,0 | | 2,36 | |
| | | GX16-2S2.25R | | ● | | | | R | 2,25 | 2,00 | 2,15 | 16,0 | | 2,36 | |
| EN |  | GX09-1S1.95N | | ● | | | | N | 1,95 | 1,75 | 1,85 | 9,0 | 0,10 | 7,00 | 2,0 |
| | | GX09-1S2.25N | | ● | | | | N | 2,25 | 2,00 | 2,15 | 9,0 | 0,10 | 7,00 | 2,0 |
| | | GX09-2S2.75N | | ● | | | | N | 2,75 | 2,50 | 2,65 | 9,0 | 0,10 | 7,00 | 2,0 |
| | | GX09-2S3.25N | | ● | | | | N | 3,25 | 3,00 | 3,15 | 9,0 | 0,10 | 7,00 | 2,0 |
| | | GX16-2S2.75N | | ● | | | | N | 2,75 | 2,50 | 2,65 | 16,0 | 0,10 | 12,00 | 3,0 |
| | | GX16-2S3.25N | | ● | | | | N | 3,25 | 3,00 | 3,15 | 16,0 | 0,10 | 12,00 | 3,0 |
| | | GX16-3S4.25N | | ● | | | | N | 4,25 | 4,00 | 4,15 | 16,0 | 0,20 | 12,00 | 3,5 |
| | | GX16-4S5.25N | | ● | | | | N | 5,25 | 5,00 | 5,15 | 16,0 | 0,20 | 12,00 | 4,0 |
| | | | CTCP325 | CTP1340 | CTCP335 | CTPP345 | H216T | LNR | s | $s_1$ | $s_2$ | l | r | $T_{max}$ | $a_{max}$ |

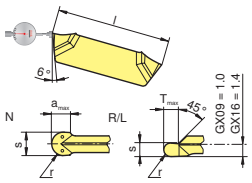



**DIN 471 - 472:** DIN-Norm für Sicherungsringeinstiche
**s:** Stechplattenbreite
**$s_1$:** Sicherungsringbreite
**$s_2$:** Norm - Nutbreite H13 (+0,14/0)

C47-C62 | C63-C64 | C239 | C227 | C179-C180 | C188-C189 | C213-C214 | C215-C216

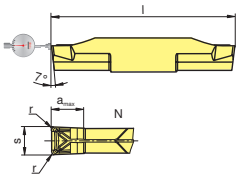
| | | | CTCP325 | CTP1340 | CTCP335 | CTPP345 | H216T | LNR | s [mm] | l [mm] | r [mm] | $T_{max}$ [mm] | $a_{max}$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | | | | | | | |
| M | | | ○ | ● | ○ | ● | | | | | | | |
| K | | | ● | ● | ● | | ● | | | | | | |
| N | | | | | | | ● | | | | | | |
| S | | | | ● | | ○ | | | | | | | |
| H | | | | | | | | | | | | | |
| ER-EL |  | GX09-1R0.80L | ● | | | | | L | 1,60 | 9,0 | 0,80 | 1,78 | |
| | | GX09-1R0.80R | ● | | | | | R | 1,60 | 9,0 | 0,80 | 1,78 | |
| | | GX16-2R0.80L | ● | | | | | L | 1,60 | 16,0 | 0,80 | 1,78 | |
| | | GX16-2R0.80R | ● | | | | | R | 1,60 | 16,0 | 0,80 | 1,78 | |
| | | GX16-2R1.00L | ● | | | | | L | 2,00 | 16,0 | 1,00 | 2,18 | |
| | | GX16-2R1.00R | ● | | | | | R | 2,00 | 16,0 | 1,00 | 2,18 | |
| | | GX16-2R1.20L | ● | | | | | L | 2,40 | 16,0 | 1,20 | 2,58 | |
| | | GX16-2R1.20R | ● | | | | | R | 2,40 | 16,0 | 1,20 | 2,58 | |
| EN |  | GX09-1R1.00N | ● | | | | | N | 2,00 | 9,0 | 1,00 | 7,00 | 1,0 |
| | | GX09-1R1.20N | ● | | | | | N | 2,40 | 9,0 | 1,20 | 7,00 | 1,0 |
| | | GX16-2R1.50N | ● | ● | | | | N | 3,00 | 16,0 | 1,50 | 12,00 | 1,5 |
| | | GX16-3R2.00N | ● | ● | | | | N | 4,00 | 16,0 | 2,00 | 12,00 | 2,0 |
| | | GX16-3R2.50N | ● | ● | | | | N | 5,00 | 16,0 | 2,50 | 12,00 | 2,5 |
| | | GX16-4R3.00N | ● | ● | | | | N | 6,00 | 16,0 | 3,00 | 12,00 | 3,0 |
| -M3 |  | GX24-2R1.50N-M3 | ● | | ● | | | N | 3,00 | 24,4 | 1,50 | 21,00 | 1,5 |
| | | GX24-3R2.00N-M3 | ● | | ● | | | N | 4,00 | 24,4 | 2,00 | 21,00 | 2,5 |
| | | GX24-3R2.50N-M3 | ● | | ● | | | N | 5,00 | 24,4 | 2,50 | 21,00 | 3,0 |
| | | GX24-4R3.00N-M3 | ● | | ● | | | N | 6,00 | 24,4 | 3,00 | 21,00 | 4,0 |
| -27P |  | GX16-2R1.50N-27P | | | | | ● | N | 3,00 | 16,0 | 1,50 | 12,00 | 1,5 |
| | | GX16-3R2.00N-27P | | | | | ● | N | 4,00 | 16,0 | 2,00 | 12,00 | 2,0 |
| | | GX16-3R2.50N-27P | | | | | ● | N | 5,00 | 16,0 | 2,50 | 12,00 | 2,5 |
| | | | CTCP325 | CTP1340 | CTCP335 | CTPP345 | H216T | LNR | s | l | r | $T_{max}$ | $a_{max}$ |




C47-C62 | C63-C64 | C239 | C227 | GX C181-C182 | GX-A C181-C182 | GX C188-C190 | GX C198 | GX C210-C214 | GX C215-C217

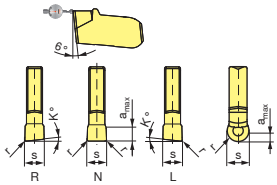
# System AX

| | | CTCP325 | CTP1340 | CTCP335 | CTPP345 | H216T | LNR | s [mm] | l [mm] | r [mm] | $a_{max}$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | | | | | | |
| M | | ○ | ● | ○ | ● | | | | | | |
| K | | ● | ● | ● | | ● | | | | | |
| N | | | | | | ● | | | | | |
| S | | | ● | | ○ | | | | | | |
| H | | | | | | | | | | | |
| -F50 |  | AX05-E3.00N0.30-10-F50 | ● | | | | N | 3,00 | 24,0 | 0,30 | 5,0 |
| | | AX10-E3.00N0.30-20-F50 | ● | | | | N | 3,00 | 34,0 | 0,30 | 10,0 |
| | | AX15-E3.00N0.30-30-F50 | ● | | | | N | 3,00 | 44,0 | 0,30 | 15,0 |
| | | | CTCP325 | CTP1340 | CTCP335 | CTPP345 | H216T | LNR | s | l | r | $a_{max}$ |




C47-C62 C63-C64 C239 C227 C183 C192-C193

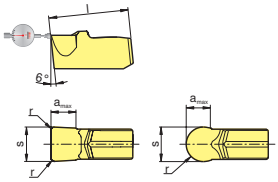
| | | | CTCP325 | CTP1340 | CTCP335 | CTPP345 | H216T | LNR | s [mm] | r [mm] | $a_{max}$ [mm] | K [°] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | | | | | | |
| M | | | ○ | ● | ○ | ● | | | | | | |
| K | | | ● | ● | ● | | ● | | | | | |
| N | | | | | | | ● | | | | | |
| S | | | | ● | | ○ | | | | | | |
| H | | | | | | | | | | | | |
| -F2 |  | SX E2.00N0.20-F2 | | ● | | ● | | N | 2,00 | 0,20 | 1,5 | |
| | | SX E3.00N0.30-F2 | ● | ● | ● | ● | | N | 3,00 | 0,30 | 2,0 | |
| | | SX E4.00N0.40-F2 | | ● | | ● | | N | 4,00 | 0,40 | 2,5 | |
| -M2 |  | SX E2.00N0.20-M2 | ● | ● | ● | ● | | N | 2,00 | 0,20 | 1,5 | |
| | | SX E3.00N0.30-M2 | ● | ● | ● | ● | | N | 3,00 | 0,30 | 2,0 | |
| | | SX E4.00N0.40-M2 | ● | ● | ● | ● | | N | 4,00 | 0,40 | 2,5 | |
| | | SX E5.00N0.40-M2 | ● | ● | ● | ● | | N | 5,00 | 0,40 | 2,7 | |
| | | SX E6.00N0.50-M2 | ● | ● | ● | ● | | N | 6,00 | 0,50 | 3,0 | |
| -M3 |  | SX R1.50N-M3 | | ● | ● | | | N | 3,00 | 1,50 | 1,5 | |
| | | SX R2.00N-M3 | | ● | ● | | | N | 4,00 | 2,00 | 2,0 | |
| | | SX R2.50N-M3 | | ● | ● | | | N | 5,00 | 2,50 | 2,5 | |
| | | SX R3.00N-M3 | | ● | | | | N | 6,00 | 3,00 | 3,0 | |
| -M1 |  | SX E2.00L6-M1 | | ● | | | | L | 2,00 | 0,20 | | 6 |
| | | SX E2.00N0.20-M1 | ● | ● | | ● | | N | 2,00 | 0,20 | | |
| | | SX E2.00R6-M1 | | ● | | | | R | 2,00 | 0,20 | | 6 |
| | | SX E3.00L6-M1 | ● | ● | | | | L | 3,00 | 0,20 | | 6 |
| | | SX E3.00N0.20-M1 | ● | ● | ● | ● | | N | 3,00 | 0,20 | | |
| | | SX E3.00R6-M1 | ● | ● | | | | R | 3,00 | 0,20 | | 6 |
| | | SX E4.00L6-M1 | | ● | | | | L | 4,00 | 0,30 | | 6 |
| | | SX E4.00N0.30-M1 | ● | ● | ● | ● | | N | 4,00 | 0,30 | | |
| | | SX E4.00R6-M1 | | ● | | | | R | 4,00 | 0,30 | | 6 |
| | | SX E5.00N0.30-M1 | ● | ● | | ● | | N | 5,00 | 0,30 | | |
| | | SX E6.00N0.40-M1 | ● | ● | | ● | | N | 6,00 | 0,40 | | |
| -27P |  | SX E2.00N0.20-27P | | | | | ● | N | 2,00 | 0,20 | 2,0 | |
| | | SX E3.00N0.30-27P | | | | | ● | N | 3,00 | 0,30 | 2,5 | |
| | | SX E4.00N0.40-27P | | | | | ● | N | 4,00 | 0,40 | 3,0 | |
| | | | CTCP325 | CTP1340 | CTCP335 | CTPP345 | H216T | LNR | s | r | $a_{max}$ | K |




C47-C62
C63-C64
C239
C227
C184
C199
C199-C201

# System LX

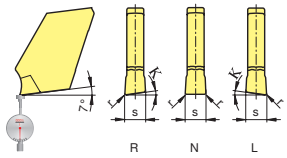
| | | | CTCP325 | CTP1340 | CTCP335 | CTPP345 | H216T | LNR | s [mm] | l [mm] | r [mm] | $a_{max}$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -M2 |  | LX E10.00N0.80-M2 | ● | ● | ● | | | N | 10,00 | 19,0 | 0,80 | 5,0 |
| | | LX E8.00N0.80-M2 | ● | ● | ● | | | N | 8,00 | 19,0 | 0,80 | 5,0 |
| -M3 |  | LX R4.00N-M3 | ● | ● | ● | | | N | 8,00 | 19,0 | 4,00 | 5,0 |





C47-C62 C63-C64 C239 C227 C185 C202

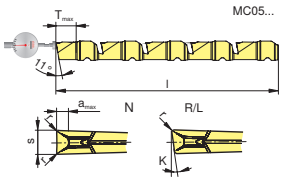
| | | | CTCP325 | CTP1340 | CTCP335 | CTPP345 | H216T | LNR | s [mm] | r [mm] | K [°] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | ● | | | | | |
| M | | | ○ | ● | ○ | ● | | | | | |
| K | | | ● | ● | ● | | ● | | | | |
| N | | | | | | | ● | | | | |
| S | | | | ● | | ○ | | | | | |
| H | | | | | | | | | | | |
| -F1 |  | FX 2.2L5-F1 | | ● | | ● | | L | 2,20 | 0,15 | 5 |
| | | FX 2.2N0.15-F1 | ● | ● | | ● | | N | 2,20 | 0,15 | |
| | | FX 2.2R5-F1 | | ● | | ● | | R | 2,20 | 0,15 | 5 |
| | | FX 3.1L5-F1 | | ● | | ● | | L | 3,10 | 0,20 | 5 |
| | | FX 3.1L8-F1 | | | | ● | | L | 3,10 | 0,20 | 8 |
| | | FX 3.1N0.20-F1 | ● | ● | | ● | | N | 3,10 | 0,20 | |
| | | FX 3.1N0.40-F1 | ● | ● | | ● | | N | 3,10 | 0,40 | |
| | | FX 3.1R5-F1 | | ● | | ● | | R | 3,10 | 0,20 | 5 |
| | | FX 3.1R8-F1 | | | | ● | | R | 3,10 | 0,20 | 8 |
| | | FX 4.1N0.20-F1 | | ● | | ● | | N | 4,10 | 0,20 | |
| | | FX 4.1N0.50-F1 | | | | ● | | N | 4,10 | 0,50 | |
| -M1 |  | FX 2.2L4-M1 | | ● | ● | ● | | L | 2,20 | 0,10 | 4 |
| | | FX 2.2N0.10-M1 | ● | ● | ● | ● | | N | 2,20 | 0,10 | |
| | | FX 2.2R4-M1 | | ● | ● | ● | | R | 2,20 | 0,10 | 4 |
| | | FX 3.1L6-M1 | ● | ● | ● | ● | | L | 3,10 | 0,15 | 6 |
| | | FX 3.1N0.15-M1 | ● | ● | ● | ● | | N | 3,10 | 0,15 | |
| | | FX 3.1R6-M1 | ● | ● | ● | ● | | R | 3,10 | 0,15 | 6 |
| | | FX 4.1L6-M1 | | ● | ● | ● | | L | 4,10 | 0,20 | 6 |
| | | FX 4.1N0.20-M1 | ● | ● | ● | ● | | N | 4,10 | 0,20 | |
| | | FX 4.1R6-M1 | | ● | ● | ● | | R | 4,10 | 0,20 | 6 |
| | | FX 5.1N0.25-M1 | ● | ● | ● | ● | | N | 5,10 | 0,25 | |
| | | FX 5.1R6-M1 | | | | ● | | R | 5,10 | 0,25 | 6 |
| | | FX 6.5N0.30-M1 | ● | ● | ● | | | N | 6,50 | 0,30 | |
| | | FX 8.2N0.40-M1 | ● | ● | ● | | | N | 8,20 | 0,40 | |
| | | FX 9.7N0.40-M1 | ● | ● | ● | | | N | 9,70 | 0,40 | |
| -R2 |  | FX 3.1N0.40-R2 | ● | ● | | ● | | N | 3,10 | 0,40 | |
| | | FX 4.1N0.50-R2 | ● | ● | | ● | | N | 4,10 | 0,50 | |
| -27P |  | FX 2.2N0.10-27P | | | | | ● | N | 2,20 | 0,10 | |
| | | FX 3.1N0.15-27P | | | | | ● | N | 3,10 | 0,15 | |
| | | FX 4.1N0.15-27P | | | | | ● | N | 4,10 | 0,20 | |
| | | | CTCP325 | CTP1340 | CTCP335 | CTPP345 | H216T | LNR | s | r | K |

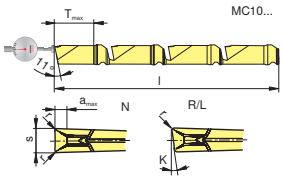



C47-C62 C63-C64 C239 C227 C186-C187 C195 C203

# System MaxiClick

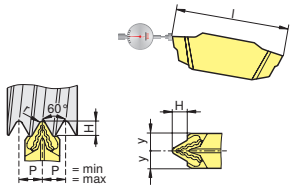
| | | CTCP325 | CTP1340 | CTCP335 | CTPP345 | H216T | LNR | s [mm] | l [mm] | r [mm] | $a_{max}$ [mm] | $T_{max}$ [mm] | K [°] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -F2 |  | | | | | | | | | | | | |
| | MC 05-5-1.00L07-F2 | | ● | | | | L | 1,00 | 59,2 | 0,10 | | 5,00 | 7 |
| | MC 05-5-1.00N0.10-F2 | | ● | | | | N | 1,00 | 59,2 | 0,10 | 0,5 | 5,00 | |
| | MC 05-5-1.00R07-F2 | | ● | | | | R | 1,00 | 59,2 | 0,10 | | 5,00 | 7 |
| | MC 05-5-1.50L07-F2 | | ● | | | | L | 1,50 | 59,2 | 0,10 | | 5,00 | 7 |
| | MC 05-5-1.50N0.10-F2 | | ● | | | | N | 1,50 | 59,2 | 0,10 | 0,7 | 5,00 | |
| | MC 05-5-1.50R07-F2 | | ● | | | | R | 1,50 | 59,2 | 0,10 | | 5,00 | 7 |
| | MC 10-4-1.50L07-F2 | | ● | | | | L | 1,50 | 59,2 | 0,10 | | 10,00 | 7 |
| | MC 10-4-1.50N0.10-F2 | | ● | | | | N | 1,50 | 59,2 | 0,10 | 1,0 | 10,00 | |
| | MC 10-4-1.50R07-F2 | | ● | | | | R | 1,50 | 59,2 | 0,10 | | 10,00 | 7 |
| | MC 10-4-2.00L07-F2 | | ● | | | | L | 2,00 | 59,2 | 0,10 | | 10,00 | 7 |
| | MC 10-4-2.00N0.10-F2 | | ● | | | | N | 2,00 | 59,2 | 0,10 | 1,2 | 10,00 | |
| | MC 10-4-2.00R07-F2 | | ● | | | | R | 2,00 | 59,2 | 0,10 | | 10,00 | 7 |
| | MC 10-4-2.50L07-F2 | | ● | | | | L | 2,50 | 59,2 | 0,10 | | 10,00 | 7 |
| | MC 10-4-2.50N0.10-F2 | | ● | | | | N | 2,50 | 59,2 | 0,10 | 1,5 | 10,00 | |
| | MC 10-4-2.50R07-F2 | | ● | | | | R | 2,50 | 59,2 | 0,10 | | 10,00 | 7 |
| -F3 |  | | | | | | | | | | | | |
| | MC 10-4-1.50L12-F3 | | ● | | | | L | 1,50 | 59,2 | 0,10 | | 10,00 | 12 |
| | MC 10-4-1.50R12-F3 | | ● | | | | R | 1,50 | 59,2 | 0,10 | | 10,00 | 12 |
| | MC 10-4-2.00L12-F3 | | ● | | | | L | 2,00 | 59,2 | 0,10 | | 10,00 | 12 |
| | MC 10-4-2.00R12-F3 | | ● | | | | R | 2,00 | 59,2 | 0,10 | | 10,00 | 12 |
| | MC 10-4-2.50L12-F3 | | ● | | | | L | 2,50 | 59,2 | 0,10 | | 10,00 | 12 |
| | MC 10-4-2.50R12-F3 | | ● | | | | R | 2,50 | 59,2 | 0,10 | | 10,00 | 12 |
| | | CTCP325 | CTP1340 | CTCP335 | CTPP345 | H216T | LNR | s | l | r | $a_{max}$ | $T_{max}$ | K |




C47-C62
C63-C64
C239
C227
MaxiClick
C196-C197

| | | | H216T | GM213 | GM240 | $P_{min}$ [mm] | $P_{max}$ [mm] | $P_{min}$ [G/Zoll] | $P_{max}$ [G/Zoll] | l [mm] | r [mm] | H [mm] | y [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -27P |  | TC16-1 EI-A60-27P | ● | | | 0,50 | 1,50 | 16 | 48 | 16,0 | 0,05 | 1,28 | 1,05 |
| | | TC16-2 EI-AG60-27P | ● | | | 0,50 | 3,00 | 8 | 48 | 16,0 | 0,05 | 2,58 | 2,15 |
| | | TC16-2 EI-G60-27P | ● | | | 1,75 | 3,00 | 8 | 14 | 16,0 | 0,15 | 2,49 | 2,15 |
| | | TC16-3 EI-N60-27P | ● | | | 3,50 | 5,00 | 5 | 7 | 16,0 | 0,25 | 4,11 | 3,10 |
| EN |  | TC16-1 EI-A60 | | ● | ● | 0,50 | 1,50 | 16 | 48 | 16,0 | 0,05 | 1,28 | 1,05 |
| | | TC16-2 EI-AG60 | | ● | ● | 0,50 | 3,00 | 8 | 48 | 16,0 | 0,05 | 2,58 | 2,15 |
| | | TC16-2 EI-G60 | | ● | ● | 1,75 | 3,00 | 8 | 14 | 16,0 | 0,15 | 2,49 | 2,15 |
| | | TC16-3 EI-N60 | | ● | ● | 3,50 | 5,00 | 5 | 7 | 16,0 | 0,25 | 4,11 | 3,10 |
| | | | H216T | GM213 | GM240 | $P_{min}$ | $P_{max}$ | $P_{min}$ | $P_{max}$ | l | r | H | y |





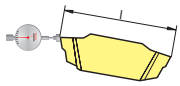
C135-C137 | C247-C259 | C227 | C218 | C219 | C220 | C221 | C222

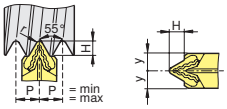
**Stechen** / Wendeplatten

# System TC

Teilprofil 55°

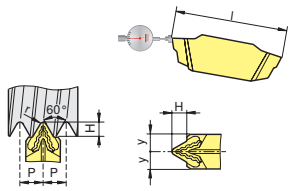
| | | H216T | GM213 | GM240 | $P_{min}$ [mm] | $P_{max}$ [mm] | $P_{min}$ [G/Zoll] | $P_{max}$ [G/Zoll] | l [mm] | r [mm] | H [mm] | y [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | | | | | | | | |
| M | | | ● | ● | | | | | | | | |
| K | | ● | ● | | | | | | | | | |
| N | | ● | | | | | | | | | | |
| S | | | | | | | | | | | | |
| H | | | | | | | | | | | | |
| EN |  | H216T | GM213 | GM240 | $P_{min}$ [mm] | $P_{max}$ [mm] | $P_{min}$ [G/Zoll] | $P_{max}$ [G/Zoll] | l [mm] | r [mm] | H [mm] | y [mm] |
| | TC16-1 EI-A55 | | ● | ● | 0,50 | 1,50 | 16 | 48 | 16,0 | 0,12 | 1,39 | 1,05 |
| | TC16-2 EI-AG55 | | ● | ● | 0,50 | 3,00 | 8 | 48 | 16,0 | 0,12 | 2,92 | 2,15 |
| | TC16-2 EI-G55 | | ● | ● | 1,75 | 3,00 | 8 | 14 | 16,0 | 0,23 | 2,78 | 2,15 |
| | TC16-3 EI-N55 | | ● | ● | 3,50 | 5,00 | 5 | 7 | 16,0 | 0,46 | 4,34 | 3,10 |




C135-C137 | C247-C259 | C227 | C218 | C219 | C219 | C221 | C222

| | | | H216T | GM213 | GM240 | $P_{min}$ [mm] | l [mm] | r [mm] | H [mm] | y [mm] |
|---|---|---|---|---|---|---|---|---|---|---|
| -27P |  | TC16-1 E 0,5 ISO-27P | ● | | | 0,50 | 16,0 | 0,05 | 0,33 | 1,05 |
| | | TC16-1 E 0,75 ISO-27P | ● | | | 0,75 | 16,0 | 0,08 | 0,49 | 1,05 |
| | | TC16-1 E 1,0 ISO-27P | ● | | | 1,00 | 16,0 | 0,12 | 0,64 | 1,05 |
| | | TC16-1 E 1,25 ISO-27P | ● | | | 1,25 | 16,0 | 0,15 | 0,80 | 1,05 |
| | | TC16-1 E 1,5 ISO-27P | ● | | | 1,50 | 16,0 | 0,18 | 0,96 | 1,05 |
| | | TC16-1 I 1,0 ISO-27P | ● | | | 1,00 | 16,0 | 0,05 | 0,60 | 1,05 |
| | | TC16-1 I 1,5 ISO-27P | ● | | | 1,50 | 16,0 | 0,08 | 0,89 | 1,05 |
| | | TC16-2 E 1,75 ISO-27P | ● | | | 1,75 | 16,0 | 0,22 | 1,11 | 2,15 |
| | | TC16-2 E 2,0 ISO-27P | ● | | | 2,00 | 16,0 | 0,25 | 1,27 | 2,15 |
| | | TC16-2 E 2,5 ISO-27P | ● | | | 2,50 | 16,0 | 0,31 | 1,58 | 2,15 |
| | | TC16-2 E 3,0 ISO-27P | ● | | | 3,00 | 16,0 | 0,38 | 1,90 | 2,15 |
| | | TC16-2 I 2,0 ISO-27P | ● | | | 2,00 | 16,0 | 0,12 | 1,18 | 2,15 |
| | | TC16-2 I 3,0 ISO-27P | ● | | | 3,00 | 16,0 | 0,19 | 1,76 | 2,15 |
| EN |  | TC16-1 E 0,5 ISO | | ● | ● | 0,50 | 16,0 | 0,05 | 0,33 | 1,05 |
| | | TC16-1 E 0,75 ISO | | ● | ● | 0,75 | 16,0 | 0,08 | 0,49 | 1,05 |
| | | TC16-1 E 1,0 ISO | | ● | ● | 1,00 | 16,0 | 0,12 | 0,64 | 1,05 |
| | | TC16-1 E 1,25 ISO | | ● | ● | 1,25 | 16,0 | 0,15 | 0,80 | 1,05 |
| | | TC16-1 E 1,5 ISO | | ● | ● | 1,50 | 16,0 | 0,18 | 0,96 | 1,05 |
| | | TC16-1 I 0,5 ISO | | ● | ● | 0,50 | 16,0 | 0,02 | 0,30 | 1,05 |
| | | TC16-1 I 0,75 ISO | | ● | ● | 0,75 | 16,0 | 0,04 | 0,45 | 1,05 |
| | | TC16-1 I 1,0 ISO | | ● | ● | 1,00 | 16,0 | 0,05 | 0,60 | 1,05 |
| | | TC16-1 I 1,25 ISO | | ● | ● | 1,25 | 16,0 | 0,07 | 0,75 | 1,05 |
| | | TC16-1 I 1,5 ISO | | ● | ● | 1,50 | 16,0 | 0,08 | 0,89 | 1,05 |
| | | TC16-2 E 1,75 ISO | | ● | ● | 1,75 | 16,0 | 0,22 | 1,11 | 2,15 |
| | | TC16-2 E 2,0 ISO | | ● | ● | 2,00 | 16,0 | 0,25 | 1,27 | 2,15 |
| | | TC16-2 E 2,5 ISO | | ● | ● | 2,50 | 16,0 | 0,31 | 1,58 | 2,15 |
| | | TC16-2 E 3,0 ISO | | ● | ● | 3,00 | 16,0 | 0,38 | 1,90 | 2,15 |
| | | TC16-2 I 1,75 ISO | | ● | ● | 1,75 | 16,0 | 0,11 | 1,03 | 2,15 |
| | | TC16-2 I 2,0 ISO | | ● | ● | 2,00 | 16,0 | 0,12 | 1,18 | 2,15 |
| | | TC16-2 I 2,5 ISO | | ● | ● | 2,50 | 16,0 | 0,16 | 1,47 | 2,15 |
| | | TC16-2 I 3,0 ISO | | ● | ● | 3,00 | 16,0 | 0,19 | 1,76 | 2,15 |
| | | TC16-3 E 3,5 ISO | | ● | ● | 3,50 | 16,0 | 0,44 | 2,22 | 3,10 |
| | | TC16-3 E 4,0 ISO | | ● | ● | 4,00 | 16,0 | 0,50 | 2,53 | 3,10 |
| | | TC16-3 E 4,5 ISO | | ● | ● | 4,50 | 16,0 | 0,56 | 2,85 | 3,10 |
| | | TC16-3 E 5,0 ISO | | ● | ● | 5,00 | 16,0 | 0,63 | 3,16 | 3,10 |
| | | TC16-3 I 3,5 ISO | | ● | ● | 3,50 | 16,0 | 0,22 | 2,06 | 3,10 |
| | | TC16-3 I 4,0 ISO | | ● | ● | 4,00 | 16,0 | 0,25 | 2,35 | 3,10 |
| | | TC16-3 I 4,5 ISO | | ● | ● | 4,50 | 16,0 | 0,28 | 2,64 | 3,10 |
| | | TC16-3 I 5,0 ISO | | ● | ● | 5,00 | 16,0 | 0,31 | 2,94 | 3,10 |
| | | | H216T | GM213 | GM240 | $P_{min}$ | l | r | H | y |

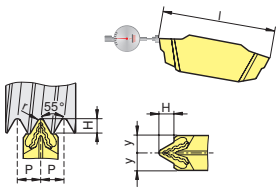



C135-C137 | C247-C259 | C227 | TC C218 | TC C219 | TC C219 | TC C221 | TC-F C222

# System TC

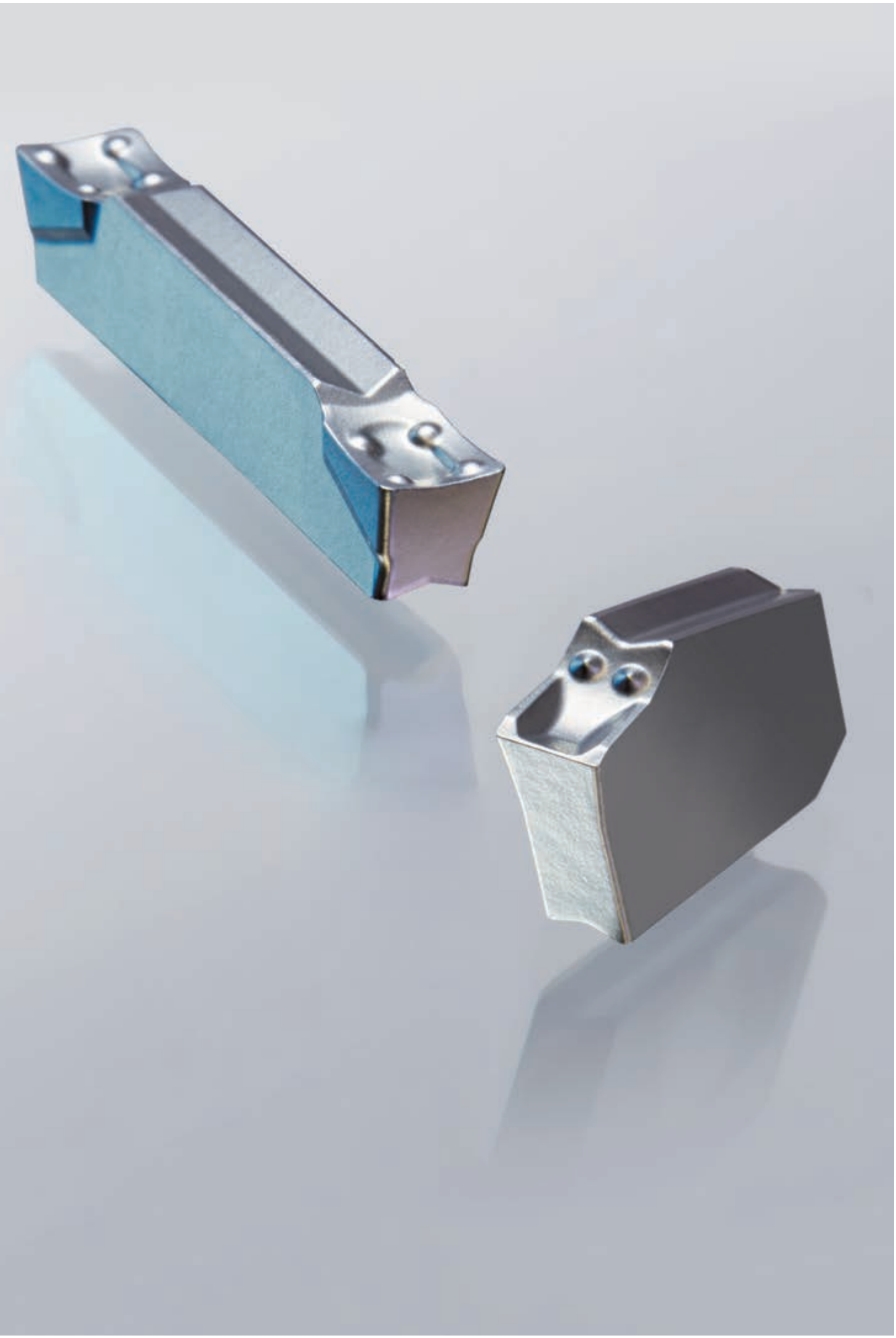
Vollprofil 55°

| | | | H216T | GM213 | GM240 | $P_{min}$ [G/Zoll] | l [mm] | r [mm] | H [mm] | y [mm] |
|---|---|---|---|---|---|---|---|---|---|---|
| -27P |  | TC16-1 EI 19 W-27P | ● | | | 19 | 16,0 | 0,17 | 0,89 | 1,05 |
| | | TC16-2 EI 11 W-27P | ● | | | 11 | 16,0 | 0,29 | 1,54 | 2,15 |
| | | TC16-2 EI 14 W-27P | ● | | | 14 | 16,0 | 0,23 | 1,21 | 2,15 |
| EN |  | TC16-1 EI 16 W | | ● | ● | 16 | 16,0 | 0,20 | 1,06 | 1,05 |
| | | TC16-1 EI 18 W | | ● | ● | 18 | 16,0 | 0,18 | 0,94 | 1,05 |
| | | TC16-1 EI 19 W | | ● | ● | 19 | 16,0 | 0,17 | 0,89 | 1,05 |
| | | TC16-1 EI 20 W | | ● | ● | 20 | 16,0 | 0,16 | 0,84 | 1,05 |
| | | TC16-1 EI 24 W | | ● | ● | 24 | 16,0 | 0,13 | 0,70 | 1,05 |
| | | TC16-1 EI 26 W | | ● | ● | 26 | 16,0 | 0,12 | 0,65 | 1,05 |
| | | TC16-1 EI 28 W | | ● | ● | 28 | 16,0 | 0,12 | 0,60 | 1,05 |
| | | TC16-2 EI 10 W | | ● | ● | 10 | 16,0 | 0,32 | 1,69 | 2,15 |
| | | TC16-2 EI 11 W | | ● | ● | 11 | 16,0 | 0,29 | 1,54 | 2,15 |
| | | TC16-2 EI 12 W | | ● | ● | 12 | 16,0 | 0,27 | 1,41 | 2,15 |
| | | TC16-2 EI 14 W | | ● | ● | 14 | 16,0 | 0,23 | 1,21 | 2,15 |
| | | TC16-2 EI 8 W | | ● | ● | 8 | 16,0 | 0,40 | 2,11 | 2,15 |
| | | TC16-2 EI 9 W | | ● | ● | 9 | 16,0 | 0,36 | 1,88 | 2,15 |
| | | TC16-3 EI 5 W | | ● | ● | 5 | 16,0 | 0,64 | 3,38 | 3,10 |
| | | TC16-3 EI 6 W | | ● | | 6 | 16,0 | 0,54 | 2,82 | 3,10 |
| | | TC16-3 EI 7 W | | ● | ● | 7 | 16,0 | 0,46 | 2,41 | 3,10 |
| | | | H216T | GM213 | GM240 | $P_{min}$ | l | r | H | y |






C135-C137 | C247-C259 | C227 | C218 | C219 | C219 | C221 | C222



# Übersicht

Werkzeuge



## Grundhalter


| | | |
|---|---|---|
|  | MSS 0° | C168 |
|  | MSS 90° | C169 |
|  | MSS 45° | C170 |
|  | HSK-T 0° | C171 |
|  | HSK-T 90° | C172 |
|  | UTS 0° | C173 |
|  | UTS 90° | C174 |
|  | Adapter | C175 |

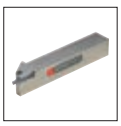

## Module Außen


| | | |
|---|---|---|
|  | GX24 axial | C181 |
|  | GX axial lang | C182 |
|  | AX | C183 |
|  | SX | C184 |
|  | LX | C185 |
|  | FX | C186 |
|  | FX lang | C187 |


## Module Außen


| | | |
|---|---|---|
|  | GX09 | C176 |
|  | GX16 | C177 |
|  | GX24 | C178 |
|  | GX09 | C179 |
|  | GX16 | C180 |

### Monohalter


| | | |
|---|---|---|
|  | GX09 | C188 |
|  | GX16 | C189 |
|  | GX24 | C190 |
|  | AX | C192-C193 |
|  | SX | C194 |
|  | FX | C195 |
|  | MaxiClick | C196-C197 |


### Spannblock


| | | |
|---|---|---|
|  | SBN...K | C204 |
|  | SBN...KS | C205 |
|  | HSK-T...KH | C206 |


### Bohrstange


| | | |
|---|---|---|
|  | 1.5 x D | C207 |
|  | 2.5 x D | C208 |
|  | UTS 2.0 x D | C209 |


### Klinge


| | | |
|---|---|---|
|  | GX24 | C198 |
|  | SX | C199 |
|  | SX verstärkt | C200-C201 |
|  | LX | C202 |
|  | FX | C203 |


### Module Innen


| | | |
|---|---|---|
|  | GX09 | C210 |
|  | GX16 | C211 |
|  | GX24 | C212 |
|  | GX09 | C213 |
|  | GX16 | C214 |

# Übersicht

Werkzeuge

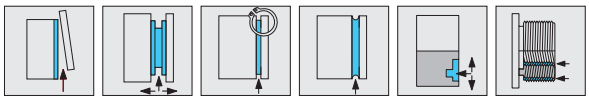


## Monobohrstange


| | | |
|---|---|---|
|  | GX09 | C215 |
|  | GX16 | C216 |
|  | GX24 | C217 |


## Gewinde - Monowerkzeuge und Module


| | | |
|---|---|---|
|  | TC16 | C218 |
|  | TC-Mono | C219 |
|  | TC16 | C220 |
|  | TC-Mono | C221 |
|  | TC Fräser | C222 |





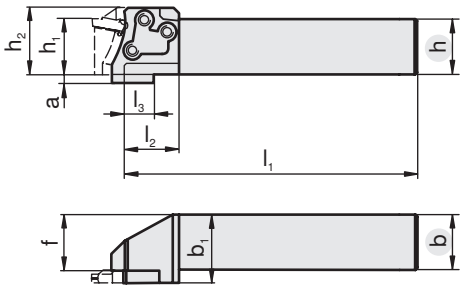
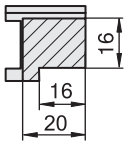



Bild zeigt Rechtsausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | h [mm] | b [mm] | $h_1$ [mm] | $h_2$ [mm] | $b_1$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | a [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | MSS-E12R00-1212E | R | 12 | 12 | 12 | 14,5 | 15,25 | 70 | 12 | | | 11,75 | MSS-E12R.. | E01 |
| 12 | MSS-E12L00-1212E | L | 12 | 12 | 12 | 14,5 | 15,25 | 70 | 12 | | | 11,75 | MSS-E12L.. | E01 |
| 16 | MSS-E16R00-1616G | R | 16 | 16 | 16 | 19,5 | 19,25 | 90 | 16 | | | 15,75 | MSS-E16R.. | E02 |
| 16 | MSS-E16L00-1616G | L | 16 | 16 | 16 | 19,5 | 19,25 | 90 | 16 | | | 15,75 | MSS-E16L.. | E02 |
| 20 | MSS-E20R00-1620G | R | 16 | 20 | 16 | 24,0 | 24,25 | 90 | 20 | | | 20,15 | MSS-E20R.. | E03 |
| 20 | MSS-E20R00-2020J | R | 20 | 20 | 20 | 24,0 | 24,25 | 110 | 20 | | | 20,15 | MSS-E20R.. | E03 |
| 20 | MSS-E20L00-1620G | L | 16 | 20 | 16 | 24,0 | 24,25 | 90 | 20 | | | 20,15 | MSS-E20L.. | E03 |
| 20 | MSS-E20L00-2020J | L | 20 | 20 | 20 | 24,0 | 24,25 | 110 | 20 | | | 20,15 | MSS-E20L.. | E03 |
| 25 | MSS-E25R00-2525L | R | 25 | 25 | 25 | 30,0 | 31,00 | 140 | 25 | | | 25,50 | MSS-E25R.. | E04 |
| 25 | MSS-E25L00-2525L | L | 25 | 25 | 25 | 30,0 | 31,00 | 140 | 25 | | | 25,50 | MSS-E25L.. | E04 |
| 32 | MSS-E32R00-3232Q | R | 32 | 32 | 32 | 38,8 | 38,00 | 180 | 32 | 16,0 | 3,00 | 32,50 | MSS-E32R.. | E05 |
| 32 | MSS-E32R00-3225N | R | 32 | 25 | 32 | 38,0 | 31,00 | 160 | 32 | | | 25,50 | MSS-E32R.. | E05 |
| 32 | MSS-E32L00-3232Q | L | 32 | 32 | 32 | 38,8 | 38,00 | 180 | 32 | 16,0 | 3,00 | 32,50 | MSS-E32L.. | E05 |
| 32 | MSS-E32L00-3225N | L | 32 | 25 | 32 | 38,0 | 31,00 | 160 | 32 | | | 25,50 | MSS-E32L.. | E05 |



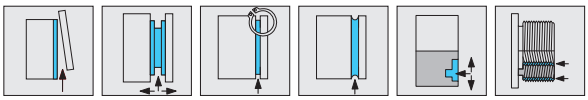

gilt nur für:
**MSS-E20R/L00-1620G**

| | | | |
|---|---|---|---|
| E01 | 228617 | 8095010200 | |
| E02 | 228620 | | 220983 |
| E03 | 195068 | | 220983 |
| E04 | 195069 | | 220985 |
| E05 | 195070 | | 200317 |

C269 | GX C176-C178 | GX C179-C180 | GX-A C181-C182 | AX C183 | SX C184 | LX C185 | FX C186-C187 | TC C218

# MSS Schaft

90°





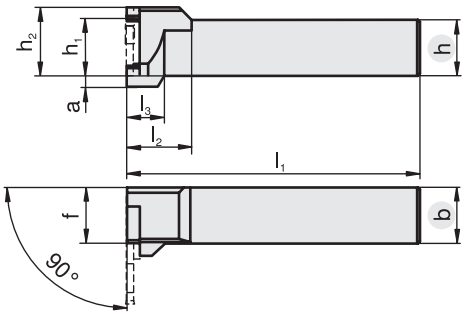



Bild zeigt Rechtsausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | h [mm] | b [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | a [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | MSS-E20R90-2020J | R | 20 | 20 | 20 | 24,0 | 110 | 20 | | | 20,00 | MSS-E20L.. | E01 |
| 20 | MSS-E20L90-2020J | L | 20 | 20 | 20 | 24,0 | 110 | 20 | | | 20,00 | MSS-E20R.. | E01 |
| 25 | MSS-E25R90-2525L | R | 25 | 25 | 25 | 30,0 | 140 | 28 | | | 25,00 | MSS-E25L.. | E02 |
| 25 | MSS-E25L90-2525L | L | 25 | 25 | 25 | 30,0 | 140 | 28 | | | 25,00 | MSS-E25R.. | E02 |
| 32 | MSS-E32R90-3232R | R | 32 | 32 | 32 | 38,8 | 200 | 34 | 19,2 | 3,00 | 32,00 | MSS-E32L.. | E03 |
| 32 | MSS-E32R90-3225N | R | 32 | 25 | 32 | 38,0 | 160 | 34 | | | 32,00 | MSS-E32L.. | E03 |
| 32 | MSS-E32L90-3225N | L | 32 | 25 | 32 | 38,0 | 160 | 34 | | | 32,00 | MSS-E32R.. | E03 |
| 32 | MSS-E32L90-3232R | L | 32 | 32 | 32 | 38,8 | 200 | 34 | 19,2 | 3,00 | 32,00 | MSS-E32R.. | E03 |

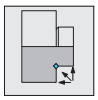
Rechter Schaft - linkes Modul
Linker Schaft - rechtes Modul

| | | |
|---|---|---|
| E01 | 195068 | 220983 |
| E02 | 195069 | 220985 |
| E03 | 195070 | 200317 |

C269 | GX C176-C178 | GX C179-C180 | GX-A C181-C182 | AX C183 | SX C184 | LX C185 | FX C186-C187 | TC C218

# MSS Schaft

45°





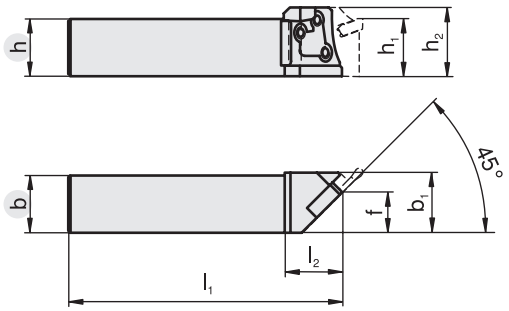



Bild zeigt Linksausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | h [mm] | b [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | a [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | MSS-E20R45-2020J | R | 20 | 20 | 20 | 24,0 | 110 | 20 | | | 14,50 | MSS-E20L.. | E01 |
| 20 | MSS-E20L45-2020J | L | 20 | 20 | 20 | 24,0 | 110 | 20 | | | 14,50 | MSS-E20R.. | E01 |
| 25 | MSS-E25R45-2525L | R | 25 | 25 | 25 | 30,0 | 140 | 25 | | | 18,00 | MSS-E25L.. | E02 |
| 25 | MSS-E25L45-2525L | L | 25 | 25 | 25 | 30,0 | 140 | 25 | | | 18,00 | MSS-E25R.. | E02 |

Rechter Schaft - linkes Modul
Linker Schaft - rechtes Modul

| | | | |
|---|---|---|---|
| E01 | 219981 | 195068 | 220983 |
| E02 | 219982 | 195069 | 220985 |

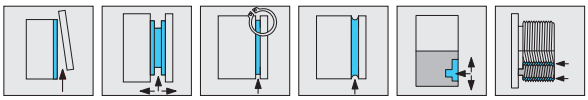
C269

GX

C179

# MSS Grundhalter

HSK-T 0°





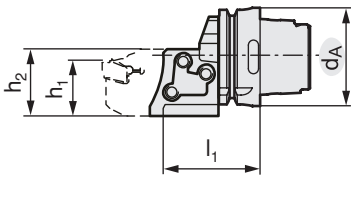



Bild zeigt Rechtsausführung

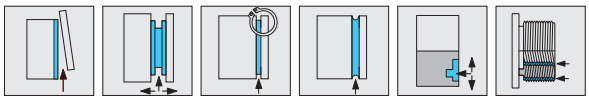
| Bgr. [mm] | Type, Bezeichnung | L N R | $d_A$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | $b_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 25 | HSK-T63-MSS-E25R00 | R | 63 | 25 | 31,3 | 67 | 44,20 | 38,70 | MSS-E25R.. | E01 |
| 25 | HSK-T100-MSS-E25R00 | R | 100 | 31,2 | 49,0 | 100 | 54,50 | 49,00 | MSS-E25R.. | E01 |
| 25 | HSK-T63-MSS-E25L00 | L | 63 | 25 | 31,3 | 67 | 44,20 | 38,70 | MSS-E25L.. | E01 |
| 25 | HSK-T100-MSS-E25L00 | L | 100 | 31,2 | 49,0 | 100 | 54,50 | 49,00 | MSS-E25L.. | E01 |
| 32 | HSK-T63-MSS-E32R00 | R | 63 | 35 | 41,0 | 74 | 44,20 | 38,70 | MSS-E32R.. | E02 |
| 32 | HSK-T100-MSS-E32R00 | R | 100 | 43,8 | 49,8 | 77 | 54,20 | 48,70 | MSS-E32R.. | E02 |
| 32 | HSK-T63-MSS-E32L00 | L | 63 | 35 | 41,0 | 74 | 44,20 | 38,70 | MSS-E32L.. | E02 |
| 32 | HSK-T100-MSS-E32L00 | L | 100 | 43,8 | 49,8 | 77 | 54,20 | 48,70 | MSS-E32L.. | E02 |

| | | | |
|---|---|---|---|
| E01 | 11848510 | 195069 | 220985 |
| E02 | 11848510 | 195070 | 200317 |

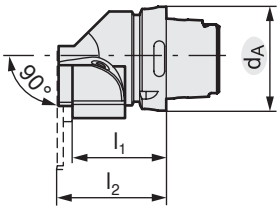
C269 | GX C176-C178 | GX C179-C180 | GX-A C181-C182 | AX C183 | SX C184 | LX C185 | FX C186-C187 | TC C218

# MSS Grundhalter

HSK-T 90°







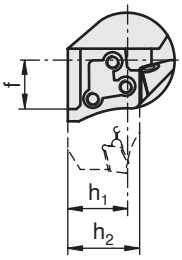




Bild zeigt Rechtsausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | $d_A$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 32 | HSK-T63-MSS-E32R90 | R | 63 | 34,8 | 40,9 | 63,7 | 69,2 | 31,50 | MSS-E32L.. | E01 |
| 32 | HSK-T100-MSS-E32R90 | R | 100 | 43,8 | 49,8 | 73,7 | 79,2 | 50,00 | MSS-E32L.. | E01 |
| 32 | HSK-T63-MSS-E32L90 | L | 63 | 34,8 | 40,9 | 63,7 | 69,2 | 31,50 | MSS-E32R.. | E01 |
| 32 | HSK-T100-MSS-E32L90 | L | 100 | 43,8 | 49,8 | 73,7 | 79,2 | 50,00 | MSS-E32R.. | E01 |

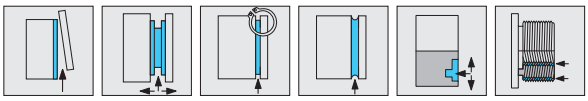
Rechter Schaft - linkes Modul
Linker Schaft - rechtes Modul

| | | | |
|---|---|---|---|
| E01 | 11848510 | 195070 | 200317 |

C269 | C176-C178 (GX) | C179-C180 (GX) | C181-C182 (GX-A) | C183 (AX) | C184 (SX) | C185 (LX) | C186-C187 (FX) | C218 (TC)

# MSS Grundhalter

UTS 0°





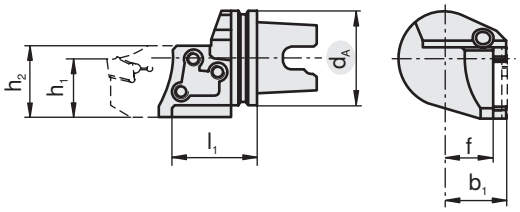



Bild zeigt Rechtsausführung

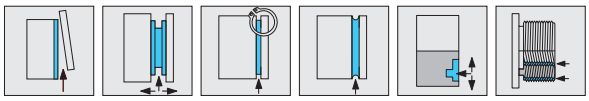
| Bgr. [mm] | Type, Bezeichnung | L N R | $d_A$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | $b_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 25 | UT40-MSS-E25R00 | R | 40 | 25 | 30,0 | 36 | 26,40 | 20,50 | MSS-E25R.. | E01 |
| 25 | UT50-MSS-E25R00 | R | 50 | 25 | 30,0 | 42 | 31,40 | 25,50 | MSS-E25R.. | E02 |
| 25 | UT63-MSS-E25R00 | R | 63 | 25 | 30,0 | 50 | 37,40 | 31,50 | MSS-E25R.. | E03 |
| 25 | UT40-MSS-E25L00 | L | 40 | 25 | 30,0 | 36 | 26,40 | 20,50 | MSS-E25L.. | E01 |
| 25 | UT50-MSS-E25L00 | L | 50 | 25 | 30,0 | 42 | 31,40 | 25,50 | MSS-E25L.. | E02 |
| 25 | UT63-MSS-E25L00 | L | 63 | 25 | 30,0 | 50 | 37,40 | 31,50 | MSS-E25L.. | E03 |
| 32 | UT50-MSS-E32R00 | R | 50 | 35 | 41,8 | 49 | 31,40 | 25,50 | MSS-E32R.. | E04 |
| 32 | UT63-MSS-E32R00 | R | 63 | 35 | 41,8 | 50 | 37,40 | 31,50 | MSS-E32R.. | E05 |
| 32 | UT63-MSS-E32L00 | L | 63 | 35 | 41,8 | 50 | 37,40 | 31,50 | MSS-E32L.. | E05 |

| | | | | |
|---|---|---|---|---|
| E01 | 201850 | 195069 | 194263 | 220985 |
| E02 | 201850 | 195069 | 225429 | 220985 |
| E03 | 231176 | 195069 | 225430 | 220985 |
| E04 | 201850 | 195070 | 225429 | 200317 |
| E05 | 231176 | 195070 | 225430 | 200317 |

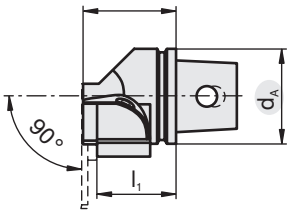
C269 | GX C176-C178 | GX C179-C180 | GX-A C181-C182 | AX C183 | LX C185 | FX C186-C187 | TC C218

# MSS Grundhalter

UTS 90°







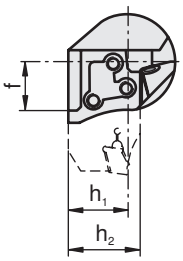
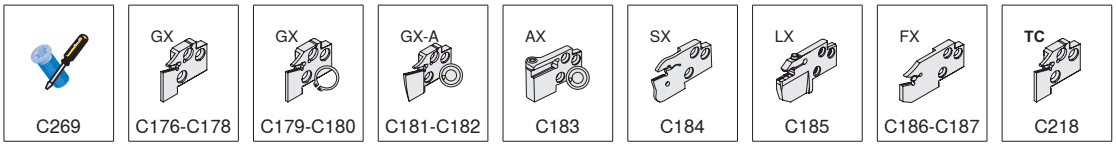




Bild zeigt Rechtsausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | $d_A$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 25 | UT40-MSS-E25R90 | R | 40 | 25 | 30,0 | 33,5 | 39 | 20,00 | MSS-E25L.. | E01 |
| 25 | UT50-MSS-E25R90 | R | 50 | 25 | 30,0 | 43,5 | 49 | 25,00 | MSS-E25L.. | E02 |
| 25 | UT40-MSS-E25L90 | L | 40 | 25 | 30,0 | 33,5 | 39 | 20,00 | MSS-E25R.. | E01 |
| 25 | UT50-MSS-E25L90 | L | 50 | 25 | 30,0 | 43,5 | 49 | 25,00 | MSS-E25R.. | E02 |

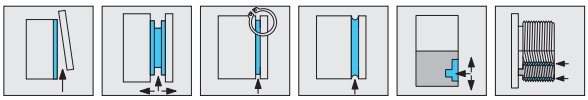
Rechter Schaft - linkes Modul
Linker Schaft - rechtes Modul

| | | | | |
|---|---|---|---|---|
| E01 | 201850 | 195069 | 194263 | 220985 |
| E02 | 201850 | 195069 | 225429 | 220985 |

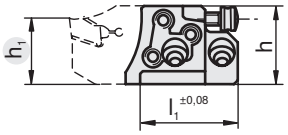


# MSS Grundhalter

Adapter







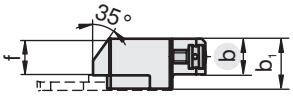



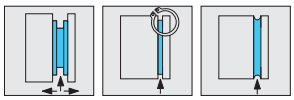

Bild zeigt Rechtsausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | $h_1$ [mm] | b [mm] | h [mm] | $b_1$ [mm] | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 20 | MSS-E20R00-AD | R | 20 | 10,7 | 24 | 15,3 | 30 | 11,2 | MSS-E20R.. | E01 |
| 20 | MSS-E20L00-AD | L | 20 | 10,7 | 24 | 15,3 | 30 | 11,2 | MSS-E20L.. | E01 |
| 25 | MSS-E25R00-AD | R | 25 | 12,6 | 30 | 18,6 | 37 | 13,1 | MSS-E25R.. | E02 |
| 25 | MSS-E25L00-AD | L | 25 | 12,6 | 30 | 18,6 | 37 | 13,1 | MSS-E25L.. | E02 |
| 32 | MSS-E32R00-AD | R | 32 | 14,6 | 38 | 20,6 | 46 | 15,1 | MSS-E32R.. | E03 |
| 32 | MSS-E32L00-AD | L | 32 | 14,6 | 38 | 20,6 | 46 | 15,1 | MSS-E32L.. | E03 |

Weitere Einbaumaße siehe C267-C268

| | | | |
|---|---|---|---|
| E01 | 195068 | 229131 | 220983 |
| E02 | 195069 | 284518 | 220985 |
| E03 | 195070 | 229126 | 200317 |

C269 | GX C176 | GX C179 | GX-A C181-C182 | AX C183 | SX C184 | LX C185 | FX C186-C187 | TC C218





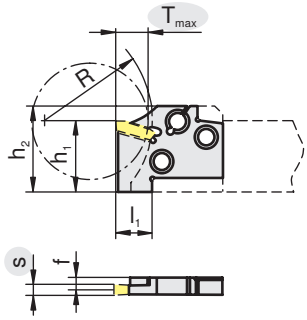



Bild zeigt Rechtsausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | f [mm] | R [mm] |  |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | MSS-E12R07-GX09-1 | R | 2,00 | 2,75 | 7 | 12 | 14,5 | 8 | 3,15 | 18 | GX09-1.. |
| 12 | MSS-E12R07-GX09-2 | R | 2,76 | 3,75 | 7 | 12 | 14,5 | 8 | 3,15 | 18 | GX09-2.. |
| 12 | MSS-E12L07-GX09-1 | L | 2,00 | 2,75 | 7 | 12 | 14,5 | 8 | 3,15 | 18 | GX09-1.. |
| 12 | MSS-E12L07-GX09-2 | L | 2,76 | 3,75 | 7 | 12 | 14,5 | 8 | 3,15 | 18 | GX09-2.. |
| 16 | MSS-E16R07-GX09-1 | R | 2,00 | 2,75 | 7 | 16 | 19,5 | 8 | 3,15 | 24 | GX09-1.. |
| 16 | MSS-E16R07-GX09-2 | R | 2,76 | 3,75 | 7 | 16 | 19,5 | 8 | 3,15 | 24 | GX09-2.. |
| 16 | MSS-E16L07-GX09-1 | L | 2,00 | 2,75 | 7 | 16 | 19,5 | 8 | 3,15 | 24 | GX09-1.. |
| 16 | MSS-E16L07-GX09-2 | L | 2,76 | 3,75 | 7 | 16 | 19,5 | 8 | 3,15 | 24 | GX09-2.. |


GX-E  C151-C152

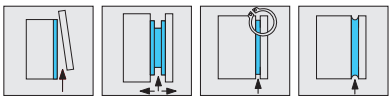
GX-S  C153

GX-R  C154

 C168

# MSS-Module – Außen

Einstechen und Drehen – GX16





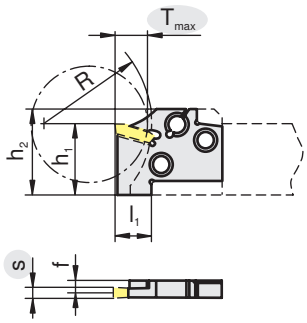
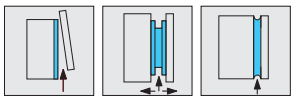



Bild zeigt Rechtsausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | f [mm] | R [mm] | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | MSS-E20R12-GX16-1 | R | 2,00 | 2,75 | 12 | 20 | 24 | 13 | 3,75 | 30 | GX16-1.. |
| 20 | MSS-E20R12-GX16-2 | R | 2,76 | 3,75 | 12 | 20 | 24 | 13 | 3,40 | 30 | GX16-2.. |
| 20 | MSS-E20R12-GX16-3 | R | 3,76 | 5,00 | 12 | 20 | 24 | 13 | 2,93 | 30 | GX16-3.. |
| 20 | MSS-E20L12-GX16-1 | L | 2,00 | 2,75 | 12 | 20 | 24 | 13 | 3,75 | 30 | GX16-1.. |
| 20 | MSS-E20L12-GX16-2 | L | 2,76 | 3,75 | 12 | 20 | 24 | 13 | 3,40 | 30 | GX16-2.. |
| 20 | MSS-E20L12-GX16-3 | L | 3,76 | 5,00 | 12 | 20 | 24 | 13 | 2,93 | 30 | GX16-3.. |
| 25 | MSS-E25R12-GX16-1 | R | 2,00 | 2,75 | 12 | 25 | 30 | 13 | 5,25 | 37,5 | GX16-1.. |
| 25 | MSS-E25R12-GX16-2 | R | 2,76 | 3,75 | 12 | 25 | 30 | 13 | 4,90 | 37,5 | GX16-2.. |
| 25 | MSS-E25R12-GX16-3 | R | 3,76 | 5,00 | 12 | 25 | 30 | 13 | 4,43 | 37,5 | GX16-3.. |
| 25 | MSS-E25R12-GX16-4 | R | 5,01 | 6,50 | 12 | 25 | 30 | 13 | 3,80 | 37,5 | GX16-4.. |
| 25 | MSS-E25L12-GX16-1 | L | 2,00 | 2,75 | 12 | 25 | 30 | 13 | 5,25 | 37,5 | GX16-1.. |
| 25 | MSS-E25L12-GX16-2 | L | 2,76 | 3,75 | 12 | 25 | 30 | 13 | 4,90 | 37,5 | GX16-2.. |
| 25 | MSS-E25L12-GX16-3 | L | 3,76 | 5,00 | 12 | 25 | 30 | 13 | 4,43 | 37,5 | GX16-3.. |
| 25 | MSS-E25L12-GX16-4 | L | 5,01 | 6,50 | 12 | 25 | 30 | 13 | 3,80 | 37,5 | GX16-4.. |
| 32 | MSS-E32R12-GX16-2 | R | 2,76 | 3,75 | 12 | 32 | 38 | 13 | 4,90 | 48 | GX16-2.. |
| 32 | MSS-E32R12-GX16-3 | R | 3,76 | 5,00 | 12 | 32 | 38 | 13 | 4,43 | 48 | GX16-3.. |
| 32 | MSS-E32R12-GX16-4 | R | 5,01 | 6,50 | 12 | 32 | 38 | 13 | 3,80 | 48 | GX16-4.. |
| 32 | MSS-E32L12-GX16-2 | L | 2,76 | 3,75 | 12 | 32 | 38 | 13 | 4,90 | 48 | GX16-2.. |
| 32 | MSS-E32L12-GX16-3 | L | 3,76 | 5,00 | 12 | 32 | 38 | 13 | 4,43 | 48 | GX16-3.. |
| 32 | MSS-E32L12-GX16-4 | L | 5,01 | 6,50 | 12 | 32 | 38 | 13 | 3,80 | 48 | GX16-4.. |

GX-E C151 | GX-S C153 | GX-R C154 | C168 | C169 | C175 | C171+C173 | C172+C174





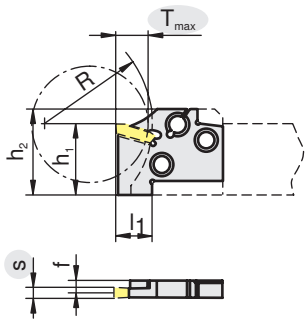



Bild zeigt Rechtsausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | f [mm] | R [mm] | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | MSS-E20R21-GX24-1 | R | 2,00 | 2,75 | 21 | 20 | 24 | 22 | 3,85 | 30 | GX24-1.. |
| 20 | MSS-E20R21-GX24-2 | R | 2,76 | 3,75 | 21 | 20 | 24 | 22 | 3,40 | 30 | GX24-2.. |
| 20 | MSS-E20R21-GX24-3 | R | 3,76 | 5,00 | 21 | 20 | 24 | 22 | 3,00 | 30 | GX24-3.. |
| 20 | MSS-E20L21-GX24-1 | L | 2,00 | 2,75 | 21 | 20 | 24 | 22 | 3,85 | 30 | GX24-1.. |
| 20 | MSS-E20L21-GX24-2 | L | 2,76 | 3,75 | 21 | 20 | 24 | 22 | 3,40 | 30 | GX24-2.. |
| 20 | MSS-E20L21-GX24-3 | L | 3,76 | 5,00 | 21 | 20 | 24 | 22 | 3,00 | 30 | GX24-3.. |
| 25 | MSS-E25R21-GX24-1 | R | 2,00 | 2,75 | 21 | 25 | 30 | 22 | 5,35 | 37,5 | GX24-1.. |
| 25 | MSS-E25R21-GX24-2 | R | 2,76 | 3,75 | 21 | 25 | 30 | 22 | 4,90 | 37,5 | GX24-2.. |
| 25 | MSS-E25R21-GX24-3 | R | 3,76 | 5,00 | 21 | 25 | 30 | 22 | 4,43 | 37,5 | GX24-3.. |
| 25 | MSS-E25R21-GX24-4 | R | 5,01 | 6,50 | 21 | 25 | 30 | 22 | 3,80 | 37,5 | GX24-4.. |
| 25 | MSS-E25R21-GX24-5 | R | 8,00 | 8,00 | 21 | 25 | 30 | 23 | 2,95 | 37,5 | GX24-5.. |
| 25 | MSS-E25L21-GX24-1 | L | 2,00 | 2,75 | 21 | 25 | 30 | 22 | 5,35 | 37,5 | GX24-1.. |
| 25 | MSS-E25L21-GX24-2 | L | 2,76 | 3,75 | 21 | 25 | 30 | 22 | 4,90 | 37,5 | GX24-2.. |
| 25 | MSS-E25L21-GX24-3 | L | 3,76 | 5,00 | 21 | 25 | 30 | 22 | 4,43 | 37,5 | GX24-3.. |
| 25 | MSS-E25L21-GX24-4 | L | 5,01 | 6,50 | 21 | 25 | 30 | 22 | 3,80 | 37,5 | GX24-4.. |
| 25 | MSS-E25L21-GX24-5 | L | 8,00 | 8,00 | 21 | 25 | 30 | 23 | 2,95 | 37,5 | GX24-5.. |
| 32 | MSS-E32R21-GX24-2 | R | 2,76 | 3,75 | 21 | 32 | 38 | 22 | 4,95 | 48 | GX24-2.. |
| 32 | MSS-E32R21-GX24-3 | R | 3,76 | 5,00 | 21 | 32 | 38 | 22 | 4,43 | 48 | GX24-3.. |
| 32 | MSS-E32R21-GX24-4 | R | 5,01 | 6,50 | 21 | 32 | 38 | 22 | 3,80 | 48 | GX24-4.. |
| 32 | MSS-E32L21-GX24-2 | L | 2,76 | 3,75 | 21 | 32 | 38 | 22 | 4,95 | 48 | GX24-2.. |
| 32 | MSS-E32L21-GX24-3 | L | 3,76 | 5,00 | 21 | 32 | 38 | 22 | 4,43 | 48 | GX24-3.. |
| 32 | MSS-E32L21-GX24-4 | L | 5,01 | 6,50 | 21 | 32 | 38 | 22 | 3,80 | 48 | GX24-4.. |


GX-E  C151-C152

GX-R  C154

 C168

 C169

 C175

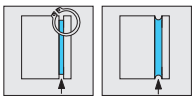
 C171+C173

 C172+C174

Stechen / Werkzeuge

# MSS-Module – Außen

Sicherungsring- und Radieneinstiche – GX09





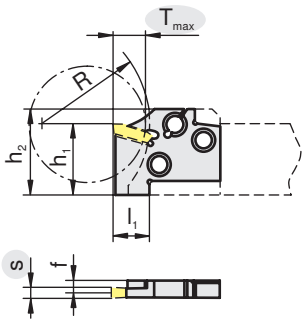



Bild zeigt Rechtsausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | f [mm] | R [mm] |  |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | MSS-E12R02-GX09-1 | R | 0,60 | 1,95 | 2 | 12 | 14,5 | 8 | 3,15 | 18 | GX09-1..R/L |
| 12 | MSS-E12L02-GX09-1 | L | 0,60 | 1,95 | 2 | 12 | 14,5 | 8 | 3,15 | 18 | GX09-1..R/L |
| 16 | MSS-E16R02-GX09-1 | R | 0,60 | 1,95 | 2 | 16 | 19,5 | 8 | 3,15 | 24 | GX09-1..R/L |
| 16 | MSS-E16L02-GX09-1 | L | 0,60 | 1,95 | 2 | 16 | 19,5 | 8 | 3,15 | 24 | GX09-1..R/L |

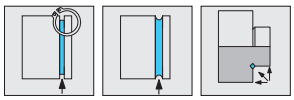
GX-S

C153

GX-R

C154


C168





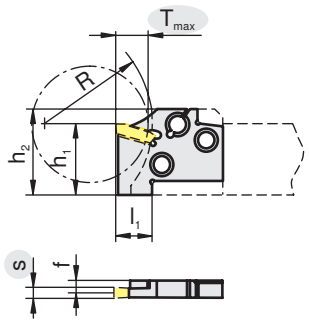


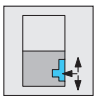

Bild zeigt Rechtsausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | f [mm] | R [mm] | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | MSS-E20R03-GX16-2 | R | 0,60 | 2,75 | 3 | 20 | 24 | 13 | 3,40 | 30 | GX16-2..R/L |
| 20 | MSS-E20L03-GX16-2 | L | 0,60 | 2,75 | 3 | 20 | 24 | 13 | 3,40 | 30 | GX16-2..R/L |
| 25 | MSS-E25R03-GX16-2 | R | 0,60 | 2,75 | 3 | 25 | 30 | 13 | 4,90 | 37,5 | GX16-2..R/L |
| 25 | MSS-E25L03-GX16-2 | L | 0,60 | 2,75 | 3 | 25 | 30 | 13 | 4,90 | 37,5 | GX16-2..R/L |
| 32 | MSS-E32R03-GX16-2 | R | 0,60 | 2,75 | 3 | 32 | 38 | 13 | 4,90 | 48 | GX16-2..R/L |
| 32 | MSS-E32L03-GX16-2 | L | 0,60 | 2,75 | 3 | 32 | 38 | 13 | 4,90 | 48 | GX16-2..R/L |


GX-S C153 | GX-R C154 | C168 | C170 | C169 | C175 | C171+C173 | C172+C174

# MSS-Module – Außen

Axialeinstiche – GX24





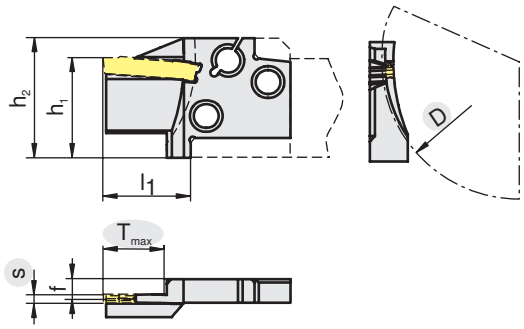
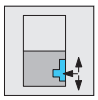



Bild zeigt Rechtsausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | $D_{min}$ [mm] | $D_{max}$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | f [mm] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | MSS-E20R14-GX24-2 A50-70 | R | 2,76 | 3,75 | 14 | 50 | 70 | 20 | 24 | 22 | 3,40 | GX24-2.. |
| 20 | MSS-E20R14-GX24-2 A70-100 | R | 2,76 | 3,75 | 14 | 70 | 100 | 20 | 24 | 22 | 3,40 | GX24-2.. |
| 20 | MSS-E20R14-GX24-2 A100-150 | R | 2,76 | 3,75 | 14 | 100 | 150 | 20 | 24 | 22 | 3,40 | GX24-2.. |
| 20 | MSS-E20L14-GX24-2 A50-70 | L | 2,76 | 3,75 | 14 | 50 | 70 | 20 | 24 | 22 | 3,40 | GX24-2.. |
| 20 | MSS-E20L14-GX24-2 A70-100 | L | 2,76 | 3,75 | 14 | 70 | 100 | 20 | 24 | 22 | 3,40 | GX24-2.. |
| 20 | MSS-E20L14-GX24-2 A100-150 | L | 2,76 | 3,75 | 14 | 100 | 150 | 20 | 24 | 22 | 3,40 | GX24-2.. |
| 25 | MSS-E25R15-GX24-2 A50-70 | R | 2,76 | 3,75 | 15 | 50 | 70 | 25 | 30 | 22 | 4,90 | GX24-2.. |
| 25 | MSS-E25R15-GX24-2 A100-150 | R | 2,76 | 3,75 | 15 | 100 | 150 | 25 | 30 | 22 | 4,90 | GX24-2.. |
| 25 | MSS-E25R15-GX24-2 A70-100 | R | 2,76 | 3,75 | 15 | 70 | 100 | 25 | 30 | 22 | 4,90 | GX24-2.. |
| 25 | MSS-E25R15-GX24-3 A100-150 | R | 3,76 | 5,00 | 15 | 100 | 150 | 25 | 30 | 22 | 4,43 | GX24-3.. |
| 25 | MSS-E25R15-GX24-3 A70-100 | R | 3,76 | 5,00 | 15 | 70 | 100 | 25 | 30 | 22 | 4,43 | GX24-3.. |
| 25 | MSS-E25R15-GX24-3 A150-300 | R | 3,76 | 5,00 | 15 | 150 | 300 | 25 | 30 | 22 | 4,43 | GX24-3.. |
| 25 | MSS-E25R15-GX24-3 A50-70 | R | 3,76 | 5,00 | 15 | 50 | 70 | 25 | 30 | 22 | 4,43 | GX24-3.. |
| 25 | MSS-E25R15-GX24-4 A50-70 | R | 5,01 | 6,50 | 15 | 50 | 70 | 25 | 30 | 22 | 3,80 | GX24-4.. |
| 25 | MSS-E25R15-GX24-4 A150-300 | R | 5,01 | 6,50 | 15 | 150 | 300 | 25 | 30 | 22 | 3,80 | GX24-4.. |
| 25 | MSS-E25R15-GX24-4 A100-150 | R | 5,01 | 6,50 | 15 | 100 | 150 | 25 | 30 | 22 | 3,80 | GX24-4.. |
| 25 | MSS-E25R15-GX24-4 A70-100 | R | 5,01 | 6,50 | 15 | 70 | 100 | 25 | 30 | 22 | 3,80 | GX24-4.. |
| 25 | MSS-E25L15-GX24-2 A50-70 | L | 2,76 | 3,75 | 15 | 50 | 70 | 25 | 30 | 22 | 4,90 | GX24-2.. |
| 25 | MSS-E25L15-GX24-2 A100-150 | L | 2,76 | 3,75 | 15 | 100 | 150 | 25 | 30 | 22 | 4,90 | GX24-2.. |
| 25 | MSS-E25L15-GX24-2 A70-100 | L | 2,76 | 3,75 | 15 | 70 | 100 | 25 | 30 | 22 | 4,90 | GX24-2.. |
| 25 | MSS-E25L15-GX24-3 A100-150 | L | 3,76 | 5,00 | 15 | 100 | 150 | 25 | 30 | 22 | 4,43 | GX24-3.. |
| 25 | MSS-E25L15-GX24-3 A70-100 | L | 3,76 | 5,00 | 15 | 70 | 100 | 25 | 30 | 22 | 4,43 | GX24-3.. |
| 25 | MSS-E25L15-GX24-3 A150-300 | L | 3,76 | 5,00 | 15 | 150 | 300 | 25 | 30 | 22 | 4,43 | GX24-3.. |
| 25 | MSS-E25L15-GX24-3 A50-70 | L | 3,76 | 5,00 | 15 | 50 | 70 | 25 | 30 | 22 | 4,43 | GX24-3.. |
| 25 | MSS-E25L15-GX24-4 A100-150 | L | 5,01 | 6,50 | 15 | 100 | 150 | 25 | 30 | 22 | 3,80 | GX24-4.. |
| 25 | MSS-E25L15-GX24-4 A70-100 | L | 5,01 | 6,50 | 15 | 70 | 100 | 25 | 30 | 22 | 3,80 | GX24-4.. |
| 25 | MSS-E25L15-GX24-4 A50-70 | L | 5,01 | 6,50 | 15 | 50 | 70 | 25 | 30 | 22 | 3,80 | GX24-4.. |
| 25 | MSS-E25L15-GX24-4 A150-300 | L | 5,01 | 6,50 | 15 | 150 | 300 | 25 | 30 | 22 | 3,80 | GX24-4.. |
| 32 | MSS-E32R15-GX24-3 A70-100 | R | 3,76 | 5,00 | 15 | 70 | 100 | 32 | 38 | 22 | 4,43 | GX24-3.. |
| 32 | MSS-E32R15-GX24-3 A150-300 | R | 3,76 | 5,00 | 15 | 150 | 300 | 32 | 38 | 22 | 4,43 | GX24-3.. |
| 32 | MSS-E32R15-GX24-3 A100-150 | R | 3,76 | 5,00 | 15 | 100 | 150 | 32 | 38 | 22 | 4,43 | GX24-3.. |
| 32 | MSS-E32R15-GX24-4 A70-100 | R | 5,01 | 6,50 | 15 | 70 | 100 | 32 | 38 | 22 | 3,80 | GX24-4.. |
| 32 | MSS-E32R15-GX24-4 A150-300 | R | 5,01 | 6,50 | 15 | 150 | 300 | 32 | 38 | 22 | 3,80 | GX24-4.. |
| 32 | MSS-E32R15-GX24-4 A100-150 | R | 5,01 | 6,50 | 15 | 100 | 150 | 32 | 38 | 22 | 4,43 | GX24-4.. |
| 32 | MSS-E32R15-GX24-4 A300-900 | R | 5,01 | 6,50 | 15 | 300 | 900 | 32 | 38 | 22 | 3,80 | GX24-4.. |
| 32 | MSS-E32L15-GX24-3 A150-300 | L | 3,76 | 5,00 | 15 | 150 | 300 | 32 | 38 | 22 | 4,43 | GX24-3.. |
| 32 | MSS-E32L15-GX24-3 A70-100 | L | 3,76 | 5,00 | 15 | 70 | 100 | 32 | 38 | 22 | 4,43 | GX24-3.. |
| 32 | MSS-E32L15-GX24-3 A100-150 | L | 3,76 | 5,00 | 15 | 100 | 150 | 32 | 38 | 22 | 4,43 | GX24-3.. |
| 32 | MSS-E32L15-GX24-4 A70-100 | L | 5,01 | 6,50 | 15 | 70 | 100 | 32 | 38 | 22 | 3,80 | GX24-4.. |
| 32 | MSS-E32L15-GX24-4 A300-900 | L | 5,01 | 6,50 | 15 | 300 | 900 | 32 | 38 | 22 | 3,80 | GX24-4.. |
| 32 | MSS-E32L15-GX24-4 A100-150 | L | 5,01 | 6,50 | 15 | 100 | 150 | 32 | 38 | 22 | 3,80 | GX24-4.. |
| 32 | MSS-E32L15-GX24-4 A150-300 | L | 5,01 | 6,50 | 15 | 150 | 300 | 32 | 38 | 22 | 3,80 | GX24-4.. |

GX-E C151-C152 | GX-R C154 | C168 | C169 | C175 | C171+C173 | C172+C174





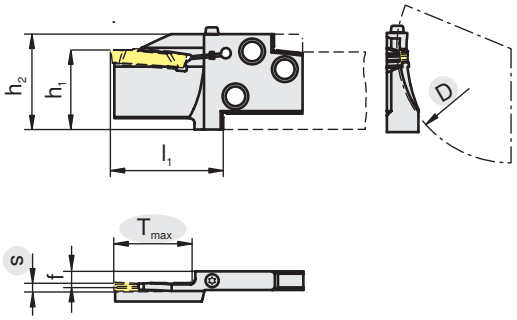



Bild zeigt Rechtsausführung

| Bgr. [mm] | Type, Bezeichnung | L NR | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | $D_{min}$ [mm] | $D_{max}$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | MSS-E25R21-GX24-3 AS100-150 | R | 3,76 | 5,00 | 21 | 100 | 150 | 25 | 30 | 35 | 4,43 | GX24-3.. | E01 |
| 25 | MSS-E25R21-GX24-3 AS70-100 | R | 3,76 | 5,00 | 21 | 70 | 100 | 25 | 30 | 35 | 4,43 | GX24-3.. | E01 |
| 25 | MSS-E25R21-GX24-3 AS50-70 | R | 3,76 | 5,00 | 21 | 50 | 70 | 25 | 30 | 35 | 4,43 | GX24-3.. | E01 |
| 25 | MSS-E25R21-GX24-3 AS150-300 | R | 3,76 | 5,00 | 21 | 150 | 300 | 25 | 30 | 35 | 4,43 | GX24-3.. | E01 |
| 25 | MSS-E25R25-GX24-4 AS100-150 | R | 5,01 | 6,50 | 25 | 100 | 150 | 25 | 30 | 35 | 3,80 | GX24-4.. | E01 |
| 25 | MSS-E25R25-GX24-4 AS70-100 | R | 5,01 | 6,50 | 25 | 70 | 100 | 25 | 30 | 35 | 3,80 | GX24-4.. | E01 |
| 25 | MSS-E25R25-GX24-4 AS50-70 | R | 5,01 | 6,50 | 25 | 50 | 70 | 25 | 30 | 35 | 3,80 | GX24-4.. | E01 |
| 25 | MSS-E25R25-GX24-4 AS150-300 | R | 5,01 | 6,50 | 25 | 150 | 300 | 25 | 30 | 35 | 3,80 | GX24-4.. | E01 |
| 25 | MSS-E25L21-GX24-3 AS50-70 | L | 3,76 | 5,00 | 21 | 50 | 70 | 25 | 30 | 35 | 4,43 | GX24-3.. | E01 |
| 25 | MSS-E25L21-GX24-3 AS70-100 | L | 3,76 | 5,00 | 21 | 70 | 100 | 25 | 30 | 35 | 4,43 | GX24-3.. | E01 |
| 25 | MSS-E25L21-GX24-3 AS100-150 | L | 3,76 | 5,00 | 21 | 100 | 150 | 25 | 30 | 35 | 4,43 | GX24-3.. | E01 |
| 25 | MSS-E25L21-GX24-3 AS150-300 | L | 3,76 | 5,00 | 21 | 150 | 300 | 25 | 30 | 35 | 4,43 | GX24-3.. | E01 |
| 25 | MSS-E25L25-GX24-4 AS50-70 | L | 5,01 | 6,50 | 25 | 50 | 70 | 25 | 30 | 35 | 3,80 | GX24-4.. | E01 |
| 25 | MSS-E25L25-GX24-4 AS70-100 | L | 5,01 | 6,50 | 25 | 70 | 100 | 25 | 30 | 35 | 3,80 | GX24-4.. | E01 |
| 25 | MSS-E25L25-GX24-4 AS100-150 | L | 5,01 | 6,50 | 25 | 100 | 150 | 25 | 30 | 35 | 3,80 | GX24-4.. | E01 |
| 25 | MSS-E25L25-GX24-4 AS150-300 | L | 5,01 | 6,50 | 25 | 150 | 300 | 25 | 30 | 35 | 3,80 | GX24-4.. | E01 |

Axialmodule in Ausführung „lang” können beidseitig gespannt werden (Kontraversion).
Siehe Seiten C241-C244

| | | | |
|---|---|---|---|
| E01 | 11081190 | 11149570 | 220983 |

C269 | GX-E C151-C152 | GX-R C154 | C168 | C169 | C175 | C171+C173 | C172+C174

# MSS-Module – Außen

Axialeinstiche – AX





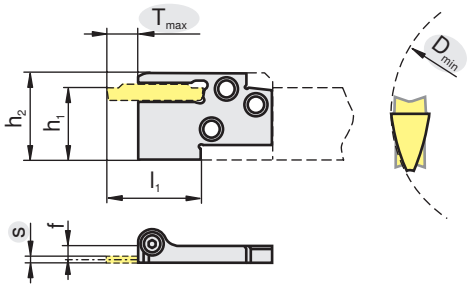
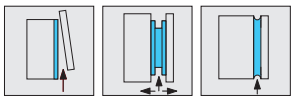



Bild zeigt Rechtsausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | s [mm] | $D_{min}$ [mm] | $T_{max}$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | MSS-E16R05-AX05 | R | 3,0 | 10 | 5 | 16 | 20,5 | 24 | 2,50 | AX05.. | E01 |
| 16 | MSS-E16L05-AX05 | L | 3,0 | 10 | 5 | 16 | 20,5 | 24 | 2,50 | AX05.. | E01 |
| 20 | MSS-E20R10-AX10 | R | 3,0 | 20 | 10 | 20 | 25 | 33 | 3,10 | AX10.. | E02 |
| 20 | MSS-E20R15-AX15 | R | 3,0 | 30 | 15 | 20 | 25 | 44 | 3,10 | AX15.. | E02 |
| 20 | MSS-E20R05-AX05 | R | 3,0 | 10 | 5 | 20 | 25 | 28 | 3,10 | AX05.. | E02 |
| 20 | MSS-E20L15-AX15 | L | 3,0 | 30 | 15 | 20 | 25 | 44 | 3,10 | AX15.. | E02 |
| 20 | MSS-E20L10-AX10 | L | 3,0 | 20 | 10 | 20 | 25 | 33 | 3,10 | AX10.. | E02 |
| 20 | MSS-E20L05-AX05 | L | 3,0 | 10 | 5 | 20 | 25 | 28 | 3,10 | AX05.. | E02 |
| 25 | MSS-E25R10-AX10 | R | 3,0 | 20 | 10 | 25 | 30 | 32,5 | 4,60 | AX10.. | E03 |
| 25 | MSS-E25R05-AX05 | R | 3,0 | 10 | 5 | 25 | 30 | 27,5 | 4,60 | AX05.. | E03 |
| 25 | MSS-E25R15-AX15 | R | 3,0 | 30 | 15 | 25 | 30 | 43,5 | 4,60 | AX15.. | E03 |
| 25 | MSS-E25L15-AX15 | L | 3,0 | 30 | 15 | 25 | 30 | 43,5 | 4,60 | AX15.. | E03 |
| 25 | MSS-E25L10-AX10 | L | 3,0 | 20 | 10 | 25 | 30 | 32,5 | 4,60 | AX10.. | E03 |
| 25 | MSS-E25L05-AX05 | L | 3,0 | 10 | 5 | 25 | 30 | 27,5 | 4,60 | AX05.. | E03 |

| | | |
|---|---|---|
| E01 | 228620 | 220983 |
| E02 | 195068 | 220983 |
| E03 | 195069 | 220985 |

C269 | AX C155 | C168 | C169 | C175 | C171+C173





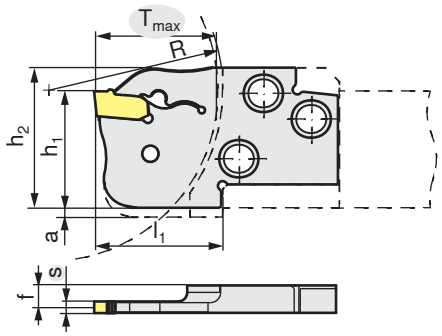



Bild zeigt Rechtsausführung

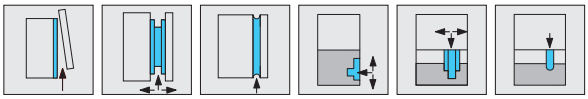
| Bgr. [mm] | Type, Bezeichnung | L N R | s [mm] | $T_{max}$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | f [mm] | a [mm] | R [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | MSS-E20R20-SX2 | R | 2,0 | 20 | 20 | 24 | 22 | 3,57 | 3,00 | 30 | SX..2 | E01 |
| 20 | MSS-E20R20-SX3 | R | 3,0 | 20 | 20 | 24 | 22 | 3,20 | 3,00 | 30 | SX..3 | E01 |
| 20 | MSS-E20L20-SX2 | L | 2,0 | 20 | 20 | 24 | 22 | 3,57 | 3,00 | 30 | SX..2 | E01 |
| 20 | MSS-E20L20-SX3 | L | 3,0 | 20 | 20 | 24 | 22 | 3,20 | 3,00 | 30 | SX..3 | E01 |
| 25 | MSS-E25R20-SX2 | R | 2,0 | 20 | 25 | 30 | 22 | 5,07 | | 37,5 | SX..2 | E01 |
| 25 | MSS-E25R25-SX3 | R | 3,0 | 25 | 25 | 30 | 27 | 4,70 | | 37,5 | SX..3 | E01 |
| 25 | MSS-E25R35-SX3 | R | 3,0 | 35 | 25 | 30 | 37 | 4,70 | | 37,5 | SX..3 | E01 |
| 25 | MSS-E25R25-SX4 | R | 4,0 | 25 | 25 | 30 | 27 | 4,30 | | 37,5 | SX..4 | E02 |
| 25 | MSS-E25R35-SX4 | R | 4,0 | 35 | 25 | 30 | 37 | 4,30 | | 37,5 | SX..4 | E02 |
| 25 | MSS-E25L20-SX2 | L | 2,0 | 20 | 25 | 30 | 22 | 5,07 | | 37,5 | SX..2 | E01 |
| 25 | MSS-E25L25-SX3 | L | 3,0 | 25 | 25 | 30 | 27 | 4,70 | | 37,5 | SX..3 | E01 |
| 25 | MSS-E25L35-SX3 | L | 3,0 | 35 | 25 | 30 | 37 | 4,70 | | 37,5 | SX..3 | E01 |
| 25 | MSS-E25L25-SX4 | L | 4,0 | 25 | 25 | 30 | 27 | 4,30 | | 37,5 | SX..4 | E02 |
| 25 | MSS-E25L35-SX4 | L | 4,0 | 35 | 25 | 30 | 37 | 4,30 | | 37,5 | SX..4 | E02 |
| 32 | MSS-E32R35-SX3 | R | 3,0 | 35 | 32 | 38 | 37 | 4,70 | | 48 | SX..3 | E01 |
| 32 | MSS-E32R35-SX4 | R | 4,0 | 35 | 32 | 38 | 37 | 4,30 | | 48 | SX..4 | E02 |
| 32 | MSS-E32L35-SX3 | L | 3,0 | 35 | 32 | 38 | 37 | 4,70 | | 48 | SX..3 | E01 |
| 32 | MSS-E32L35-SX4 | L | 4,0 | 35 | 32 | 38 | 37 | 4,30 | | 48 | SX..4 | E02 |

| | |
|---|---|
| E01 | 11366865 |
| E02 | 11366866 |

C269 | SX-E C156 | SX-R C156 | C168 | C169 | C175 | C171+C173 | C172+C174

# MSS-Module – Außen

Einstechen und Drehen – LX





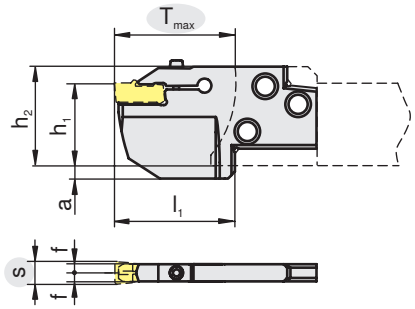
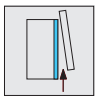



Bild zeigt neutrale Ausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | f [mm] | a [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | MSS-E32N25-LX | N | 8,00 | 10,00 | 25 | 32 | 38,75 | 27 | 3,40 | 5,25 | LX.. | E01 |
| 32 | MSS-E32N32-LX | N | 8,00 | 10,00 | 32 | 32 | 38,75 | 34 | 3,40 | 5,25 | LX.. | E01 |
| 32 | MSS-E32N45-LX | N | 8,00 | 10,00 | 45 | 32 | 38,75 | 47 | 3,40 | 5,25 | LX.. | E01 |

| | | | |
|---|---|---|---|
| E01 | 11007006 | 11149571 | 220985 |

C269 | LX-E C157 | LX-R C157 | C168 | C169 | C175 | C175 | C171+C173 | C172+C174





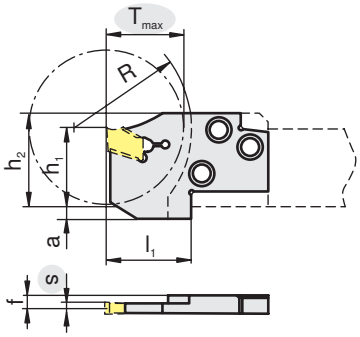



Bild zeigt Rechtsausführung

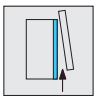
| Bgr. [mm] | Type, Bezeichnung | L NR | s [mm] | $T_{max}$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | f [mm] | a [mm] | R [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | MSS-E20R20-FX2.2 | R | 2,2 | 20 | 20 | 24 | 22 | 3,58 | 3,00 | 30 | FX 2.2.. | E01 |
| 20 | MSS-E20R20-FX3.1 | R | 3,1 | 20 | 20 | 24 | 22 | 3,20 | 3,00 | 30 | FX 3.1.. | E02 |
| 20 | MSS-E20R20-FX4.1 | R | 4,1 | 20 | 20 | 24 | 22 | 2,80 | 3,00 | 30 | FX 4.1.. | E02 |
| 20 | MSS-E20L20-FX2.2 | L | 2,2 | 20 | 20 | 24 | 22 | 3,58 | 3,00 | 30 | FX 2.2.. | E01 |
| 20 | MSS-E20L20-FX3.1 | L | 3,1 | 20 | 20 | 24 | 22 | 3,20 | 3,00 | 30 | FX 3.1.. | E02 |
| 20 | MSS-E20L20-FX4.1 | L | 4,1 | 20 | 20 | 24 | 22 | 2,80 | 3,00 | 30 | FX 4.1.. | E02 |
| 25 | MSS-E25R20-FX2.2 | R | 2,2 | 20 | 25 | 30 | 22 | 5,08 | | 37,5 | FX 2.2.. | E01 |
| 25 | MSS-E25R25-FX3.1 | R | 3,1 | 25 | 25 | 30 | 27 | 4,70 | | 37,5 | FX 3.1.. | E02 |
| 25 | MSS-E25R25-FX4.1 | R | 4,1 | 25 | 25 | 30 | 27 | 4,30 | | 37,5 | FX 4.1.. | E02 |
| 25 | MSS-E25R25-FX5.1 | R | 5,1 | 25 | 25 | 30 | 27 | 3,90 | | 37,5 | FX 5.1.. | E02 |
| 25 | MSS-E25R25-FX6.5 | R | 6,5 | 25 | 25 | 30 | 27 | 3,30 | | 37,5 | FX 6.5.. | E02 |
| 25 | MSS-E25L20-FX2.2 | L | 2,2 | 20 | 25 | 30 | 22 | 5,08 | | 37,5 | FX 2.2.. | E01 |
| 25 | MSS-E25L25-FX3.1 | L | 3,1 | 25 | 25 | 30 | 27 | 4,70 | | 37,5 | FX 3.1.. | E02 |
| 25 | MSS-E25L25-FX4.1 | L | 4,1 | 25 | 25 | 30 | 27 | 4,30 | | 37,5 | FX 4.1.. | E02 |
| 25 | MSS-E25L25-FX5.1 | L | 5,1 | 25 | 25 | 30 | 27 | 3,90 | | 37,5 | FX 5.1.. | E02 |
| 25 | MSS-E25L25-FX6.5 | L | 6,5 | 25 | 25 | 30 | 27 | 3,30 | | 37,5 | FX 6.5.. | E02 |
| 32 | MSS-E32R32-FX3.1 | R | 3,1 | 32 | 32 | 38 | 34 | 4,70 | | 48 | FX 3.1.. | E02 |
| 32 | MSS-E32R32-FX4.1 | R | 4,1 | 32 | 32 | 38 | 34 | 4,30 | | 48 | FX 4.1.. | E02 |
| 32 | MSS-E32R32-FX5.1 | R | 5,1 | 32 | 32 | 38 | 34 | 3,90 | | 48 | FX 5.1.. | E02 |
| 32 | MSS-E32R32-FX6.5 | R | 6,5 | 32 | 32 | 38 | 34 | 3,30 | | 48 | FX 6.5.. | E02 |
| 32 | MSS-E32L32-FX3.1 | L | 3,1 | 32 | 32 | 38 | 34 | 4,70 | | 48 | FX 3.1.. | E02 |
| 32 | MSS-E32L32-FX4.1 | L | 4,1 | 32 | 32 | 38 | 34 | 4,30 | | 48 | FX 4.1.. | E02 |
| 32 | MSS-E32L32-FX5.1 | L | 5,1 | 32 | 32 | 38 | 34 | 3,90 | | 48 | FX 5.1.. | E02 |
| 32 | MSS-E32L32-FX6.5 | L | 6,5 | 32 | 32 | 38 | 34 | 3,30 | | 48 | FX 6.5.. | E02 |

| | |
|---|---|
| E01 | 154461 |
| E02 | 154463 |

C269 C158 C168 C169 C175 C171+C173 C172+C174

# MSS-Module – Außen

Abstechen – FX lang





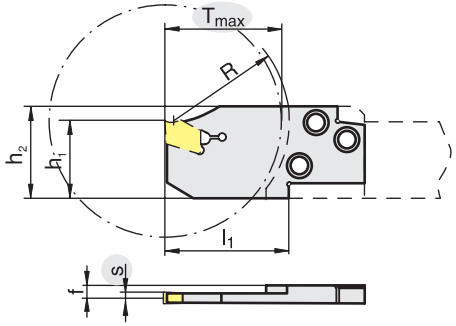
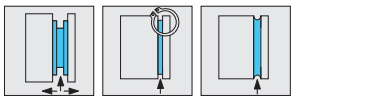



Bild zeigt Rechtsausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | s [mm] | $T_{max}$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | f [mm] | R [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | MSS-E25R35-FX3.1 | R | 3,1 | 35 | 25 | 30 | 37 | 4,70 | 37,5 | FX 3.1.. | E01 |
| 25 | MSS-E25R35-FX4.1 | R | 4,1 | 35 | 25 | 30 | 37 | 4,30 | 37,5 | FX 4.1.. | E01 |
| 25 | MSS-E25R35-FX5.1 | R | 5,1 | 35 | 25 | 30 | 37 | 3,90 | 37,5 | FX 5.1.. | E01 |
| 25 | MSS-E25R35-FX6.5 | R | 6,5 | 35 | 25 | 30 | 37 | 3,30 | 37,5 | FX 6.5.. | E01 |
| 25 | MSS-E25L35-FX3.1 | L | 3,1 | 35 | 25 | 30 | 37 | 4,70 | 37,5 | FX 3.1.. | E01 |
| 25 | MSS-E25L35-FX4.1 | L | 4,1 | 35 | 25 | 30 | 37 | 4,30 | 37,5 | FX 4.1.. | E01 |
| 25 | MSS-E25L35-FX5.1 | L | 5,1 | 35 | 25 | 30 | 37 | 3,90 | 37,5 | FX 5.1.. | E01 |
| 25 | MSS-E25L35-FX6.5 | L | 6,5 | 35 | 25 | 30 | 37 | 3,30 | 37,5 | FX 6.5.. | E01 |
| 32 | MSS-E32R45-FX3.1 | R | 3,1 | 45 | 32 | 38 | 47 | 4,70 | 48 | FX 3.1.. | E01 |
| 32 | MSS-E32R45-FX4.1 | R | 4,1 | 45 | 32 | 38 | 47 | 4,30 | 48 | FX 4.1.. | E01 |
| 32 | MSS-E32R45-FX5.1 | R | 5,1 | 45 | 32 | 38 | 47 | 3,90 | 48 | FX 5.1.. | E01 |
| 32 | MSS-E32R45-FX6.5 | R | 6,5 | 45 | 32 | 38 | 47 | 3,30 | 48 | FX 6.5.. | E01 |
| 32 | MSS-E32L45-FX3.1 | L | 3,1 | 45 | 32 | 38 | 47 | 4,70 | 48 | FX 3.1.. | E01 |
| 32 | MSS-E32L45-FX4.1 | L | 4,1 | 45 | 32 | 38 | 47 | 4,30 | 48 | FX 4.1.. | E01 |
| 32 | MSS-E32L45-FX5.1 | L | 5,1 | 45 | 32 | 38 | 47 | 3,90 | 48 | FX 5.1.. | E01 |
| 32 | MSS-E32L45-FX6.5 | L | 6,5 | 45 | 32 | 38 | 47 | 3,30 | 48 | FX 6.5.. | E01 |

| | |
|---|---|
| E01 | 154463 |

C269 | FX C158 | C168 | C169 | C175 | C171+C173 | C172+C174





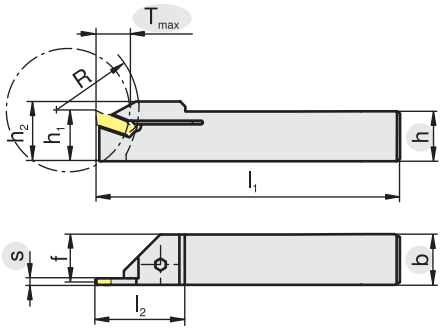
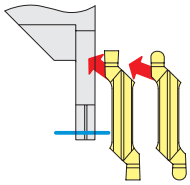



Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L NR | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | $h_2$ [mm] | b [mm] | $h_1$ [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | R [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | E10R00-1010M-GX09 | R | 2,00 | 3,75 | 7 | 12,0 | 10 | 10 | 150 | 18 | 9,35 | 15 | GX09.. | E01 |
| 10 | E10L00-1010M-GX09 | L | 2,00 | 3,75 | 7 | 12,0 | 10 | 10 | 150 | 18 | 9,35 | 15 | GX09.. | E01 |



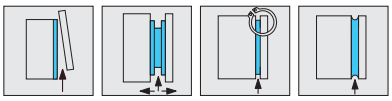
**Achtung:**
Beim Einsatz von „R“ oder „L“-Platten (GX-S und GX-R) muss das Werkzeug an der Stirnfläche nachgearbeitet werden, damit es freigeht.

| | | |
|---|---|---|
| E01 | 219981 | 220983 |


C269 | GX-E C151-C152 | GX-S C153 | GX-R C154

# Monohalter

GX16





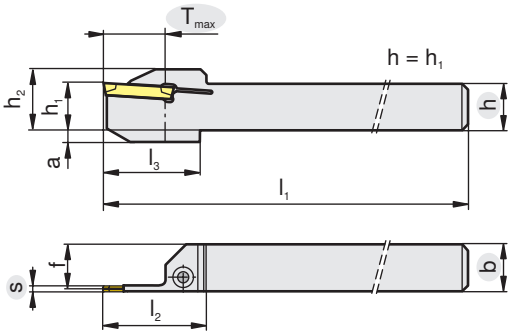
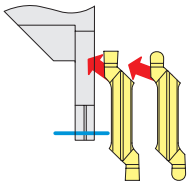



Bild zeigt Rechtsausführung

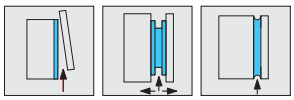
| h [mm] | Type, Bezeichnung | L N R | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | $h_2$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | f [mm] | a [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | E12R0012-1212K-GX16-1 | R | 2,00 | 2,75 | 12 | 17,0 | 12 | 125 | 26 | 24,0 | 11,35 | 4,00 | GX16-1.. | E01 |
| 12 | E12R0012-1212K-GX16-2 | R | 2,76 | 3,75 | 12 | 17,0 | 12 | 125 | 26 | 24,0 | 11,00 | 4,00 | GX16-2.. | E01 |
| 12 | E12L0012-1212K-GX16-1 | L | 2,00 | 2,75 | 12 | 17,0 | 12 | 125 | 26 | 24,0 | 11,35 | 4,00 | GX16-1.. | E01 |
| 12 | E12L0012-1212K-GX16-2 | L | 2,76 | 3,75 | 12 | 17,0 | 12 | 125 | 26 | 24,0 | 11,00 | 4,00 | GX16-2.. | E01 |
| 16 | E16R0012-1616K-GX16-1 | R | 2,00 | 2,75 | 12 | 21,0 | 16 | 125 | 26 | 24,0 | 15,35 | 4,00 | GX16-1.. | E01 |
| 16 | E16R0012-1616K-GX16-2 | R | 2,76 | 3,75 | 12 | 21,0 | 16 | 125 | 26 | 24,0 | 15,00 | 4,00 | GX16-2.. | E01 |
| 16 | E16R0012-1616K-GX16-3 | R | 3,76 | 5,00 | 12 | 21,0 | 16 | 125 | 26 | 24,0 | 14,53 | 4,00 | GX16-3.. | E01 |
| 16 | E16L0012-1616K-GX16-1 | L | 2,00 | 2,75 | 12 | 21,0 | 16 | 125 | 26 | 24,0 | 15,35 | 4,00 | GX16-1.. | E01 |
| 16 | E16L0012-1616K-GX16-2 | L | 2,76 | 3,75 | 12 | 21,0 | 16 | 125 | 26 | 24,0 | 15,00 | 4,00 | GX16-2.. | E01 |
| 16 | E16L0012-1616K-GX16-3 | L | 3,76 | 5,00 | 12 | 21,0 | 16 | 125 | 26 | 24,0 | 14,53 | 4,00 | GX16-3.. | E01 |
| 20 | E20R0012-2020K-GX16-1 | R | 2,00 | 2,75 | 12 | 25,0 | 20 | 125 | 26 | | 19,35 | | GX16-1.. | E01 |
| 20 | E20R0012-2020K-GX16-2 | R | 2,76 | 3,75 | 12 | 25,0 | 20 | 125 | 26 | | 19,00 | | GX16-2.. | E01 |
| 20 | E20R0012-2020K-GX16-3 | R | 3,76 | 5,00 | 12 | 25,0 | 20 | 125 | 26 | | 18,53 | | GX16-3.. | E01 |
| 20 | E20L0012-2020K-GX16-1 | L | 2,00 | 2,75 | 12 | 25,0 | 20 | 125 | 26 | | 19,35 | | GX16-1.. | E01 |
| 20 | E20L0012-2020K-GX16-2 | L | 2,76 | 3,75 | 12 | 25,0 | 20 | 125 | 26 | | 19,00 | | GX16-2.. | E01 |
| 20 | E20L0012-2020K-GX16-3 | L | 3,76 | 5,00 | 12 | 25,0 | 20 | 125 | 26 | | 18,53 | | GX16-3.. | E01 |
| 25 | E25R0012-2525M-GX16-2 | R | 2,76 | 3,75 | 12 | 30,0 | 25 | 150 | 26 | | 24,00 | | GX16-2.. | E01 |
| 25 | E25R0012-2525M-GX16-3 | R | 3,76 | 5,00 | 12 | 30,0 | 25 | 150 | 26 | | 23,53 | | GX16-3.. | E01 |
| 25 | E25L0012-2525M-GX16-2 | L | 2,76 | 3,75 | 12 | 30,0 | 25 | 150 | 26 | | 24,00 | | GX16-2.. | E01 |
| 25 | E25L0012-2525M-GX16-3 | L | 3,76 | 5,00 | 12 | 30,0 | 25 | 150 | 26 | | 23,53 | | GX16-3.. | E01 |



**Achtung:**
Beim Einsatz von „R“ oder „L“-Platten (GX-S und GX-R) muss das Werkzeug an der Stirnfläche nachgearbeitet werden, damit es freigeht.

| | | |
|---|---|---|
| E01 | 11081190 | 220983 |

C269 | GX-E C151-C152 | GX-S C153 | GX-R C154





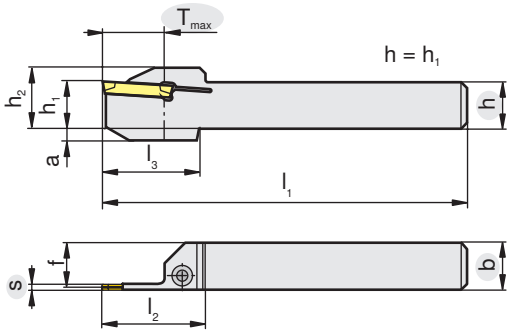



Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L NR | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | $h_2$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | f [mm] | a [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | E16R0021-1616K-GX24-1 | R | 2,00 | 2,75 | 21 | 21,0 | 16 | 125 | 35 | 32,0 | 15,20 | 4,00 | GX24-1.. | E01 |
| 16 | E16R0021-1616K-GX24-2 | R | 2,76 | 3,75 | 21 | 21,0 | 16 | 125 | 35 | 32,0 | 15,00 | 4,00 | GX24-2.. | E01 |
| 16 | E16L0021-1616K-GX24-1 | L | 2,00 | 2,75 | 21 | 21,0 | 16 | 125 | 35 | 32,0 | 15,20 | 4,00 | GX24-1.. | E01 |
| 16 | E16L0021-1616K-GX24-2 | L | 2,76 | 3,75 | 21 | 21,0 | 16 | 125 | 35 | 32,0 | 15,00 | 4,00 | GX24-2.. | E01 |
| 20 | E20R0021-2020K-GX24-1 | R | 2,00 | 2,75 | 21 | 25,0 | 20 | 125 | 35 | | 19,20 | | GX24-1.. | E01 |
| 20 | E20R0021-2020K-GX24-2 | R | 2,76 | 3,75 | 21 | 25,0 | 20 | 125 | 35 | | 19,00 | | GX24-2.. | E01 |
| 20 | E20R0021-2020K-GX24-3 | R | 3,76 | 5,00 | 21 | 25,0 | 20 | 125 | 35 | | 18,53 | | GX24-3.. | E01 |
| 20 | E20L0021-2020K-GX24-1 | L | 2,00 | 2,75 | 21 | 25,0 | 20 | 125 | 35 | | 19,20 | | GX24-1.. | E01 |
| 20 | E20L0021-2020K-GX24-2 | L | 2,76 | 3,75 | 21 | 25,0 | 20 | 125 | 35 | | 19,00 | | GX24-2.. | E01 |
| 20 | E20L0021-2020K-GX24-3 | L | 3,76 | 5,00 | 21 | 25,0 | 20 | 125 | 35 | | 18,53 | | GX24-3.. | E01 |
| 25 | E25R0021-2525M-GX24-2 | R | 2,76 | 3,75 | 21 | 30,0 | 25 | 150 | 35 | | 24,00 | | GX24-2.. | E01 |
| 25 | E25R0021-2525M-GX24-3 | R | 3,76 | 5,00 | 21 | 30,0 | 25 | 150 | 35 | | 23,53 | | GX24-3.. | E01 |
| 25 | E25R0021-2525M-GX24-4 | R | 5,01 | 6,50 | 21 | 30,0 | 25 | 150 | 35 | | 22,90 | | GX24-4.. | E01 |
| 25 | E25L0021-2525M-GX24-2 | L | 2,76 | 3,75 | 21 | 30,0 | 25 | 150 | 35 | | 24,00 | | GX24-2.. | E01 |
| 25 | E25L0021-2525M-GX24-3 | L | 3,76 | 5,00 | 21 | 30,0 | 25 | 150 | 35 | | 23,53 | | GX24-3.. | E01 |
| 25 | E25L0021-2525M-GX24-4 | L | 5,01 | 6,50 | 21 | 30,0 | 25 | 150 | 35 | | 22,90 | | GX24-4.. | E01 |
| 32 | E32R0021-3225P-GX24-2 | R | 2,76 | 3,75 | 21 | 37,0 | 25 | 170 | 35 | | 24,00 | | GX24-2.. | E01 |
| 32 | E32R0021-3225P-GX24-3 | R | 3,76 | 5,00 | 21 | 37,0 | 25 | 170 | 35 | | 23,53 | | GX24-3.. | E01 |
| 32 | E32R0021-3225P-GX24-4 | R | 5,01 | 6,50 | 21 | 37,0 | 25 | 170 | 35 | | 22,90 | | GX24-4.. | E01 |
| 32 | E32L0021-3225P-GX24-2 | L | 2,76 | 3,75 | 21 | 37,0 | 25 | 170 | 35 | | 24,00 | | GX24-2.. | E01 |
| 32 | E32L0021-3225P-GX24-3 | L | 3,76 | 5,00 | 21 | 37,0 | 25 | 170 | 35 | | 23,53 | | GX24-3.. | E01 |
| 32 | E32L0021-3225P-GX24-4 | L | 5,01 | 6,50 | 21 | 37,0 | 25 | 170 | 35 | | 22,90 | | GX24-4.. | E01 |

| | | |
|---|---|---|
| E01 | 11007006 | 220985 |

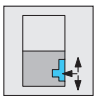

C269

GX-E C151

GX-R C154

# Monohalter

Axialeinstiche GX24





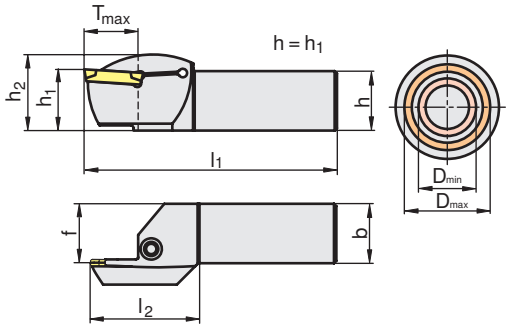



Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $s_{min}$ [mm] | $s_{max}$ [mm] | $D_{min}$ [mm] | $D_{max}$ [mm] | $T_{max}$ [mm] | $h_2$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | E25R0012-2525X-GX24-2 AS40-45 | R | 2,76 | 3,75 | 40 | 45 | 12 | 32,0 | 25 | 115 | 45 | 24,70 | GX24-2.. | E01 |
| 25 | E25R0012-2525X-GX24-2 AS45-50 | R | 2,76 | 3,75 | 45 | 50 | 12 | 32,0 | 25 | 115 | 45 | 24,70 | GX24-2.. | E01 |
| 25 | E25R0016-2525X-GX24-2 AS50-60 | R | 2,76 | 3,75 | 50 | 60 | 16 | 32,0 | 25 | 115 | 45 | 24,70 | GX24-2.. | E01 |
| 25 | E25R0019-2525X-GX24-2 AS60-75 | R | 2,76 | 3,75 | 60 | 75 | 19 | 32,0 | 25 | 115 | 45 | 24,70 | GX24-2.. | E01 |
| 25 | E25R0019-2525X-GX24-2 AS75-100 | R | 2,76 | 3,75 | 75 | 100 | 19 | 32,0 | 25 | 115 | 45 | 24,70 | GX24-2.. | E01 |
| 25 | E25R0022-2525X-GX24-2 AS100-130 | R | 2,76 | 3,75 | 100 | 130 | 22 | 32,0 | 25 | 115 | 45 | 24,70 | GX24-2.. | E01 |
| 25 | E25R0022-2525X-GX24-2 AS130-180 | R | 2,76 | 3,75 | 130 | 180 | 22 | 32,0 | 25 | 115 | 45 | 24,70 | GX24-2.. | E01 |
| 25 | E25R0022-2525X-GX24-2 AS180-300 | R | 2,76 | 3,75 | 180 | 300 | 22 | 32,0 | 25 | 115 | 45 | 24,70 | GX24-2.. | E01 |
| 25 | E25R0012-2525X-GX24-3 AS40-45 | R | 3,76 | 5,00 | 40 | 45 | 12 | 32,0 | 25 | 115 | 45 | 24,20 | GX24-3.. | E01 |
| 25 | E25R0012-2525X-GX24-3 AS45-50 | R | 3,76 | 5,00 | 45 | 50 | 12 | 32,0 | 25 | 115 | 45 | 24,20 | GX24-3.. | E01 |
| 25 | E25R0020-2525X-GX24-3 AS50-60 | R | 3,76 | 5,00 | 50 | 60 | 20 | 32,0 | 25 | 115 | 45 | 24,20 | GX24-3.. | E01 |
| 25 | E25R0020-2525X-GX24-3 AS60-75 | R | 3,76 | 5,00 | 60 | 75 | 20 | 32,0 | 25 | 115 | 45 | 24,20 | GX24-3.. | E01 |
| 25 | E25R0022-2525X-GX24-3 AS75-100 | R | 3,76 | 5,00 | 75 | 100 | 22 | 32,0 | 25 | 115 | 45 | 24,20 | GX24-3.. | E01 |
| 25 | E25R0022-2525X-GX24-3 AS100-150 | R | 3,76 | 5,00 | 100 | 150 | 22 | 32,0 | 25 | 115 | 45 | 24,20 | GX24-3.. | E01 |
| 25 | E25R0022-2525X-GX24-3 AS150-300 | R | 3,76 | 5,00 | 150 | 300 | 22 | 32,0 | 25 | 115 | 45 | 24,20 | GX24-3.. | E01 |
| 25 | E25R0020-2525X-GX24-4 AS40-50 | R | 5,01 | 6,50 | 40 | 50 | 20 | 32,0 | 25 | 115 | 45 | 23,20 | GX24-4.. | E01 |
| 25 | E25R0022-2525X-GX24-4 AS50-70 | R | 5,01 | 6,50 | 50 | 70 | 22 | 32,0 | 25 | 115 | 45 | 23,20 | GX24-4.. | E01 |
| 25 | E25R0025-2525X-GX24-4 AS70-100 | R | 5,01 | 6,50 | 70 | 100 | 25 | 32,0 | 25 | 115 | 45 | 23,20 | GX24-4.. | E01 |
| 25 | E25R0025-2525X-GX24-4 AS100-150 | R | 5,01 | 6,50 | 100 | 150 | 25 | 32,0 | 25 | 115 | 45 | 23,20 | GX24-4.. | E01 |
| 25 | E25R0025-2525X-GX24-4 AS150-300 | R | 5,01 | 6,50 | 150 | 300 | 25 | 32,0 | 25 | 115 | 45 | 23,20 | GX24-4.. | E01 |
| 25 | E25L0012-2525X-GX24-2 AS40-45 | L | 2,76 | 3,75 | 40 | 45 | 12 | 32,0 | 25 | 115 | 45 | 24,70 | GX24-2.. | E01 |
| 25 | E25L0012-2525X-GX24-2 AS45-50 | L | 2,76 | 3,75 | 45 | 50 | 12 | 32,0 | 25 | 115 | 45 | 24,70 | GX24-2.. | E01 |
| 25 | E25L0016-2525X-GX24-2 AS50-60 | L | 2,76 | 3,75 | 50 | 60 | 16 | 32,0 | 25 | 115 | 45 | 24,70 | GX24-2.. | E01 |
| 25 | E25L0019-2525X-GX24-2 AS60-75 | L | 2,76 | 3,75 | 60 | 75 | 19 | 32,0 | 25 | 115 | 45 | 24,70 | GX24-2.. | E01 |
| 25 | E25L0019-2525X-GX24-2 AS75-100 | L | 2,76 | 3,75 | 75 | 100 | 19 | 32,0 | 25 | 115 | 45 | 24,70 | GX24-2.. | E01 |
| 25 | E25L0022-2525X-GX24-2 AS100-130 | L | 2,76 | 3,75 | 100 | 130 | 22 | 32,0 | 25 | 115 | 45 | 24,70 | GX24-2.. | E01 |
| 25 | E25L0022-2525X-GX24-2 AS130-180 | L | 2,76 | 3,75 | 130 | 180 | 22 | 32,0 | 25 | 115 | 45 | 24,70 | GX24-2.. | E01 |
| 25 | E25L0022-2525X-GX24-2 AS180-300 | L | 2,76 | 3,75 | 180 | 300 | 22 | 32,0 | 25 | 115 | 45 | 24,70 | GX24-2.. | E01 |
| 25 | E25L0012-2525X-GX24-3 AS40-45 | L | 3,76 | 5,00 | 40 | 45 | 12 | 32,0 | 25 | 115 | 45 | 24,20 | GX24-3.. | E01 |
| 25 | E25L0012-2525X-GX24-3 AS45-50 | L | 3,76 | 5,00 | 45 | 50 | 12 | 32,0 | 25 | 115 | 45 | 24,20 | GX24-3.. | E01 |
| 25 | E25L0020-2525X-GX24-3 AS50-60 | L | 3,76 | 5,00 | 50 | 60 | 20 | 32,0 | 25 | 115 | 45 | 24,20 | GX24-3.. | E01 |
| 25 | E25L0020-2525X-GX24-3 AS60-75 | L | 3,76 | 5,00 | 60 | 75 | 20 | 32,0 | 25 | 115 | 45 | 24,20 | GX24-3.. | E01 |
| 25 | E25L0022-2525X-GX24-3 AS75-100 | L | 3,76 | 5,00 | 75 | 100 | 22 | 32,0 | 25 | 115 | 45 | 24,20 | GX24-3.. | E01 |
| 25 | E25L0022-2525X-GX24-3 AS100-150 | L | 3,76 | 5,00 | 100 | 150 | 22 | 32,0 | 25 | 115 | 45 | 24,20 | GX24-3.. | E01 |
| 25 | E25L0022-2525X-GX24-3 AS150-300 | L | 3,76 | 5,00 | 150 | 300 | 22 | 32,0 | 25 | 115 | 45 | 24,20 | GX24-3.. | E01 |
| 25 | E25L0020-2525X-GX24-4 AS40-50 | L | 5,01 | 6,50 | 40 | 50 | 20 | 32,0 | 25 | 115 | 45 | 23,20 | GX24-4.. | E01 |
| 25 | E25L0022-2525X-GX24-4 AS50-70 | L | 5,01 | 6,50 | 50 | 70 | 22 | 32,0 | 25 | 115 | 45 | 23,20 | GX24-4.. | E01 |
| 25 | E25L0025-2525X-GX24-4 AS70-100 | L | 5,01 | 6,50 | 70 | 100 | 25 | 32,0 | 25 | 115 | 45 | 23,20 | GX24-4.. | E01 |
| 25 | E25L0025-2525X-GX24-4 AS100-150 | L | 5,01 | 6,50 | 100 | 150 | 25 | 32,0 | 25 | 115 | 45 | 23,20 | GX24-4.. | E01 |
| 25 | E25L0025-2525X-GX24-4 AS150-300 | L | 5,01 | 6,50 | 150 | 300 | 25 | 32,0 | 25 | 115 | 45 | 23,20 | GX24-4.. | E01 |

| | | |
|---|---|---|
| E01 | 11207638 | 11224503 |

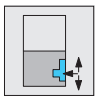
C269 C151 C154

GX-E

GX-R

# Monohalter

AX 0°





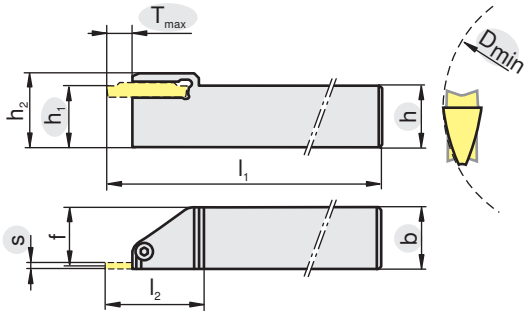
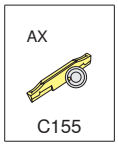




Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L NR | b [mm] | s [mm] | $D_{min}$ [mm] | $T_{max}$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | E16R0005-1616L-AX05 | R | 16 | 3,0 | 10 | 5 | 16 | 21,0 | 140 | 28 | 14,70 | AX05.. | E01 |
| 16 | E16R0010-1616L-AX10 | R | 16 | 3,0 | 20 | 10 | 16 | 21,0 | 140 | 38 | 14,70 | AX10.. | E01 |
| 16 | E16L0005-1616L-AX05 | L | 16 | 3,0 | 10 | 5 | 16 | 21,0 | 140 | 28 | 14,70 | AX05.. | E01 |
| 16 | E16L0010-1616L-AX10 | L | 16 | 3,0 | 20 | 10 | 16 | 21,0 | 140 | 38 | 14,70 | AX10.. | E01 |
| 20 | E20R0005-2020L-AX05 | R | 20 | 3,0 | 10 | 5 | 20 | 25,0 | 140 | 28 | 18,70 | AX05.. | E02 |
| 20 | E20R0010-2020L-AX10 | R | 20 | 3,0 | 20 | 10 | 20 | 25,0 | 140 | 38 | 18,70 | AX10.. | E02 |
| 20 | E20R0015-2020L-AX15 | R | 20 | 3,0 | 30 | 15 | 20 | 25,0 | 140 | 49 | 18,70 | AX15.. | E02 |
| 20 | E20L0005-2020L-AX05 | L | 20 | 3,0 | 10 | 5 | 20 | 25,0 | 140 | 28 | 18,70 | AX05.. | E02 |
| 20 | E20L0010-2020L-AX10 | L | 20 | 3,0 | 20 | 10 | 20 | 25,0 | 140 | 38 | 18,70 | AX10.. | E02 |
| 20 | E20L0015-2020L-AX15 | L | 20 | 3,0 | 30 | 15 | 20 | 25,0 | 140 | 49 | 18,70 | AX15.. | E02 |
| 25 | E25R0005-2525N-AX05 | R | 25 | 3,0 | 10 | 5 | 25 | 30,0 | 160 | 28 | 23,70 | AX05.. | E02 |
| 25 | E25R0010-2525N-AX10 | R | 25 | 3,0 | 20 | 10 | 25 | 30,0 | 160 | 38 | 23,70 | AX10.. | E02 |
| 25 | E25R0015-2525N-AX15 | R | 25 | 3,0 | 30 | 15 | 25 | 30,0 | 160 | 49 | 23,70 | AX15.. | E02 |
| 25 | E25L0005-2525N-AX05 | L | 25 | 3,0 | 10 | 5 | 25 | 30,0 | 160 | 28 | 23,70 | AX05.. | E02 |
| 25 | E25L0010-2525N-AX10 | L | 25 | 3,0 | 20 | 10 | 25 | 30,0 | 160 | 38 | 23,70 | AX10.. | E02 |
| 25 | E25L0015-2525N-AX15 | L | 25 | 3,0 | 30 | 15 | 25 | 30,0 | 160 | 49 | 23,70 | AX15.. | E02 |

| | | |
|---|---|---|
| E01 | 195068 | 220983 |
| E02 | 195069 | 220985 |


C269



C155

# Monohalter

AX 90°





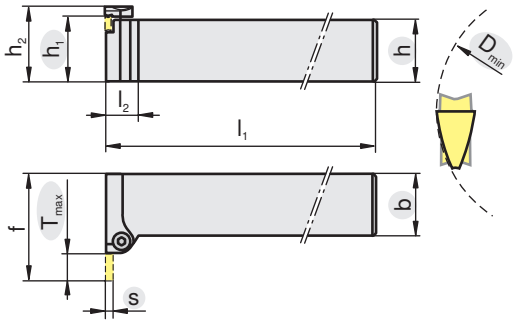



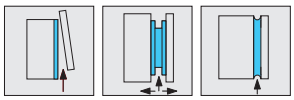

Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | b [mm] | s [mm] | $D_{min}$ [mm] | $T_{max}$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | E16R9005-1616J-AX05 | R | 16 | 3,0 | 10 | 5 | 16 | 21,0 | 110 | 13,5 | 28,00 | AX05.. | E01 |
| 16 | E16R9010-1616J-AX10 | R | 16 | 3,0 | 20 | 10 | 16 | 21,0 | 110 | 13,0 | 38,00 | AX10.. | E01 |
| 16 | E16L9005-1616J-AX05 | L | 16 | 3,0 | 10 | 5 | 16 | 21,0 | 110 | 13,5 | 28,00 | AX05.. | E01 |
| 16 | E16L9010-1616J-AX10 | L | 16 | 3,0 | 20 | 10 | 16 | 21,0 | 110 | 13,0 | 38,00 | AX10.. | E01 |
| 20 | E20R9005-2020J-AX05 | R | 20 | 3,0 | 10 | 5 | 20 | 25,0 | 110 | 12,0 | 28,00 | AX05.. | E01 |
| 20 | E20R9010-2020J-AX10 | R | 20 | 3,0 | 20 | 10 | 20 | 25,0 | 110 | 13,0 | 38,00 | AX10.. | E02 |
| 20 | E20R9015-2020J-AX15 | R | 20 | 3,0 | 30 | 15 | 20 | 25,0 | 110 | 13,0 | 49,00 | AX15.. | E02 |
| 20 | E20L9005-2020J-AX05 | L | 20 | 3,0 | 10 | 5 | 20 | 25,0 | 110 | 12,0 | 28,00 | AX05.. | E01 |
| 20 | E20L9010-2020J-AX10 | L | 20 | 3,0 | 20 | 10 | 20 | 25,0 | 110 | 13,0 | 38,00 | AX10.. | E02 |
| 20 | E20L9015-2020J-AX15 | L | 20 | 3,0 | 30 | 15 | 20 | 25,0 | 110 | 13,0 | 49,00 | AX15.. | E02 |
| 25 | E25R9005-2525L-AX05 | R | 25 | 3,0 | 10 | 5 | 25 | 30,0 | 140 | 12,0 | 33,00 | AX05.. | E01 |
| 25 | E25R9010-2525J-AX10 | R | 25 | 3,0 | 20 | 10 | 25 | 30,0 | 110 | 13,0 | 43,00 | AX10.. | E02 |
| 25 | E25R9015-2525L-AX15 | R | 25 | 3,0 | 30 | 15 | 25 | 30,0 | 140 | 13,0 | 49,00 | AX15.. | E02 |
| 25 | E25L9005-2525L-AX05 | L | 25 | 3,0 | 10 | 5 | 25 | 30,0 | 140 | 12,0 | 33,00 | AX05.. | E01 |
| 25 | E25L9010-2525J-AX10 | L | 25 | 3,0 | 20 | 10 | 25 | 30,0 | 110 | 13,0 | 43,00 | AX10.. | E02 |
| 25 | E25L9015-2525L-AX15 | L | 25 | 3,0 | 30 | 15 | 25 | 30,0 | 140 | 13,0 | 49,00 | AX15.. | E02 |

| | | |
|---|---|---|
| E01 | 195068 | 220983 |
| E02 | 195069 | 220985 |

C269

AX
C155





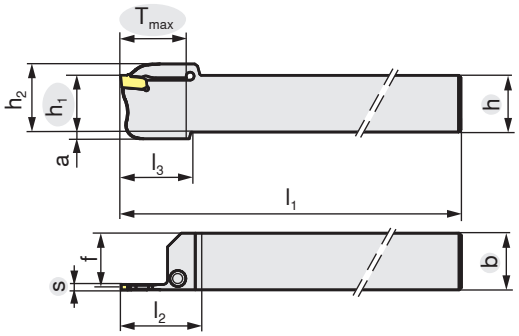



Bild zeigt Rechtsausführung

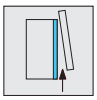
| h [mm] | Type, Bezeichnung | L NR | b [mm] | s [mm] | $T_{max}$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | E16R0016-1616K-SX2 | R | 16 | 2,0 | 16 | 16 | 21,0 | 125 | 31 | 26,0 | 15,20 | SX..2 | E01 |
| 16 | E16R0020-1616K-SX3 | R | 16 | 3,0 | 20 | 16 | 21,0 | 125 | 36 | 30,0 | 14,75 | SX..3 | E01 |
| 16 | E16L0016-1616K-SX2 | L | 16 | 2,0 | 16 | 16 | 21,0 | 125 | 31 | 26,0 | 15,20 | SX..2 | E01 |
| 16 | E16L0020-1616K-SX3 | L | 16 | 3,0 | 20 | 16 | 21,0 | 125 | 36 | 30,0 | 14,75 | SX..3 | E01 |
| 20 | E20R0016-2020K-SX2 | R | 20 | 2,0 | 16 | 20 | 25,0 | 125 | 31 | 26,0 | 19,20 | SX..2 | E01 |
| 20 | E20R0020-2020K-SX3 | R | 20 | 3,0 | 20 | 20 | 25,0 | 125 | 38 | 30,0 | 18,75 | SX..3 | E01 |
| 20 | E20R0025-2020K-SX4 | R | 20 | 4,0 | 25 | 20 | 27,0 | 125 | 44 | 35,0 | 18,35 | SX..4 | E01 |
| 20 | E20L0016-2020K-SX2 | L | 20 | 2,0 | 16 | 20 | 25,0 | 125 | 31 | 26,0 | 19,20 | SX..2 | E01 |
| 20 | E20L0020-2020K-SX3 | L | 20 | 3,0 | 20 | 20 | 25,0 | 125 | 38 | 30,0 | 18,75 | SX..3 | E01 |
| 20 | E20L0025-2020K-SX4 | L | 20 | 4,0 | 25 | 20 | 27,0 | 125 | 44 | 35,0 | 18,35 | SX..4 | E01 |
| 25 | E25R0020-2525M-SX3 | R | 25 | 3,0 | 20 | 25 | 30,0 | 150 | 40 | 30,0 | 23,75 | SX..3 | E01 |
| 25 | E25R0025-2525M-SX4 | R | 25 | 4,0 | 25 | 25 | 32,0 | 150 | 46 | 35,0 | 23,35 | SX..4 | E01 |
| 25 | E25R0025-2525M-SX5 | R | 25 | 5,0 | 25 | 25 | 32,0 | 150 | 46 | 35,0 | 22,85 | SX..5 | E01 |
| 25 | E25R0032-2525M-SX6 | R | 25 | 6,0 | 32 | 25 | 33,0 | 150 | 54 | 43,0 | 22,40 | SX..6 | E01 |
| 25 | E25L0020-2525M-SX3 | L | 25 | 3,0 | 20 | 25 | 30,0 | 150 | 40 | 30,0 | 23,75 | SX..3 | E01 |
| 25 | E25L0025-2525M-SX4 | L | 25 | 4,0 | 25 | 25 | 32,0 | 150 | 46 | 35,0 | 23,35 | SX..4 | E01 |
| 25 | E25L0025-2525M-SX5 | L | 25 | 5,0 | 25 | 25 | 32,0 | 150 | 46 | 35,0 | 22,85 | SX..5 | E01 |
| 25 | E25L0032-2525M-SX6 | L | 25 | 6,0 | 32 | 25 | 33,0 | 150 | 54 | 43,0 | 22,40 | SX..6 | E01 |

| | | |
|---|---|---|
| E01 | 11007006 | 220985 |

C269 | SX-E C156 | SX-R C156

# Monohalter

FX





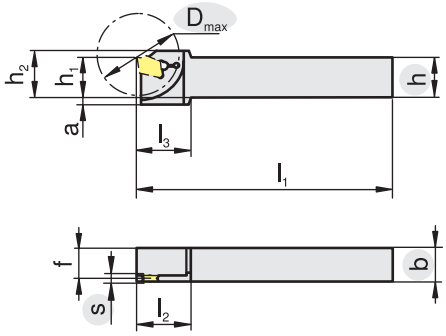
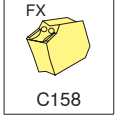


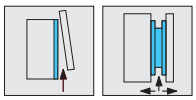

Bild zeigt Linksausführung

| h [mm] | Type, Bezeichnung | L N R | s [mm] | $D_{max}$ [mm] | b [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | f [mm] | a [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | XLCER 1010 M22 FX | R | 2,2 | 30 | 10 | 10 | 19,5 | 150 | 19 | 19,0 | 9,18 | 6,50 | FX 2.2.. | E01 |
| 10 | XLCEL 1010 M22 FX | L | 2,2 | 30 | 10 | 10 | 19,5 | 150 | 19 | 19,0 | 9,18 | 6,50 | FX 2.2.. | E01 |
| 12 | XLCER 1212 M22 FX | R | 2,2 | 30 | 12 | 12 | 19,5 | 150 | 19 | 19,0 | 11,18 | 4,50 | FX 2.2.. | E01 |
| 12 | XLCER 1212 F22 FX | R | 2,2 | 30 | 12 | 12 | 19,5 | 80 | 19 | 19,0 | 11,18 | 4,50 | FX 2.2.. | E01 |
| 12 | XLCEL 1212 M22 FX | L | 2,2 | 30 | 12 | 12 | 19,5 | 150 | 19 | 19,0 | 11,18 | 4,50 | FX 2.2.. | E01 |
| 12 | XLCEL 1212 F22 FX | L | 2,2 | 30 | 12 | 12 | 19,5 | 80 | 19 | 19,0 | 11,18 | 4,50 | FX 2.2.. | E01 |
| 14 | XLCER 1414 M22 FX | R | 2,2 | 30 | 14 | 14 | 19,5 | 150 | 19 | 19,0 | 13,18 | 2,50 | FX 2.2.. | E01 |
| 14 | XLCEL 1414 M22 FX | L | 2,2 | 30 | 14 | 14 | 19,5 | 150 | 19 | 19,0 | 13,18 | 2,50 | FX 2.2.. | E01 |
| 16 | XLCER 1612 H22 FX | R | 2,2 | 30 | 12 | 16 | 19,5 | 100 | 19 | 19,0 | 11,18 | 0,50 | FX 2.2.. | E01 |
| 16 | XLCFR 1612 H31 FX | R | 3,1 | 35 | 12 | 16 | 22,5 | 100 | 22 | 22,0 | 10,80 | 3,50 | FX 3.1.. | E02 |
| 16 | XLCEL 1612 H22 FX | L | 2,2 | 30 | 12 | 16 | 19,5 | 100 | 19 | 19,0 | 11,18 | 0,50 | FX 2.2.. | E01 |
| 16 | XLCFL 1612 H31 FX | L | 3,1 | 35 | 12 | 16 | 22,5 | 100 | 22 | 22,0 | 10,80 | 3,50 | FX 3.1.. | E02 |
| 20 | XLCFR 2016 K31 FX | R | 3,1 | 40 | 16 | 20 | 26,0 | 125 | 26 | 26,0 | 14,80 | 3,00 | FX 3.1.. | E02 |
| 20 | XLCFR 2016 K41 FX | R | 4,1 | 40 | 16 | 20 | 26,0 | 125 | 26 | 26,0 | 14,40 | 3,00 | FX 4.1.. | E02 |
| 20 | XLCFL 2016 K31 FX | L | 3,1 | 40 | 16 | 20 | 26,0 | 125 | 26 | 26,0 | 14,80 | 3,00 | FX 3.1.. | E02 |
| 20 | XLCFL 2016 K41 FX | L | 4,1 | 40 | 16 | 20 | 26,0 | 125 | 26 | 26,0 | 14,40 | 3,00 | FX 4.1.. | E02 |
| 25 | XLCFR 2520 M31 FX | R | 3,1 | 50 | 20 | 25 | 31,5 | 150 | 32 | 32,0 | 18,80 | 3,50 | FX 3.1.. | E02 |
| 25 | XLCFR 2520 M41 FX | R | 4,1 | 50 | 20 | 25 | 31,5 | 150 | 32 | 32,0 | 18,40 | 3,50 | FX 4.1.. | E02 |
| 25 | XLCFL 2520 M31 FX | L | 3,1 | 50 | 20 | 25 | 31,5 | 150 | 32 | 32,0 | 18,80 | 3,50 | FX 3.1.. | E02 |
| 25 | XLCFL 2520 M41 FX | L | 4,1 | 50 | 20 | 25 | 31,5 | 150 | 32 | 32,0 | 18,40 | 3,50 | FX 4.1.. | E02 |

| | |
|---|---|
| E01 | 154461 |
| E02 | 154463 |







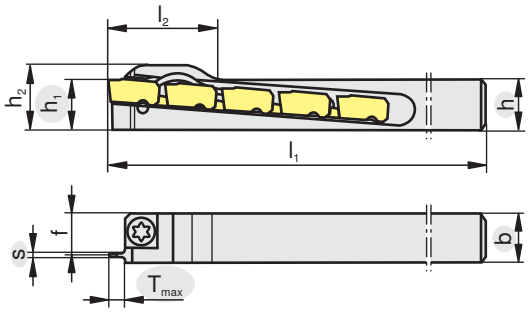



Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L NR | b [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | MC05R-1010K | R | 10 | 1,00 | 1,50 | 5 | 10 | 13,0 | 125 | 23 | 8,50 | MC 05.. | E01 |
| 10 | MC05L-1010K | L | 10 | 1,00 | 1,50 | 5 | 10 | 13,0 | 125 | 23 | 8,50 | MC 05.. | E01 |
| 12 | MC05R-1212K | R | 12 | 1,00 | 1,50 | 5 | 12 | 15,0 | 125 | 23 | 10,50 | MC 05.. | E01 |
| 12 | MC05L-1212K | L | 12 | 1,00 | 1,50 | 5 | 12 | 15,0 | 125 | 23 | 10,50 | MC 05.. | E01 |
| 16 | MC05R-1616K | R | 16 | 1,00 | 1,50 | 5 | 16 | 19,0 | 125 | 23 | 14,50 | MC 05.. | E01 |
| 16 | MC05L-1616K | L | 16 | 1,00 | 1,50 | 5 | 16 | 19,0 | 125 | 23 | 14,50 | MC 05.. | E01 |
| 20 | MC05R-2020K | R | 20 | 1,00 | 1,50 | 5 | 20 | 23,0 | 125 | 23 | 18,50 | MC 05.. | E01 |
| 20 | MC05L-2020K | L | 20 | 1,00 | 1,50 | 5 | 20 | 23,0 | 125 | 23 | 18,80 | MC 05.. | E01 |
| 25 | MC05R-2525M | R | 25 | 1,00 | 1,50 | 5 | 25 | 28,0 | 150 | 23 | 23,50 | MC 05.. | E01 |
| 25 | MC05L-2525M | L | 25 | 1,00 | 1,50 | 5 | 25 | 28,0 | 150 | 23 | 23,50 | MC 05.. | E01 |

| | | |
|---|---|---|
| E01 | 11042274 | 220983 |

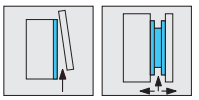

C269

MaxiClick

C159

# Monohalter

MaxiClick MC10





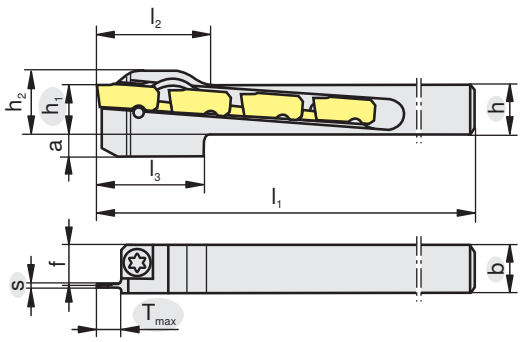



Bild zeigt Rechtsausführung

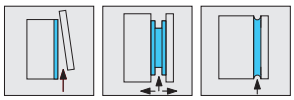
| h [mm] | Type, Bezeichnung | LNR | b [mm] | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | MC10R-1010K | R | 10 | 1,50 | 2,50 | 10 | 10 | 13,0 | 125 | 28 | 8,50 | MC 10.. | E01 |
| 10 | MC10R-1010K-S | R | 10 | 1,50 | 2,50 | 10 | 10 | 19,0 | 125 | 28 | 8,50 | MC 10.. | E01 |
| 10 | MC10L-1010K | L | 10 | 1,50 | 2,50 | 10 | 10 | 13,0 | 125 | 28 | 8,50 | MC 10.. | E01 |
| 10 | MC10L-1010K-S | L | 10 | 1,50 | 2,50 | 10 | 10 | 19,0 | 125 | 28 | 8,50 | MC 10.. | E01 |
| 12 | MC10R-1212K | R | 12 | 1,50 | 2,50 | 10 | 12 | 15,0 | 125 | 28 | 10,50 | MC 10.. | E01 |
| 12 | MC10R-1212K-S | R | 12 | 1,50 | 2,50 | 10 | 12 | 19,0 | 125 | 28 | 10,50 | MC 10.. | E01 |
| 12 | MC10L-1212K | L | 12 | 1,50 | 2,50 | 10 | 12 | 15,0 | 125 | 28 | 10,50 | MC 10.. | E01 |
| 12 | MC10L-1212K-S | L | 12 | 1,50 | 2,50 | 10 | 12 | 19,0 | 125 | 28 | 10,50 | MC 10.. | E01 |
| 16 | MC10R-1616K | R | 16 | 1,50 | 2,50 | 10 | 16 | 19,0 | 125 | 28 | 14,50 | MC 10.. | E01 |
| 16 | MC10L-1616K | L | 16 | 1,50 | 2,50 | 10 | 16 | 19,0 | 125 | 28 | 14,50 | MC 10.. | E01 |
| 20 | MC10R-2020K | R | 20 | 1,50 | 2,50 | 10 | 20 | 23,0 | 125 | 28 | 18,50 | MC 10.. | E01 |
| 20 | MC10L-2020K | L | 20 | 1,50 | 2,50 | 10 | 20 | 23,0 | 125 | 28 | 18,50 | MC 10.. | E01 |
| 25 | MC10R-2525M | R | 25 | 1,50 | 2,50 | 10 | 25 | 28,0 | 152 | 28 | 23,50 | MC 10.. | E01 |
| 25 | MC10L-2525M | L | 25 | 1,50 | 2,50 | 10 | 25 | 28,0 | 152 | 28 | 23,50 | MC 10.. | E01 |

| | | |
|---|---|---|
| E01 | 11042274 | 220983 |

C269

MaxiClick

C159





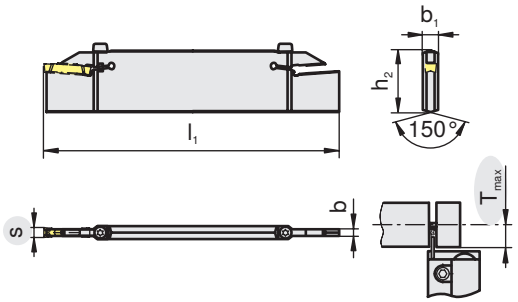



Bild zeigt neutrale Ausführung

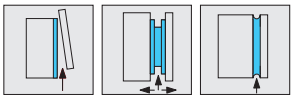
| $h_2$ [mm] | Type, Bezeichnung | L NR | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | b [mm] | $b_1$ [mm] | $l_1$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 32 | XLCFN 3202-GX24-1S | N | 2,00 | 2,75 | 21 | 1,60 | 6,2 | 180 | GX24-1.. | E01 |
| 32 | XLCFN 3203 GX24-2S | N | 2,76 | 3,75 | 21 | 2,10 | 6,2 | 180 | GX24-2.. | E01 |
| 32 | XLCFN 3204 GX24-3S | N | 3,76 | 5,00 | 21 | 3,05 | 6,2 | 180 | GX24-3.. | E01 |
| 32 | XLCFN 3206 GX24-4S | N | 5,01 | 6,50 | 21 | 4,20 | 6,2 | 180 | GX24-4.. | E01 |

| | | | |
|---|---|---|---|
| E01 | 11081190 | 11149570 | 220983 |

C269
GX-E C151
GX-R C154
C204-C205

# Klinge

SX





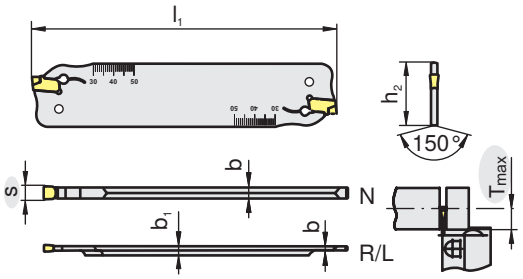



Bild zeigt neutrale Ausführung

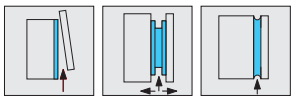
| $h_2$ [mm] | Type, Bezeichnung | L N R | s [mm] | $T_{max}$ [mm] | b [mm] | $b_1$ [mm] | $l_1$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 26 | XLCFR 2602-SX2 | R | 2,0 | 25 | 1,50 | 2,4 | 110 | SX..2 | E01 |
| 26 | XLCFN 2603-SX3 | N | 3,0 | 35 | 2,40 | | 110 | SX..3 | E01 |
| 26 | XLCFN 2604-SX4 | N | 4,0 | 40 | 3,20 | | 110 | SX..4 | E02 |
| 26 | XLCFL 2602-SX2 | L | 2,0 | 25 | 1,50 | 2,4 | 110 | SX..2 | E01 |
| 32 | XLCFR 3202-SX2 | R | 2,0 | 25 | 1,50 | 2,4 | 150 | SX..2 | E01 |
| 32 | XLCFN 3203-SX3 | N | 3,0 | 50 | 2,40 | | 150 | SX..3 | E01 |
| 32 | XLCFN 3204-SX4 | N | 4,0 | 50 | 3,20 | | 150 | SX..4 | E02 |
| 32 | XLCFN 3205-SX5 | N | 5,0 | 55 | 4,20 | | 150 | SX..5 | E02 |
| 32 | XLCFN 3206-SX6 | N | 6,0 | 60 | 5,20 | | 150 | SX..6 | E02 |
| 32 | XLCFL 3202-SX2 | L | 2,0 | 25 | 1,50 | 2,4 | 150 | SX..2 | E01 |

| | |
|---|---|
| E01 | 11366865 |
| E02 | 11366866 |

C269 | SX-E C156 | SX-R C156 | C204-C205

# Klinge

SX, verstärkte Ausführung





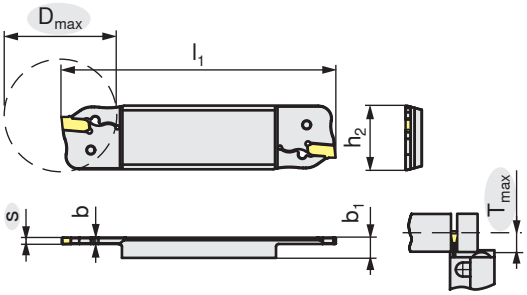



Bild zeigt Rechtsausführung

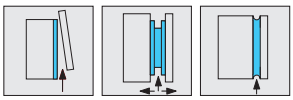
| $h_2$ [mm] | Type, Bezeichnung | L NR | s [mm] | $T_{max}$ [mm] | $D_{max}$ [mm] | b [mm] | $b_1$ [mm] | $l_1$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 26 | XLCFR 2608-SX2 | R | 2,0 | 22 | 44 | 1,50 | 8,0 | 110 | SX..2 | E01 |
| 26 | XLCFR 2608-SX3 | R | 3,0 | 22 | 44 | 2,50 | 8,0 | 110 | SX..3 | E01 |
| 26 | XLCFL 2608-SX2 | L | 2,0 | 22 | 44 | 1,50 | 8,0 | 110 | SX..2 | E01 |
| 26 | XLCFL 2608-SX3 | L | 3,0 | 22 | 44 | 2,50 | 8,0 | 110 | SX..3 | E01 |

| | |
|---|---|
| E01 | 11366865 |

C269 C156 C156 C204-C205

# Klinge

SX, verstärkte Ausführung





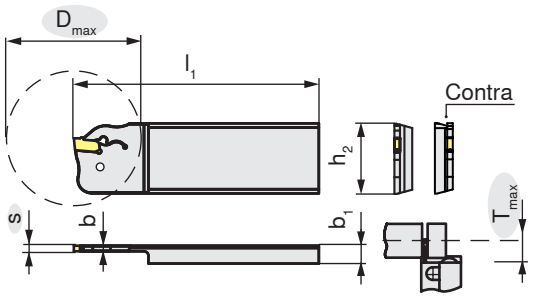
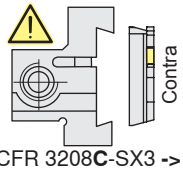



Bild zeigt Rechtsausführung

| $h_2$ [mm] | Type, Bezeichnung | L N R | s [mm] | $T_{max}$ [mm] | $D_{max}$ [mm] | b [mm] | $b_1$ [mm] | $l_1$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 32 | XLCFR 3208-SX3 | R | 3,0 | 33 | 66 | 2,50 | 8,0 | 110 | SX..3 | E01 |
| 32 | XLCFR 3208C-SX3 | R | 3,0 | 33 | 66 | 2,50 | 8,0 | 110 | SX..3 | E01 |
| 32 | XLCFR 3208-SX4 | R | 4,0 | 33 | 66 | 3,40 | 8,0 | 110 | SX..4 | E02 |
| 32 | XLCFL 3208-SX3 | L | 3,0 | 33 | 66 | 2,50 | 8,0 | 110 | SX..3 | E01 |
| 32 | XLCFL 3208C-SX3 | L | 3,0 | 33 | 66 | 2,50 | 8,0 | 110 | SX..3 | E01 |
| 32 | XLCFL 3208-SX4 | L | 4,0 | 33 | 66 | 3,40 | 8,0 | 110 | SX..4 | E02 |

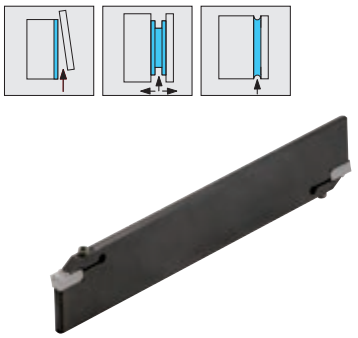



XLCFR 3208**C**-SX3 **-> C**=CONTRA

Weitere Informationen Seite C262

| | |
|---|---|
| E01 | 11366865 |
| E02 | 11366866 |

C269 | SX-E C156 | SX-R C156 | C204-C205



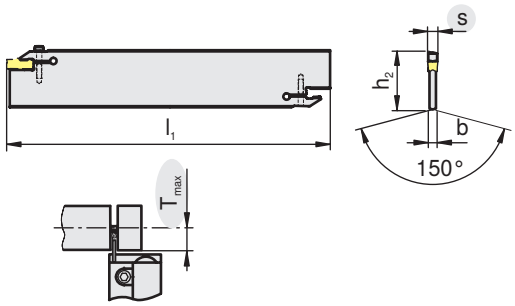



Bild zeigt neutrale Ausführung

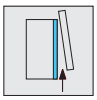
| $h_2$ [mm] | Type, Bezeichnung | L N R | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | b [mm] | $l_1$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 46 | XLCEN 4608 LX | N | 8,00 | 10,00 | 80 | 6,80 | 250 | LX.. | E01 |

| | | | |
|---|---|---|---|
| E01 | 11007006 | 11149571 | 220985 |

| | | | |
|---|---|---|---|
| C269 | LX-E C157 | LX-R C157 | C204 |

# Klinge

FX





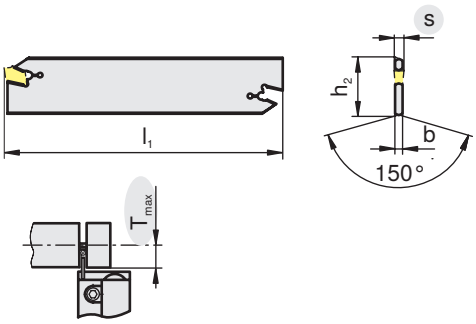
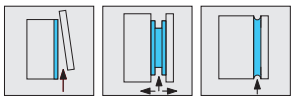



Bild zeigt neutrale Ausführung

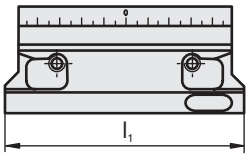
| $h_2$ [mm] | Type, Bezeichnung | L N R | s [mm] | $T_{max}$ [mm] | b [mm] | $l_1$ [mm] | | |
|---|---|---|---|---|---|---|---|---|
| 26 | XLCEN 2602 J22 FX | N | 2,2 | 25 | 1,65 | 110 | FX 2.2.. | E01 |
| 26 | XLCFN 2603 J31 FX | N | 3,1 | 35 | 2,40 | 110 | FX 3.1.. | E02 |
| 26 | XLCFN 2604 J41 FX | N | 4,1 | 40 | 3,20 | 110 | FX 4.1.. | E02 |
| 32 | XLCEN 3202 M22 FX | N | 2,2 | 30 | 1,65 | 150 | FX 2.2.. | E01 |
| 32 | XLCFN 3203 M31 FX | N | 3,1 | 50 | 2,40 | 150 | FX 3.1.. | E02 |
| 32 | XLCFN 3204 M41 FX | N | 4,1 | 50 | 3,20 | 150 | FX 4.1.. | E02 |
| 32 | XLCFN 3205 M51 FX | N | 5,1 | 55 | 4,00 | 150 | FX 5.1.. | E02 |
| 32 | XLCFN 3206 M65 FX | N | 6,5 | 55 | 5,20 | 150 | FX 6.5.. | E02 |
| 46 | XLCEN 4608 S82 FX | N | 8,2 | 80 | 6,80 | 250 | FX 8.2.. | E03 |
| 46 | XLCEN 4609 S97 FX | N | 9,7 | 80 | 8,00 | 250 | FX 9.7.. | E03 |

| | |
|---|---|
| E01 | 154461 |
| E02 | 154463 |
| E03 | 154464 |

C269 C158 C204-C205







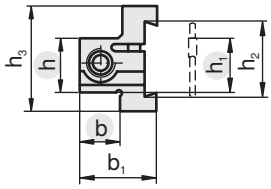




Bild zeigt neutrale Ausführung

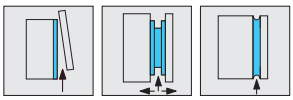
| $h_2$ [mm] | Type, Bezeichnung | L N R | h [mm] | $h_1$ [mm] | $h_3$ [mm] | $l_1$ [mm] | b [mm] | $b_1$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 26 | SBN 2020-26 K | N | 20 | 20 | 39 | 90 | 20 | 33,0 | XLC.. 26.. | E01 |
| 32 | SBN 2520-32 K | N | 25 | 25 | 48 | 110 | 20 | 36,0 | XLC.. 32.. | E01 |
| 32 | SBN 3229-32 K | N | 32 | 32 | 48 | 120 | 29 | 44,5 | XLC.. 32.. | E01 |
| 46 | SBN 3229-46 K | N | 32 | 32 | 70 | 150 | 29 | 52,0 | XLC.. 46.. | E02 |
| 46 | SBN 4037-46 K | N | 40 | 40 | 70 | 150 | 37 | 60,0 | XLC.. 46.. | E02 |

Die Spannblöcke werden ohne Kühlmittelset geliefert.
Bei Anwendung der integrierten Kühlmittelzuführung bitte das entsprechende Kühlmittelset zusätzlich bestellen.

| | | | |
|---|---|---|---|
| E01 | 22485 | 4496 | 82952 |
| E02 | 81158 | 4497 | 82954 |

C269 | GX C198 | SX C199-C201 | LX C202 | FX C203

# geteilter Spannblock





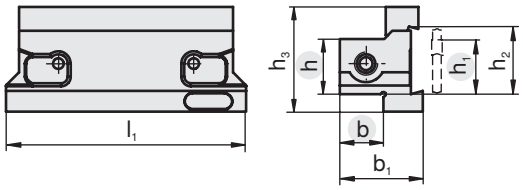


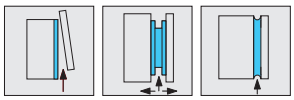

Bild zeigt neutrale Ausführung

| $h_2$ [mm] | Type, Bezeichnung | L N R | h [mm] | $h_1$ [mm] | $h_3$ [mm] | $l_1$ [mm] | b [mm] | $b_1$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 26 | SBN 2020-26 KS | N | 20 | 20 | 43 | 90 | 20 | 37 | XLC.. 26.. | E01 |
| 32 | SBN 2520-32 KS | N | 25 | 25 | 49 | 110 | 20 | 38 | XLC.. 32.. | E01 |
| 32 | SBN 3229-32 KS | N | 32 | 32 | 52 | 120 | 29 | 47 | XLC.. 32.. | E01 |

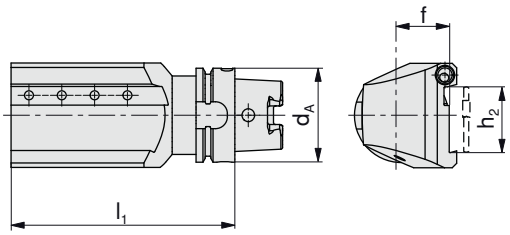
Die Spannblöcke werden ohne Kühlmittelset geliefert.
Bei Anwendung der integrierten Kühlmittelzuführung bitte das entsprechende Kühlmittelset zusätzlich bestellen.

| | | | |
|---|---|---|---|
| E01 | 22485 | 4496 | 82952 |

C269 | GX C198 | SX C199 | LX C202 | FX C203







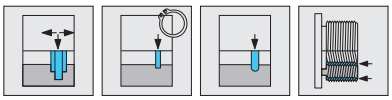

| $h_2$ [mm] | Type, Bezeichnung | L N R | $d_A$ [mm] | $h_1$ [mm] | $l_1$ [mm] | | |
|---|---|---|---|---|---|---|---|
| 32 | HSK-T63-KHR00-32 | R | 63 | 32 | 150 | XLC.. 32.. | E01 |
| 32 | HSK-T100-KHR00-32 | R | 100 | 32 | 160 | XLC.. 32.. | E01 |
| 32 | HSK-T63-KHL00-32 | L | 63 | 32 | 150 | XLC.. 32.. | E01 |
| 32 | HSK-T100-KHL00-32 | L | 100 | 32 | 160 | XLC.. 32.. | E01 |

| | | | |
|---|---|---|---|
| E01 | 11848510 | 11776816 | 11776756 |

| | | | | |
|---|---|---|---|---|
| C269 | GX C198 | SX C199 | LX C202 | FX C203 |

# MSS Bohrstange

1.5 D





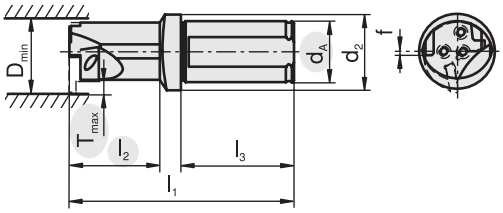
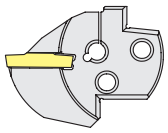


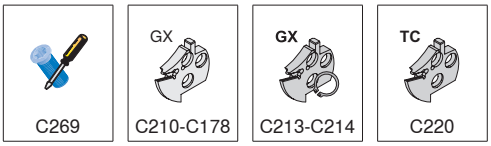

Bild zeigt Rechtsausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | $T_{max}$ [mm] | $D_{min}$ [mm] | $d_A$ [mm] | $d_2$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | MSS-I16R90-1.5D-N | R | 4 | 20 | 20 | 25 | 82 | 24 | 50 | 1,00 | MSS-I16R.. | E01 |
| 16 | MSS-I16L90-1.5D-N | L | 4 | 20 | 20 | 25 | 82 | 24 | 50 | 1,00 | MSS-I16L.. | E01 |
| 20 | MSS-I20R90-1.5D-N | R | 5 | 25 | 20 | 25 | 87 | 30 | 50 | 1,00 | MSS-I20R.. | E02 |
| 20 | MSS-I20L90-1.5D-N | L | 5 | 25 | 20 | 25 | 87 | 30 | 50 | 1,00 | MSS-I20L.. | E02 |
| 25 | MSS-I25R90-1.5D-N | R | 6 | 32 | 25 | 32 | 102 | 38 | 56 | 1,50 | MSS-I25R.. | E03 |
| 25 | MSS-I25L90-1.5D-N | L | 6 | 32 | 25 | 32 | 102 | 38 | 56 | 1,50 | MSS-I25L.. | E03 |
| 32 | MSS-I32R90-1.5D-N | R | 9 | 40 | 32 | 40 | 119 | 48 | 60 | 2,00 | MSS-I32R.. | E04 |
| 32 | MSS-I32L90-1.5D-N | L | 9 | 40 | 32 | 40 | 119 | 48 | 60 | 2,00 | MSS-I32L.. | E04 |
| 40 | MSS-I40R90-1.5D-N | R | 10 | 50 | 40 | 50 | 142 | 60 | 70 | 2,50 | MSS-I40R.. | E05 |
| 40 | MSS-I40L90-1.5D-N | L | 10 | 50 | 40 | 50 | 142 | 60 | 70 | 2,50 | MSS-I40L.. | E05 |



Beim Einsatz von Modul **MSS-I40N19-GX24..** :
$T_{max}$ + 9 mm / $D_{min}$ + 10 mm

| | | | |
|---|---|---|---|
| E01 | 228617 | 8095010200 | |
| E02 | 228619 | 8095010400 | |
| E03 | 228620 | | 220983 |
| E04 | 228621 | | 220985 |
| E05 | 195069 | | 220985 |



# MSS Bohrstange

2.5 D

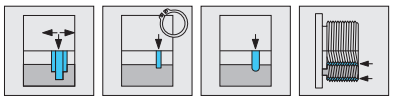
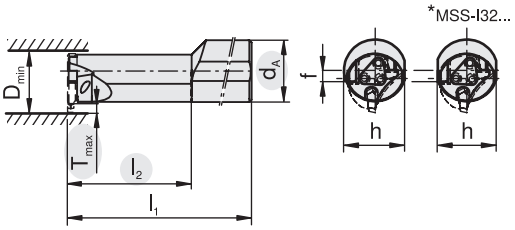


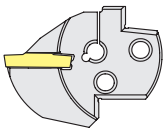


Bild zeigt Rechtsausführung




* 2 Spannflächen gilt nur für MSS-I32R/L90-2.5D-N

| Bgr. [mm] | Type, Bezeichnung | L NR | $T_{max}$ [mm] | $D_{min}$ [mm] | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | h [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | MSS-I16R90-2.5D-N | R | 4 | 20 | 20 | 180 | 40 | 19 | 4,50 | MSS-I16R.. | E01 |
| 16 | MSS-I16L90-2.5D-N | L | 4 | 20 | 20 | 180 | 40 | 19 | 4,50 | MSS-I16L.. | E01 |
| 20 | MSS-I20R90-2.5D-N | R | 5 | 25 | 25 | 200 | 50 | 24 | 6,00 | MSS-I20R.. | E02 |
| 20 | MSS-I20L90-2.5D-N | L | 5 | 25 | 25 | 200 | 50 | 24 | 6,00 | MSS-I20L.. | E02 |
| 25 | MSS-I25R90-2.5D-N | R | 6 | 32 | 32 | 250 | 63 | 31 | 7,00 | MSS-I25R.. | E03 |
| 25 | MSS-I25L90-2.5D-N | L | 6 | 32 | 32 | 250 | 63 | 31 | 7,00 | MSS-I25L.. | E03 |
| 32 | MSS-I32R90-2.5D-N | R | 9 | 40 | 40 | 300 | 80 | 38 | 9,50 | MSS-I32R.. | E04 |
| 32 | MSS-I32L90-2.5D-N | L | 9 | 40 | 40 | 300 | 80 | 38 | 9,50 | MSS-I32L.. | E04 |
| 40 | MSS-I40R90-2.5D-N | R | 10 | 50 | 50 | 350 | 100 | 48,5 | 11,00 | MSS-I40R.. | E05 |
| 40 | MSS-I40L90-2.5D-N | L | 10 | 50 | 50 | 350 | 100 | 48,5 | 11,00 | MSS-I40L.. | E05 |



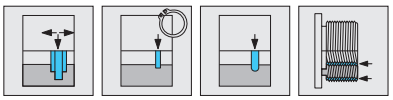
Beim Einsatz von Modul **MSS-I40N19-GX24..** :
$T_{max}$ + 9 mm / $D_{min}$ + 10 mm

| | | | |
|---|---|---|---|
| E01 | 228617 | 8095010200 | |
| E02 | 228619 | 8095010400 | |
| E03 | 228620 | | 220983 |
| E04 | 228621 | | 220985 |
| E05 | 195069 | | 220985 |

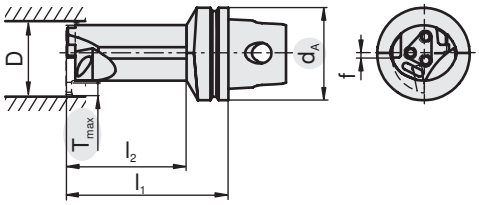
C269 | C210-C212 | C213-C214 | C220

# MSS Bohrstange

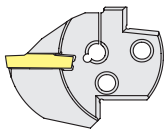
UTS 2.0 D







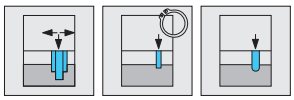

| Bgr. [mm] | Type, Bezeichnung | L N R | $T_{max}$ [mm] | $D_{min}$ [mm] | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 32 | UT40-MSS-I32R90-2D | R | 9 | 40 | 40 | 80 | 64 | 2,00 | MSS-I32R.. | E01 |
| 32 | UT50-MSS-I32L90-2D | L | 9 | 40 | 50 | 90 | 64 | 2,00 | MSS-I32L.. | E01 |
| 40 | UT40-MSS-I40L90-2D | L | 10 | 50 | 40 | 92 | 80 | 2,50 | MSS-I40L.. | E02 |



Beim Einsatz von Modul **MSS-I40N19-GX24..** :
$T_{max}$ + 9 mm / $D_{min}$ + 10 mm

| | | |
|---|---|---|
| E01 | 228621 | 220985 |
| E02 | 195069 | 220985 |

C269 | C210-C212 | C213-C214 | C220





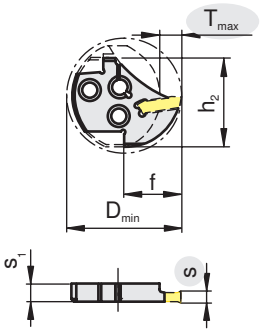



Bild zeigt Rechtsausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | $D_{min}$ [mm] | $h_2$ [mm] | $s_1$ [mm] | f [mm] | |
|---|---|---|---|---|---|---|---|---|---|---|
| 16 | MSS-I16R04-GX09-1 | R | 2,00 | 2,75 | 4 | 20 | 16,4 | 3,8 | 10,00 | GX09-1.. |
| 16 | MSS-I16R04-GX09-2 | R | 2,76 | 3,75 | 4 | 20 | 16,4 | 3,8 | 10,00 | GX09-2.. |
| 16 | MSS-I16L04-GX09-1 | L | 2,00 | 2,75 | 4 | 20 | 16,4 | 3,8 | 10,00 | GX09-1.. |
| 16 | MSS-I16L04-GX09-2 | L | 2,76 | 3,75 | 4 | 20 | 16,4 | 3,8 | 10,00 | GX09-2.. |
| 20 | MSS-I20R05-GX09-1 | R | 2,00 | 2,75 | 5 | 25 | 20,3 | 3,8 | 12,00 | GX09-1.. |
| 20 | MSS-I20R05-GX09-2 | R | 2,76 | 3,75 | 5 | 25 | 20,3 | 3,8 | 12,00 | GX09-2.. |
| 20 | MSS-I20L05-GX09-1 | L | 2,00 | 2,75 | 5 | 25 | 20,3 | 3,8 | 12,00 | GX09-1.. |
| 20 | MSS-I20L05-GX09-2 | L | 2,76 | 3,75 | 5 | 25 | 20,3 | 3,8 | 12,00 | GX09-2.. |
| 25 | MSS-I25R06-GX09-1 | R | 2,00 | 2,75 | 6 | 32 | 24,9 | 3,8 | 15,50 | GX09-1.. |
| 25 | MSS-I25R06-GX09-2 | R | 2,76 | 3,75 | 6 | 32 | 24,9 | 3,8 | 15,50 | GX09-2.. |
| 25 | MSS-I25L06-GX09-1 | L | 2,00 | 2,75 | 6 | 32 | 24,9 | 3,8 | 15,50 | GX09-1.. |
| 25 | MSS-I25L06-GX09-2 | L | 2,76 | 3,75 | 6 | 32 | 24,9 | 3,8 | 15,50 | GX09-2.. |


GX-E  C151

GX-S  C153

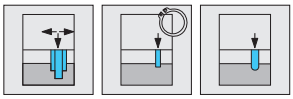
GX-R  C154

1.5D  C207

2.5D  C208

# MSS-Module – Innen

Einstechen und Drehen – GX16





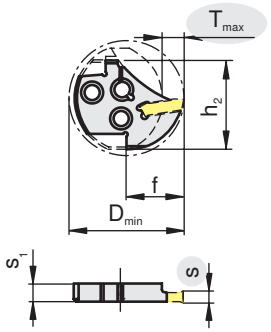
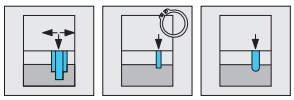



Bild zeigt Rechtsausführung

| Bgr. [mm] | Type, Bezeichnung | L NR | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | $D_{min}$ [mm] | $h_2$ [mm] | $s_1$ [mm] | f [mm] | |
|---|---|---|---|---|---|---|---|---|---|---|
| 32 | MSS-I32R09-GX16-1 | R | 2,00 | 2,75 | 9 | 40 | 32,2 | 5,9 | 20,00 | GX16-1.. |
| 32 | MSS-I32R09-GX16-2 | R | 2,76 | 3,75 | 9 | 40 | 32,2 | 5,9 | 20,00 | GX16-2.. |
| 32 | MSS-I32R09-GX16-3 | R | 3,76 | 5,00 | 9 | 40 | 32,2 | 5,9 | 20,00 | GX16-3.. |
| 32 | MSS-I32R09-GX16-4 | R | 5,01 | 6,50 | 9 | 40 | 32,2 | 5,9 | 20,00 | GX16-4.. |
| 32 | MSS-I32L09-GX16-1 | L | 2,00 | 2,75 | 9 | 40 | 32,2 | 5,9 | 20,00 | GX16-1.. |
| 32 | MSS-I32L09-GX16-2 | L | 2,76 | 3,75 | 9 | 40 | 32,2 | 5,9 | 20,00 | GX16-2.. |
| 32 | MSS-I32L09-GX16-3 | L | 3,76 | 5,00 | 9 | 40 | 32,2 | 5,9 | 20,00 | GX16-3.. |
| 32 | MSS-I32L09-GX16-4 | L | 5,01 | 6,50 | 9 | 40 | 32,2 | 5,9 | 20,00 | GX16-4.. |
| 40 | MSS-I40R10-GX16-1 | R | 2,00 | 2,75 | 10 | 50 | 39,6 | 5,9 | 24,50 | GX16-1.. |
| 40 | MSS-I40R10-GX16-2 | R | 2,76 | 3,75 | 10 | 50 | 39,6 | 5,9 | 24,50 | GX16-2.. |
| 40 | MSS-I40R10-GX16-3 | R | 3,76 | 5,00 | 10 | 50 | 39,6 | 5,9 | 24,50 | GX16-3.. |
| 40 | MSS-I40R10-GX16-4 | R | 5,01 | 6,50 | 10 | 50 | 39,6 | 5,9 | 24,50 | GX16-4.. |
| 40 | MSS-I40L10-GX16-1 | L | 2,00 | 2,75 | 10 | 50 | 39,6 | 5,9 | 24,50 | GX16-1.. |
| 40 | MSS-I40L10-GX16-2 | L | 2,76 | 3,75 | 10 | 50 | 39,6 | 5,9 | 24,50 | GX16-2.. |
| 40 | MSS-I40L10-GX16-3 | L | 3,76 | 5,00 | 10 | 50 | 39,6 | 5,9 | 24,50 | GX16-3.. |
| 40 | MSS-I40L10-GX16-4 | L | 5,01 | 6,50 | 10 | 50 | 39,6 | 5,9 | 24,50 | GX16-4.. |

GX-E C151 | GX-S C153 | GX-R C154 | 1.5D C207 | 2.5D C208 | UTS C209





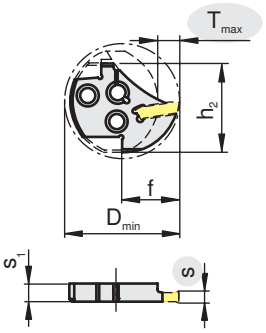


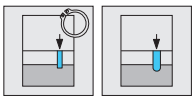

Bild zeigt neutrale Ausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | $D_{min}$ [mm] | $h_2$ [mm] | $s_1$ [mm] | f [mm] | |
|---|---|---|---|---|---|---|---|---|---|---|
| 40 | MSS-I40N19-GX24-2 | N | 2,76 | 3,75 | 19 | 60 | 40,7 | 6,2 | 33,50 | GX24-2.. |
| 40 | MSS-I40N19-GX24-3 | N | 3,76 | 5,00 | 19 | 60 | 40,7 | 6,2 | 33,50 | GX24-3.. |
| 40 | MSS-I40N19-GX24-4 | N | 5,01 | 6,50 | 19 | 60 | 40,7 | 6,2 | 33,50 | GX24-4.. |


GX-E C151 | GX-S C153 | 1.5D C207 | 2.5D C208 | UTS C209

# MSS-Module – Innen

Sicherungsring- und Radieneinstiche – GX09





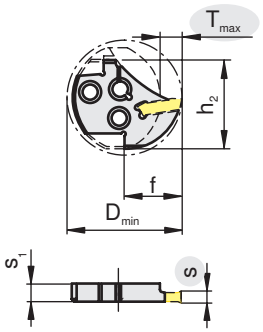
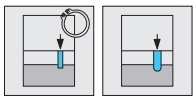



Bild zeigt Rechtsausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | $D_{min}$ [mm] | $h_2$ [mm] | $s_1$ [mm] | f [mm] | |
|---|---|---|---|---|---|---|---|---|---|---|
| 16 | MSS-I16R02-GX09-1 | R | 0,60 | 1,95 | 2 | 20 | 16,45 | 3,8 | 10,00 | GX09-1..R/L |
| 16 | MSS-I16L02-GX09-1 | L | 0,60 | 1,95 | 2 | 20 | 16,45 | 3,8 | 10,00 | GX09-1..R/L |
| 20 | MSS-I20R02-GX09-1 | R | 0,60 | 1,95 | 2 | 25 | 20,35 | 3,8 | 12,00 | GX09-1..R/L |
| 20 | MSS-I20L02-GX09-1 | L | 0,60 | 1,95 | 2 | 25 | 20,35 | 3,8 | 12,00 | GX09-1..R/L |
| 25 | MSS-I25R02-GX09-1 | R | 0,60 | 1,95 | 2 | 32 | 24,95 | 3,8 | 15,50 | GX09-1..R/L |
| 25 | MSS-I25L02-GX09-1 | L | 0,60 | 1,95 | 2 | 32 | 24,95 | 3,8 | 15,50 | GX09-1..R/L |

GX-S C153
GX-R C154
1.5D C207
2.5D C208





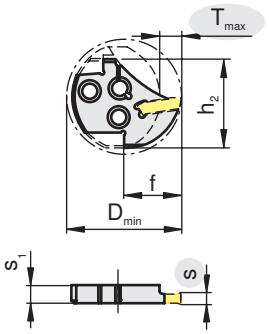



Bild zeigt Rechtsausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | $D_{min}$ [mm] | $h_2$ [mm] | $s_1$ [mm] | f [mm] | |
|---|---|---|---|---|---|---|---|---|---|---|
| 32 | MSS-I32R03-GX16-2 | R | 0,60 | 2,75 | 3 | 40 | 32,2 | 5,9 | 20,00 | GX16-2..R/L |
| 32 | MSS-I32L03-GX16-2 | L | 0,60 | 2,75 | 3 | 40 | 32,2 | 5,9 | 20,00 | GX16-2..R/L |
| 40 | MSS-I40R03-GX16-2 | R | 0,60 | 2,75 | 3 | 50 | 39,6 | 5,9 | 24,50 | GX16-2..R/L |
| 40 | MSS-I40L03-GX16-2 | L | 0,60 | 2,75 | 3 | 50 | 39,6 | 5,9 | 24,50 | GX16-2..R/L |


GX-S  C153

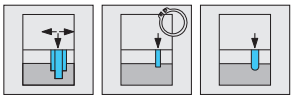
GX-R  C154

1.5D  C207

2.5D  C208

UTS  C209

# Monobohrstange GX09





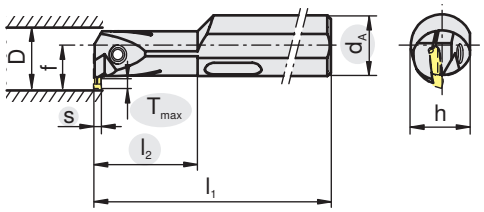
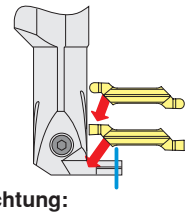



Bild zeigt Rechtsausführung

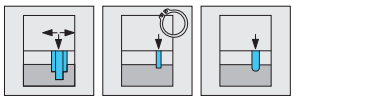
| $d_A$ [mm] | Type, Bezeichnung | L N R | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | $D_{min}$ [mm] | $l_2$ [mm] | $l_1$ [mm] | h [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | I12R90-2.5D-GX09 | R | 2,00 | 3,75 | 3 | 16 | 30 | 150 | 15,25 | 11 | GX09.. | E01 |
| 16 | I12L90-2.5D-GX09 | L | 2,00 | 3,75 | 3 | 16 | 30 | 150 | 15,25 | 11 | GX09.. | E01 |



**Achtung:**
Beim Einsatz von „R“ oder „L“-Platten (GX-S und GX-R) muss das Werkzeug an der Stirnfläche nachgearbeitet werden, damit es freigeht.

| | | |
|---|---|---|
| E01 | 228620 | 220983 |

| GX-E | GX-S | GX-R | |
|---|---|---|---|
| C151 | C153 | C154 | C269 |





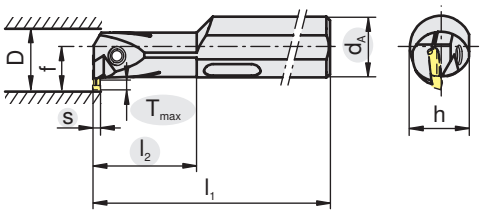
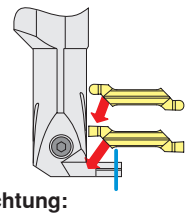



Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L NR | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | $D_{min}$ [mm] | $l_2$ [mm] | $l_1$ [mm] | h [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | I16R90-2.0D-GX16-1 | R | 2,00 | 2,75 | 5,0 | 20,5 | 32 | 150 | 15,25 | 13,5 | GX16-1.. | E01 |
| 16 | I16R90-2.0D-GX16-2 | R | 2,76 | 3,75 | 5,0 | 20,5 | 32 | 150 | 15,25 | 13,5 | GX16-2.. | E01 |
| 16 | I16L90-2.0D-GX16-1 | L | 2,00 | 2,75 | 5,0 | 20,5 | 32 | 150 | 15,25 | 13,5 | GX16-1.. | E01 |
| 16 | I16L90-2.0D-GX16-2 | L | 2,76 | 3,75 | 5,0 | 20,5 | 32 | 150 | 15,25 | 13,5 | GX16-2.. | E01 |
| 20 | I20R90-2.0D-GX16-2 | R | 2,76 | 3,75 | 5,5 | 25,0 | 40 | 180 | 19 | 15,5 | GX16-2.. | E01 |
| 20 | I20L90-2.0D-GX16-2 | L | 2,76 | 3,75 | 5,5 | 25,0 | 40 | 180 | 19 | 15,5 | GX16-2.. | E01 |
| 25 | I25R90-2.0D-GX16-2 | R | 2,76 | 3,75 | 8,0 | 32,0 | 50 | 200 | 24 | 20,5 | GX16-2.. | E01 |
| 25 | I25R90-2.0D-GX16-3 | R | 3,76 | 5,00 | 10,0 | 32,0 | 50 | 200 | 24 | 22,5 | GX16-3.. | E01 |
| 25 | I25L90-2.0D-GX16-2 | L | 2,76 | 3,75 | 8,0 | 32,0 | 50 | 200 | 24 | 20,5 | GX16-2.. | E01 |
| 25 | I25L90-2.0D-GX16-3 | L | 3,76 | 5,00 | 10,0 | 32,0 | 50 | 200 | 24 | 22,5 | GX16-3.. | E01 |
| 32 | I32R90-2.0D-GX16-2 | R | 2,76 | 3,75 | 11,0 | 42,0 | 64 | 250 | 31 | 27,5 | GX16-2.. | E01 |
| 32 | I32R90-2.0D-GX16-3 | R | 3,76 | 5,00 | 11,0 | 42,0 | 64 | 250 | 31 | 27,5 | GX16-3.. | E01 |
| 32 | I32L90-2.0D-GX16-2 | L | 2,76 | 3,75 | 11,0 | 42,0 | 64 | 250 | 31 | 27,5 | GX16-2.. | E01 |
| 32 | I32L90-2.0D-GX16-3 | L | 3,76 | 5,00 | 11,0 | 42,0 | 64 | 250 | 31 | 27,5 | GX16-3.. | E01 |

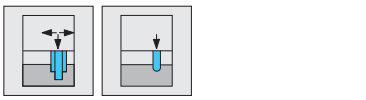


**Achtung:**
Beim Einsatz von „R“ oder „L“-Platten (GX-S und GX-R) muss das Werkzeug an der Stirnfläche nachgearbeitet werden, damit es freigeht.

| | | |
|---|---|---|
| E01 | 195068 | 220983 |

C269 | GX-E C151-C152 | GX-S C153 | GX-R C154

# Monobohrstange GX24





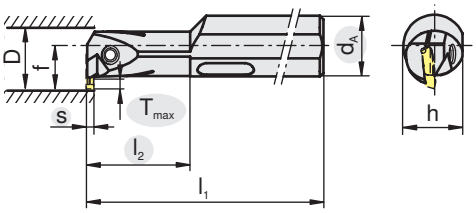
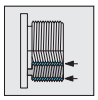



Bild zeigt Rechtsausführung

| $d_A$ [mm] | Type, Bezeichnung | L N R | $s_{min}$ [mm] | $s_{max}$ [mm] | $T_{max}$ [mm] | $D_{min}$ [mm] | $l_2$ [mm] | $l_1$ [mm] | h [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | I32R90-2.0D-GX24-2 | R | 2,76 | 3,75 | 11,0 | 42 | 64 | 250 | 31,0 | 27,5 | GX24-2.. | E01 |
| 32 | I32R90-2.0D-GX24-3 | R | 3,76 | 5,00 | 11,0 | 42 | 64 | 250 | 31,0 | 27,5 | GX24-3.. | E01 |
| 32 | I32R90-2.0D-GX24-4 | R | 5,01 | 6,50 | 17,5 | 47 | 64 | 250 | 31,0 | 30,4 | GX24-4.. | E01 |
| 32 | I32L90-2.0D-GX24-2 | L | 2,76 | 3,75 | 11,0 | 42 | 64 | 250 | 31,0 | 27,5 | GX24-2.. | E01 |
| 32 | I32L90-2.0D-GX24-3 | L | 3,76 | 5,00 | 11,0 | 42 | 64 | 250 | 31,0 | 27,5 | GX24-3.. | E01 |
| 32 | I32L90-2.0D-GX24-4 | L | 5,01 | 6,50 | 17,5 | 47 | 64 | 250 | 31,0 | 30,4 | GX24-4.. | E01 |
| 40 | I40R90-2.0D-GX24-3 | R | 3,76 | 5,00 | 12,0 | 53 | 80 | 300 | 38,5 | 32,5 | GX24-3.. | E01 |
| 40 | I40R90-2.0D-GX24-4 | R | 5,01 | 6,50 | 17,5 | 57 | 80 | 300 | 38,5 | 34,4 | GX24-4.. | E01 |
| 40 | I40L90-2.0D-GX24-3 | L | 3,76 | 5,00 | 12,0 | 53 | 80 | 300 | 38,5 | 32,5 | GX24-3.. | E01 |
| 40 | I40L90-2.0D-GX24-4 | L | 5,01 | 6,50 | 17,5 | 57 | 80 | 300 | 38,5 | 34,4 | GX24-4.. | E01 |

| | | |
|---|---|---|
| E01 | 195069 | 220985 |

C269 | GX-E C151-C152 | GX-R C154





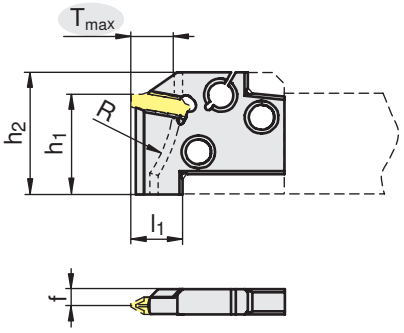



Bild zeigt Rechtsausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | $P_{min}$ [mm] | $P_{max}$ [mm] | $P_{min}$ [G/Zoll] | $P_{max}$ [G/Zoll] | $T_{max}$ [mm] | $h_1$ [mm] | $h_2$ [mm] | $l_1$ [mm] | f [mm] | R [mm] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | MSS-E20R-TC16-1 | R | 0,50 | 1,50 | 48 | 16 | 8 | 20 | 24 | 20 | 3,45 | 30 | TC16-1.. |
| 20 | MSS-E20N-TC16-2 | N | 1,75 | 3,00 | 14 | 8 | 12 | 20 | 24 | 20 | 2,20 | | TC16-2.. |
| 20 | MSS-E20L-TC16-1 | L | 0,50 | 1,50 | 48 | 16 | 8 | 20 | 24 | 20 | 3,45 | 30 | TC16-1.. |
| 25 | MSS-E25R-TC16-1 | R | 0,50 | 1,50 | 48 | 16 | 8 | 25 | 30 | 25 | 5,20 | 37,5 | TC16-1.. |
| 25 | MSS-E25R-TC16-2 | R | 1,75 | 3,00 | 14 | 8 | 10 | 25 | 30 | 25 | 4,10 | 37,5 | TC16-2.. |
| 25 | MSS-E25N-TC16-3 | N | 3,50 | 5,00 | 7 | 5 | 12 | 25 | 30 | 25 | 3,10 | | TC16-3.. |
| 25 | MSS-E25L-TC16-1 | L | 0,50 | 1,50 | 48 | 16 | 8 | 25 | 30 | 25 | 5,20 | 37,5 | TC16-1.. |
| 25 | MSS-E25L-TC16-2 | L | 1,75 | 3,00 | 14 | 8 | 10 | 25 | 30 | 25 | 4,10 | 37,5 | TC16-2.. |


TC60° C160

TC55° C161

C168

C169

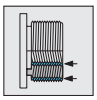
C175

C171+C173

# Monohalter

Gewindedrehen – TC







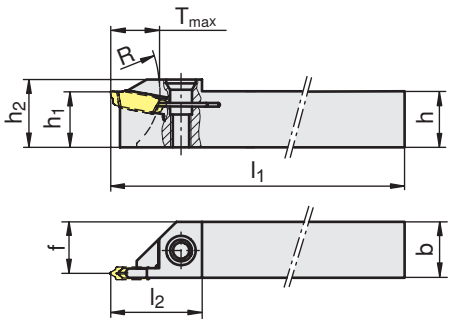
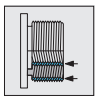



Bild zeigt Rechtsausführung

| h [mm] | Type, Bezeichnung | L N R | $P_{min}$ [mm] | $P_{max}$ [mm] | $P_{min}$ [G/Zoll] | $P_{max}$ [G/Zoll] | $T_{max}$ [mm] | $h_1$ [mm] | $h_2$ [mm] | b [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | R [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | E12R00-1212-TC16 | R | 0,50 | 3,00 | 48 | 8 | 10 | 12 | 14,5 | 12 | 150 | 20 | 11,00 | 15 | TC16-1/2.. | E01 |
| 12 | E12L00-1212-TC16 | L | 0,50 | 3,00 | 48 | 8 | 10 | 12 | 14,5 | 12 | 150 | 20 | 11,00 | 15 | TC16-1/2.. | E01 |

| | | |
|---|---|---|
| E01 | 219981 | 220983 |

C269 | TC60° C160 | TC55° C161





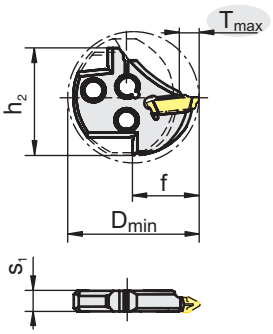


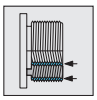

Bild zeigt Rechtsausführung

| Bgr. [mm] | Type, Bezeichnung | L N R | $P_{min}$ [mm] | $P_{max}$ [mm] | $P_{min}$ [G/Zoll] | $P_{max}$ [G/Zoll] | $T_{max}$ [mm] | $D_{min}$ [mm] | $h_2$ [mm] | $s_1$ [mm] | f [mm] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | MSS-I32R-TC16-1 | R | 0,50 | 1,50 | 48 | 16 | 7 | 40 | 32,2 | 6,2 | 20,00 | TC16-1.. |
| 32 | MSS-I32R-TC16-2 | R | 1,75 | 3,00 | 14 | 8 | 7 | 40 | 32,2 | 6,2 | 20,00 | TC16-2.. |
| 32 | MSS-I32N-TC16-3 | N | 3,50 | 5,00 | 7 | 5 | 7 | 40 | 32,2 | 6,2 | 20,00 | TC16-3.. |
| 32 | MSS-I32L-TC16-1 | L | 0,50 | 1,50 | 48 | 16 | 7 | 40 | 32,2 | 6,2 | 20,00 | TC16-1.. |
| 32 | MSS-I32L-TC16-2 | L | 1,75 | 3,00 | 14 | 8 | 7 | 40 | 32,2 | 6,2 | 20,00 | TC16-2.. |


TC60° C160 | TC55° C161 | 1.5D C207 | 2.5D C208 | UTS C209

# Monobohrstange

Gewindedrehen – TC





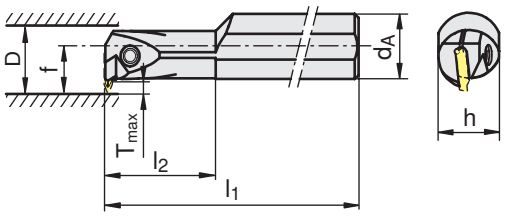
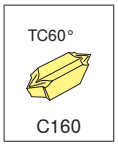


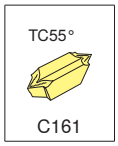

Bild zeigt Rechtsausführung

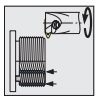
| $d_A$ [mm] | Type, Bezeichnung | LNR | $P_{min}$ [mm] | $P_{max}$ [mm] | $P_{min}$ [G/Zoll] | $P_{max}$ [G/Zoll] | $T_{max}$ [mm] | $D_{min}$ [mm] | h [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | I16R90-2D-TC16 | R | 0,50 | 3,00 | 48 | 8 | 4 | 20 | 18 | 181 | 32 | 14 | TC16-1/2.. | E01 |
| 20 | I16L90-2D-TC16 | L | 0,50 | 3,00 | 48 | 8 | 4 | 20 | 18 | 181 | 32 | 14 | TC16-1/2.. | E01 |
| 25 | I20R90-2D-TC16 | R | 0,50 | 5,00 | 48 | 5 | 5 | 25 | 23 | 200 | 40 | 17,5 | TC16-.. | E02 |
| 25 | I20L90-2D-TC16 | L | 0,50 | 5,00 | 48 | 5 | 5 | 25 | 23 | 200 | 40 | 17,5 | TC16-.. | E02 |
| 32 | I25R90-2D-TC16 | R | 0,50 | 5,00 | 48 | 5 | 6 | 32 | 30 | 250 | 50 | 22 | TC16-.. | E03 |
| 32 | I25L90-2D-TC16 | L | 0,50 | 5,00 | 48 | 5 | 6 | 32 | 30 | 250 | 50 | 22 | TC16-.. | E03 |

| | | |
|---|---|---|
| E01 | 195068 | 220983 |
| E02 | 195069 | 220985 |
| E03 | 195070 | 200317 |

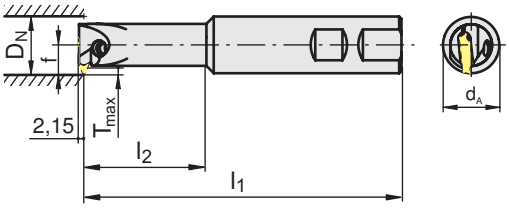






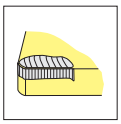
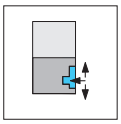
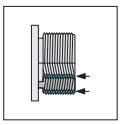
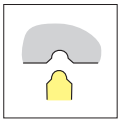
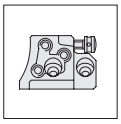



| $d_A$ [mm] | Type, Bezeichnung | L NR | $l_1$ [mm] | $l_2$ [mm] | $T_{max}$ [mm] | $D_N$ [mm] | f [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 25 | I25R90-2D-TC16-W | R | 140 | 54 | 3,0 | 25 | 12,5 | TC16-.. | E01 |
| 32 | I32R90-2D-TC16-W | R | 166 | 68 | 3,5 | 32 | 16,0 | TC16-.. | E02 |

| | | |
|---|---|---|
| E01 | 228621 | 220985 |
| E02 | 195070 | 200317 |

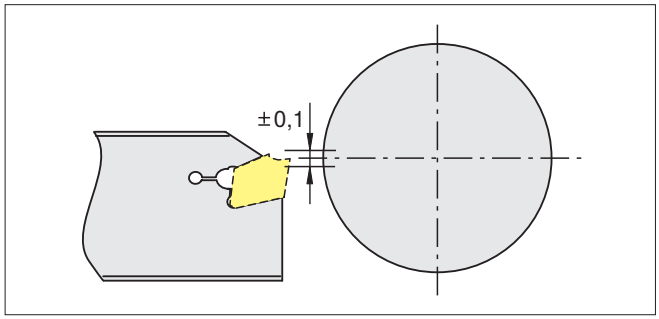
C269 | TC60° C160 | TC55° C161



| | | |
|---|---|---|
|  | Allgemein | C225-C232 |
|  | Verschleißarten / Abhilfe | C233-C234 |
|   | Werkstoffvergleichstabellen | C235-C238 |
|  | Schnittdatenrichtwerte | C239 |
|  | Einsatzmöglichkeiten Axialstechen | C241-C246 |
|  | Gewindedrehen / Gewindefräsen | C247-C260 |
|  | Systemfunktionen | C261-C265 |
|  | GX-Sonderformen | C266 |
|  | Einsatzmöglichkeiten MSS-Adapter | C267-C268 |
|  | Ersatzteilbeschreibung | C269 |

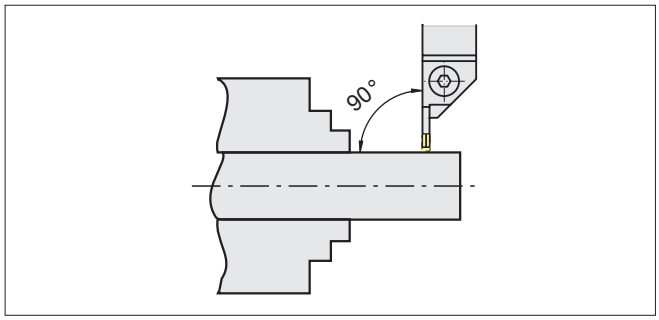
# Werkzeug - Einstellung

Einsatzempfehlungen




## Spitzenhöhe

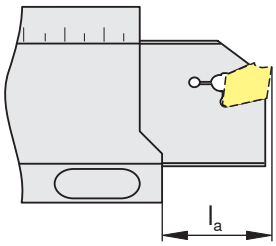
Die Spitzenhöhe sollte innerhalb einer Toleranz von ± 0,1 mm zur Werkzeugachse eingestellt sein. Dies ist besonders wichtig beim Abstechen ins Zentrum.

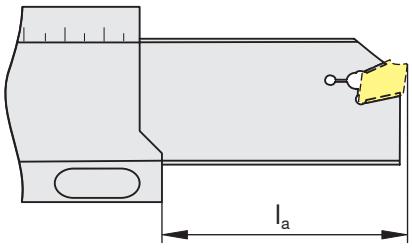



## Werkzeugeinstellung

Das Stechwerkzeug muss unter einem Winkel von 90° zur Werkstückachse eingebaut werden.

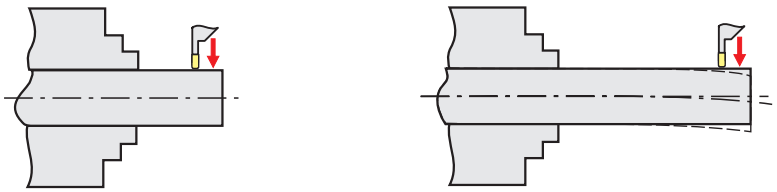
## Werkzeugauskragung



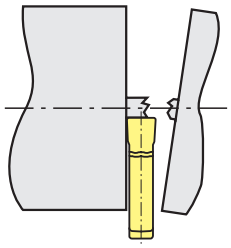

Für optimale Stabilität ist die Werkzeugauskragung immer möglichst kurz zu wählen. Als Faustregel gilt: Auskragung $l_a$ sollte nicht größer als 8 x s (Stechbreite) sein.

## Werkzeugauskragung



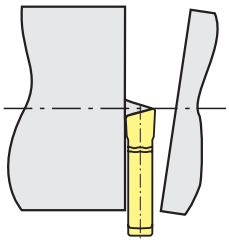
Zur Vermeidung von Vibrationen sollte das Werkstück immer möglichst kurz gespannt werden.

## Hinweise zum Abstechen



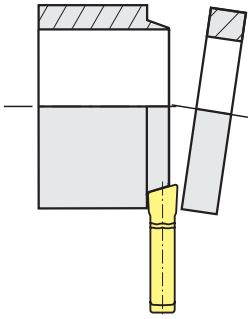
Ab Ø 5 mm den Vorschub „f“ um ca. 50% reduzieren.

Nicht über Zentrum stechen (Bruchgefahr).



Zum butzenfreien Abstechen R- bzw. L-Platten verwenden.

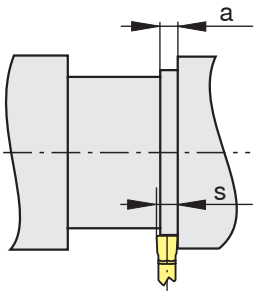
Zur Verringerung der seitlichen Abdrängkräfte den Vorschub um ca. 20% - 50% reduzieren.



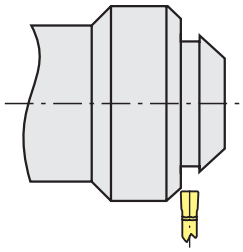
Zur Verhinderung von Ringbildung R- bzw. L-Platten verwenden.

Vorschub „f“ wegen seitlicher Abdrängkräfte ca. 20% - 50% reduzieren.

## Hinweise zum Einstechen




Beim seitlich versetzten Einstechen sollte die Breite „a“ mindestens 70% der Stechbreite „s“ betragen.



Beim Einstechen an schrägen Flächen muss der Vorschub beim Anschnitt ca. 20% - 50% reduziert werden.

# Wendeplatten

Toleranzen

| GX09-E | | | |
|---|---|---|---|
| | Toleranzen (mm) | | |
| Stufe | *x* | *s* | *r* |
| -F2 / -EN | ±0,02 | ±0,02 | ±0,05 |
| -M40 | ±0,1 | ±0,05 | |

| GX16-E | | | |
|---|---|---|---|
| | **Toleranzen (mm)** | | |
| Stufe | *x* | *s* | *r* |
| -27P / -F2 / -EN | ±0,02 | ±0,02 | ±0,05 |
| -M40 / -M1 | ±0,15 | ±0,05 | |

| GX24-E | | | |
|---|---|---|---|
| | Toleranzen (mm) | | |
| Stufe | *x* | *s* | *r* |
| -27P / -F2 | ±0,02 | ±0,02 | ±0,05 |
| -M40 / -M1 / -EN | ±0,15 | ±0,05 | |

| GX09-S / GX 16-S | | | |
|---|---|---|---|
| | Toleranzen (mm) | | |
| Stufe | *x* | *s* | *r* |
| -ER/-EL | ±0,02 | ±0,02 | – |
| -EN | | | ±0,05 |

| GX09-R | | | |
|---|---|---|---|
| | Toleranzen (mm) | | |
| Stufe | *x* | *s* | *r* |
| -EN / -ER / -EL | ±0,02 | ±0,02 | ±0,05 |

| GX 16-R | | | |
|---|---|---|---|
| | Toleranzen (mm) | | |
| Stufe | *x* | *s* | *r* |
| -27P / -EN | ±0,02 | ±0,02 | ±0,05 |

| GX 24-R | | | |
|---|---|---|---|
| | Toleranzen (mm) | | |
| Stufe | *x* | *s* | *r* |
| -27P | ±0,02 | ±0,02 | ±0,05 |
| -M3 | ±0,15 | ±0,05 | ±0,05 |

| AX | | | |
|---|---|---|---|
| | Toleranzen (mm) | | |
| Stufe | *x* | *s* | *r* |
| -F50 | ±0,02 | ±0,02 | ±0,05 |

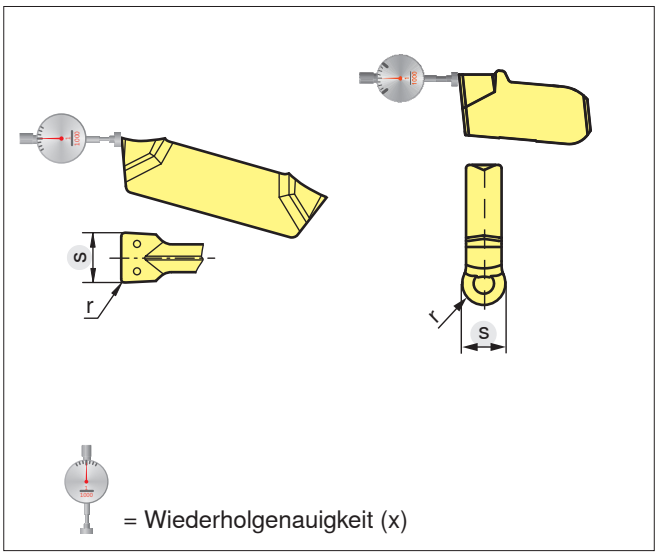
| SX | | | |
|---|---|---|---|
| | Toleranzen (mm) | | |
| Stufe | *x* | *s* | *r* |
| -27P / -F2 | ±0,02 | ±0,02 | ±0,05 |
| -M1 / -M2 / -M3 | ±0,1 | ±0,05 | ±0,05 |

| LX | | | |
|---|---|---|---|
| | Toleranzen (mm) | | |
| Stufe | *x* | *s* | *r* |
| -M2 / -M3 | ±0,15 | ±0,08 | ±0,08 |

| FX | | | | |
|---|---|---|---|---|
| | | Toleranzen (mm) | | |
| Stufe | Breite | *x* | *s* | *r* |
| -27P | 2,2 - 4,1 | ±0,05 | ±0,05 | ±0,05 |
| -F1 | 2,2 - 4,1 | ±0,13 | ±0,05 | ±0,05 |
| -M1 | 2,2 - 4,1 | ±0,13 | -0,1 | ±0,05 |
| | 5,1 - 6,5 | | -0,15 | |
| | 8,2 - 9,7 | ±0,15 | -0,2 | ±0,1 |
| -R2 | 3,1 - 4,1 | ±0,13 | ±0,05 | ±0,05 |

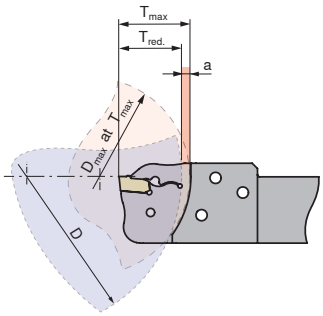
| MaxiClick | | | |
|---|---|---|---|
| | Toleranzen (mm) | | |
| Stufe | *x* | *s* | *r* |
| -F2 / -F3 | ±0,025 | ±0,03 | – |

| TC | | | |
|---|---|---|---|
| | Toleranzen (mm) | | |
| Stufe | *x* | *s* | *r* |
| -27P / -EN | ±0,02 | – | – |



## Stechtiefenreduktion

Die MSS-Stechmodule sind je nach Baugröße auf einen bestimmten Werkstückdurchmesser abgestimmt ($D_{max.}$). Ist der Durchmesser des Werkstückes größer als $D_{max.}$ des Stechmodules, so reduziert sich die erreichbare Stechtiefe um das Maß „a“. Das Ausmaß der Reduktion ist mit der folgenden Tabelle zu ermitteln




**$T_{max}$ = Maximale Einstechtiefe**
**$D_{max}$ = Maximaler Werkstückdurchmesser bei voller Einstechtiefe $T_{max}$ (a = 0)**
**a = Reduktion der Einstechtiefe**

$$T_{red.} = T_{max} - a$$

| Baugröße | Werkstückdurchmesser (mm) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E12 | **35** | 40 | 45 | 60 | 75 | 115 | >250 | | | | | | | | | | |
| E16 | **50** | 55 | 60 | 70 | 80 | 100 | 130 | 200 | >420 | | | | | | | | |
| E20 | **60** | 65 | 70 | 75 | 85 | 95 | 110 | 130 | 165 | 220 | >330 | | | | | | |
| E25 | **75** | 80 | 85 | 90 | 100 | 110 | 125 | 140 | 160 | 190 | 240 | 320 | >500 | | | | |
| E32 | **95** | 100 | 105 | 110 | 120 | 125 | 135 | 145 | 160 | 180 | 200 | 225 | 270 | 320 | 400 | 530 | >800 |
| | | **0,5** | **1,0** | **1,5** | **2,0** | **2,5** | **3,0** | **3,5** | **4,0** | **4,5** | **5,0** | **5,5** | **6,0** | **6,5** | **7,0** | **7,5** | **8,0** |

**Reduktion der maximalen Einstechtiefe a (mm)**

**Maximaler Werkstückdurchmesser ($D_{max}$) bei voller Stechtiefe ($T_{max}$) in mm**

## Berechnungsbeispiel: Modul

MSS-[E25]R[21]-GX24-3

**E25** **Baugröße 25**

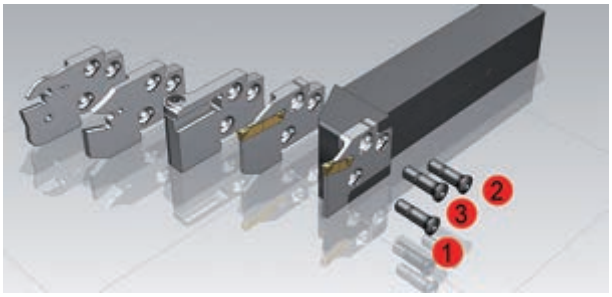
**21** $T_{max}$ = 21 mm, Ø 75 mm

D = Ø 100 mm

=> $T_{max} - a = T_{red.}$
$21 - 2 = 19$ mm

# Anzugsmomente

MSS-Modul Spannschrauben




## MSS-Werkzeugschaft

Reihenfolge für das Vor- und Nachspannen der Schrauben beachten!

C11

| MSS-Werkzeugschaft | Schraube | Torx | Anzugsmoment | |
|---|---|---|---|---|
| | | | Nm | in.lbs |
| MSS-E12... | 7897200/M2,5x10,0/T08 | T08 | 1,2 | 10,6 |
| MSS-E16... | 7897202/M3,5x12,5/T15 | T15 | 3,2 | 28,3 |
| MSS-E20... | 7897203/M4,0x14,0/T15 | T15 | 4 | 35,4 |
| MSS-E25... | 7897205/M5,0x18,0/T20 | T20 | 5 | 44,3 |
| MSS-E32... | 7897206/M6,0x20,0/T25 | T25 | 6 | 53,1 |




## MSS-Werkzeugschaft

Reihenfolge für das Vor- und Nachspannen der Schrauben beachten!

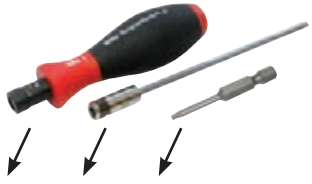
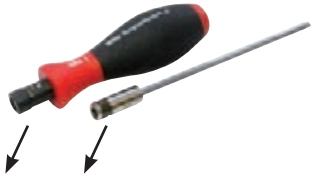
C11

| MSS-Bohrstange | Schraube | Torx | Anzugsmoment | |
|---|---|---|---|---|
| | | | Nm | in.lbs |
| MSS-I16... | 7897200/M2,5x10,0/T08 | T08 | 1,2 | 10,6 |
| MSS-I20... | 7897201/M3,0x11,0/T10 | T10 | 2 | 17,7 |
| MSS-I25... | 7897202/M3,5x12,5/T15 | T15 | 3,2 | 28,3 |
| MSS-I32... | 7897204/M4,5x17,0/T20 | T20 | 4 | 35,4 |
| MSS-I40... | 7897205/M5,0x18,0/T20 | T20 | 5 | 44,3 |

## Empfohlene Anzugsmomente

| Werkzeug | Schraube | Torx | Anzugsmoment | |
|---|---|---|---|---|
| | | | Nm | in.lbs |
| **SX**  | 7897218/M4,0X18/T20 | T20 | 4,0 | 35,4 |
| **AX**  | 7897202/M3,5X12,5/T15<br>7897203/M4,0X14/T15<br>7897205/M5,0X18/T20 | T15<br>T15<br>T20 | 3,2<br>4,0<br>5,0 | 28,3<br>35,4<br>44,3 |
| **GX**  | M5x18-15IP/10002133 | T15IP | 5,0 | 44,3 |

## Drehmoment-Schraubendreher/Bits

| | | |
|---|---|---|
|  **1 + 1 + 5 Stk. (Lieferumfang)** | DMSD 1,2Nm/SORT T08<br>DMSD 2,0Nm/SORT T10<br>DMSD 3,2Nm/SORT T15<br>DMSD 4,0Nm/SORT T15<br>DMSD 4,0Nm/SORT T20<br>DMSD 5,0Nm/SORT T20<br>DMSD 6,0Nm/SORT T25 | **Drehmoment fix eingestellt: 1,2 - 6,0 Nm** |
|  **1 + 1 Stk. (Lieferumfang)** | DMSD 1-5Nm/SORT | **Drehmoment variabel einstellbar: 1,0-5,0 Nm** |
| | DMSD 2-8Nm/SORT | **Drehmoment variabel einstellbar: 2,0-8,0 Nm** |
|  | DMSD-B T08-50MM<br>DMSD-B T10-50MM<br>DMSD-B T15-50MM<br>DMSD-B T20-50MM<br>DMSD-B T25-50MM | |

# Maßnahmen bei Stechproblemen



| Problemstellung | | | | | | | | | | Abhilfe, Maßnahmen | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Verschleißtyp | | | | Werkstückprobleme | | | | Spanbruch | | | |
| Ausbröckelung | Aufbauschneiden | Freiflächenverschleiß | Plastische Verformung | Vibrationen | Butzen und Gratbildung | Bombierte Fläche | Oberflächengüte | Span zu lang (Wirrspan) | Span zu kurz (Bruchspan) | | |
| | ⇧ | ⇩ | ⇩ | ⇩ | | | ⇧ | ⇩ | | Schnittgeschwindigkeit | Schnittwerte |
| ⇩ | | ≈ | ⇩ | ⇧ | | ⇩ | ⇩ | ⇧ | ⇩ | Vorschub | |
| ⇩ | | ⇩ | ⇩ | | ⇩ | ⇩ | ⇩ | | | Vorschub-Zentrumsbereich | |
| ⇧ | ⇧ | | ≈ | ≈ | ⇩ | ⇩ | ⇩ | ⇩ | ⇧ | Spanleitstufe (-R, -M, -F) | Wendeschneidplatten - Auswahl |
| | | | | | ▢ | | | | | R / L Ausführung | |
| ⇧ | | ⇧ | ⇧ | ⇩ | ⇩ | ⇩ | ⇧ | | | Eckenradius (größer / kleiner) | |
| ⇩ | | ⇧ | ⇧ | | | | | | | Schneidstoff (Verschleißfestigkeit / Zähigkeit) | |
| | | | | ⇩ | | ⇧ | ⇧ | | | Stechbreite | |
| ≈ | | | | ≈ | | ≈ | ≈ | | | Spannung Werkzeug | Allgemeine Kriterien |
| ≈ | | | | ≈ | | ≈ | ≈ | | | Spannung Werkstück | |
| ≈ | | | | ≈ | | | ⇩ | | | Auskragung | |
| ≈ | | ≈ | | ≈ | ≈ | | ≈ | | | Spitzenhöhe | |
| | ▢ | ▢ | ▢ | | ▢ | | ▢ | ▢ | | Kühlschmierstoff | |

⇧ erhöhen, vergrößern, großer Einfluss

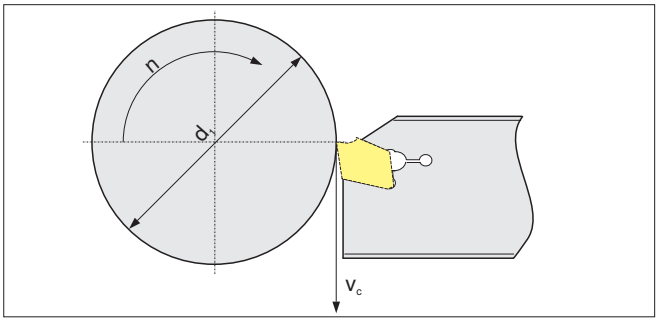
⇧ erhöhen, vergrößern, kleiner Einfluss

⇩ vermeiden, verkleinern, großer Einfluss

⇩ vermeiden, verkleinern, kleiner Einfluss

≈ kontrollieren, optimieren

▢ verwenden




## Schnittgeschwindigkeit ($v_c$)

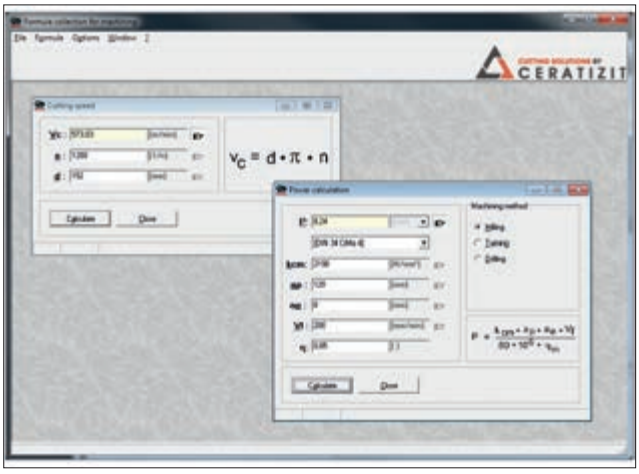
$$v_c = \frac{d_1 \cdot \pi \cdot n}{1000} \quad [m/min]$$

## Umdrehungen pro Minute (n)

$$n = \frac{v_c \cdot 1000}{d_1 \cdot \pi} \quad [U/min]$$

## Vorschubgeschwindigkeit ($v_f$)

$v_f = f \cdot n$ [mm/min]




## Die CERATIZIT Formelsammlung CT-CALC

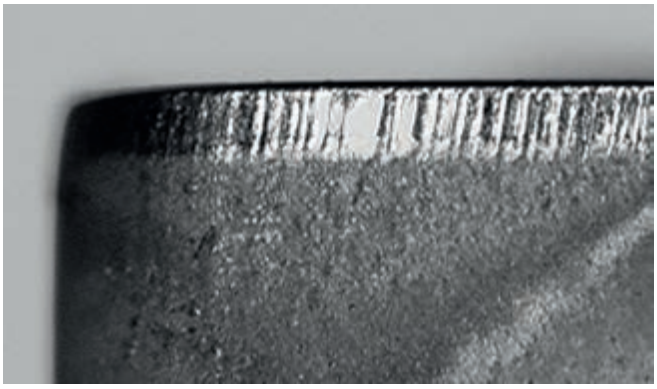
PC-gestützte Berechnung von wichtigen Zerspanungskenngrößen
- Schnittgeschwindigkeit
- Zeitspanvolumen
- Leistungsbedarf
- mittlere Spandicke

Sprachversionen
DE, EN, FR, IT, ES, DA, SE, FI

Gratis download unter
**www.ceratizit.com**

# Verschleißarten



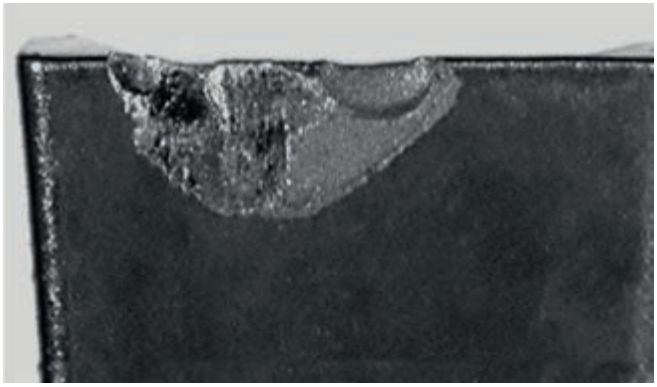


Abrieb an der Freifläche, normaler Verschleiß nach einer gewissen Eingriffszeit.

## Freiflächenverschleiß

**Ursache**
- Zu hohe Schnittgeschwindigkeit
- Hartmetallsorte mit zu geringer Verschleißfestigkeit
- Nicht angepasster Vorschub

**Abhilfe**
- Schnittgeschwindigkeit senken
- Verschleißfestere Hartmetallsorte wählen
- Vorschub in richtiges Verhältnis zu Schnittgeschwindigkeit und Schnitttiefe setzen (Vorschub erhöhen)



Durch überhöhte mechanische Beanspruchung der Schneidkante können HM-Partikel ausbrechen.

## Ausbröckelung

**Ursache**
- Zu verschleißfeste Sorte
- Vibrationen
- Zu hoher Vorschub bzw. Schnitttiefe
- Spanschlag

**Abhilfe**
- Zähere Sorte verwenden
- Negative Schneidengeometrie mit Spanleitstufe verwenden
- Überhang reduzieren; Mittenhöhe prüfen
- Stabilisierung der Schneidkante

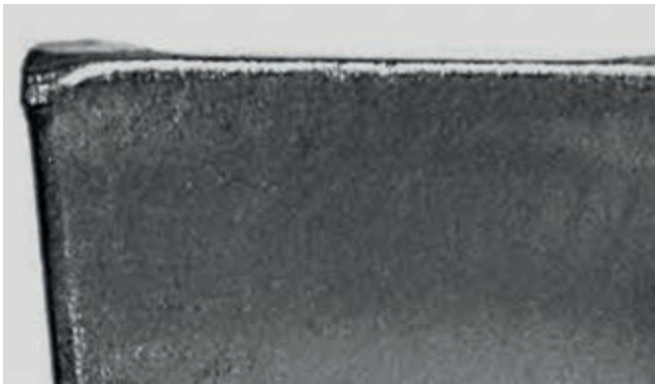


Der ablaufende heiße Span verursacht eine Auskolkung der Schneidplatte an der Spanfläche.

## Kolkverschleiß

**Ursache**
- Zu hohe Schnittgeschwindigkeit, Vorschub oder beides
- Zu geringer Spanwinkel
- Sorte mit zu geringer Verschleißfestigkeit
- Falsch zugeführte Kühlung

**Abhilfe**
- Schnittgeschwindigkeit und/oder Vorschub herabsetzen
- Kühlmittelmenge und/oder Druck erhöhen, Zuführung kontrollieren
- Kolkfestere Sorte verwenden



Hohe Zerspanungstemperatur bei gleichzeitiger mechanischer Beanspruchung kann zu plastischer Verformung führen.

## Plastische Verformung

**Ursache**
- Zu hohe Arbeitstemperatur, daher Erweichung des Grundmaterials
- Ungeeignete Sorte
- Unzureichend zugeführte Kühlung

**Abhilfe**
- Schnittgeschwindigkeit senken
- Verschleißfestere Hartmetallsorte wählen
- Kühlung vorsehen

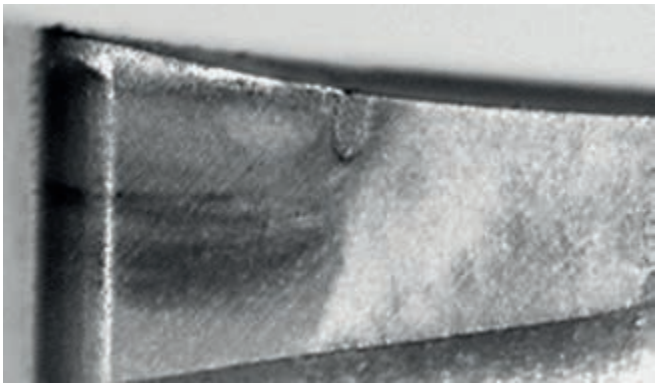


Materialaufschweißungen an der Schneidkante treten auf, wenn der Span infolge zu niedriger Schnitttemperatur nicht richtig abfließt.

## Aufbauschneidenbildung

**Ursache**
- Zu geringe Schnittgeschwindigkeit
- Zu kleiner Spanwinkel
- Falscher Schneidstoff
- Fehlende Kühlung / Schmierung

**Abhilfe**
- Schnittgeschwindigkeit erhöhen
- Spanwinkel erhöhen
- TiN-Beschichtung einsetzen
- Fettere Emulsionen verwenden



Einschnürung am Spantiefenmaximum.

## Kerbverschleiß

**Ursache**
- Oxidation an der Schneidkante
- Zu hohe Temperatur an der Kante

**Abhilfe**
- Unterschiedliche Schnitttiefen verwenden
- Schnittgeschwindigkeit herabsetzen
- Kühlschmierstoffzufuhr verbessern

# Härtewerte

Vergleichstabelle

| Zugfestigkeit N/mm² | Vickers HV | Brinell HB | Rockwell HRC | Shore C |
|---|---|---|---|---|
| 575 | 180 | 171 | | |
| 595 | 185 | 176 | | |
| 610 | 190 | 181 | | |
| 625 | 195 | 185 | | |
| 640 | 200 | 190 | 12 | |
| 660 | 205 | 195 | 13 | |
| 675 | 210 | 199 | 14 | |
| 690 | 215 | 204 | 15 | |
| 705 | 220 | 209 | 15 | 28 |
| 720 | 225 | 214 | 16 | |
| 740 | 230 | 219 | 17 | 29 |
| 755 | 235 | 223 | 18 | |
| 770 | 240 | 228 | 20.3 | 30 |
| 785 | 245 | 233 | 21.3 | |
| 800 | 250 | 238 | 22.2 | 31 |
| 820 | 255 | 242 | 23.1 | 32 |
| 835 | 260 | 247 | 24 | 33 |
| 850 | 265 | 252 | 24.8 | |
| 865 | 270 | 257 | 25.6 | |
| 880 | 275 | 261 | 26.4 | 34 |
| 900 | 280 | 268 | 27.1 | |
| 915 | 285 | 271 | 27.8 | 35 |
| 930 | 290 | 276 | 28.5 | |
| 950 | 295 | 280 | 29.2 | 36 |
| 965 | 300 | 285 | 29.8 | 37 |
| 995 | 310 | 295 | 31 | 38 |
| 1030 | 320 | 304 | 32.2 | 39 |
| 1060 | 330 | 314 | 33.3 | 40 |
| 1095 | 340 | 323 | 34.3 | 41 |
| 1125 | 350 | 333 | 35.5 | 42 |
| 1155 | 360 | 342 | 36.6 | 43 |
| 1190 | 370 | 352 | 37.7 | 44 |
| 1220 | 380 | 361 | 38.8 | 45 |
| 1255 | 390 | 371 | 39.8 | 46 |
| 1290 | 400 | 380 | 40.8 | 47 |
| 1320 | 410 | 390 | 41.8 | 48 |
| 1350 | 420 | 399 | 42.7 | |
| 1385 | 430 | 409 | 43.6 | 49 |
| 1420 | 440 | 418 | 44.5 | |
| 1455 | 450 | 428 | 45.3 | 51 |
| 1485 | 460 | 437 | 46.1 | 52 |
| 1520 | 470 | 447 | 46.9 | 53 |
| 1555 | 480 | 465 | 47.7 | 54 |
| 1595 | 490 | 466 | 48.4 | |
| 1630 | 500 | 475 | 49.1 | 57 |
| 1665 | 510 | 485 | 49.8 | 58 |
| 1700 | 520 | 494 | 50.5 | 59 |
| 1740 | 530 | 504 | 51.1 | 60 |
| 1775 | 540 | 513 | 51.7 | 61 |
| 1810 | 550 | 523 | 52.3 | 62 |

| Zugfestigkeit N/mm² | Vickers HV | Brinell HB | Rockwell HRC | Shore C |
|---|---|---|---|---|
| 1845 | 560 | 532 | 53 | 63 |
| 1880 | 570 | 542 | 53.6 | 64 |
| 1920 | 580 | 551 | 54.1 | 65 |
| 1955 | 590 | 561 | 54.7 | 66 |
| 1995 | 600 | 570 | 55.2 | 67 |
| 2030 | 610 | 580 | 55.7 | 68 |
| 2070 | 620 | 589 | 56.3 | 69 |
| 2105 | 630 | 599 | 56.8 | 70 |
| 2145 | 640 | 608 | 57.3 | 71 |
| 2180 | 650 | 618 | 57.8 | 72 |
| 2210 | 660 | 628 | 58.3 | 73 |
| 2240 | 665 | 633 | 58.8 | 74 |
| 2280 | 670 | 638 | 59.3 | |
| 2310 | 675 | 643 | 59.8 | 75 |
| 2350 | 680 | 648 | 60.3 | 76 |
| 2380 | 685 | 653 | 61.1 | 77 |
| 2410 | 690 | 658 | 61.3 | 78 |
| 2450 | 695 | 663 | 61.7 | 79 |
| 2480 | 710 | 668 | 62.2 | 80 |
| 2520 | 720 | 678 | 62.6 | 81 |
| 2550 | 730 | 683 | 63.1 | 82 |
| 2590 | 740 | 693 | 63.5 | |
| 2630 | 750 | 703 | 63.9 | 83 |
| 2660 | 760 | 708 | 64.3 | 84 |
| 2700 | 770 | 718 | 64.7 | 85 |
| 2730 | 780 | 723 | 65.1 | |
| 2770 | 790 | 733 | 65.5 | 86 |
| 2800 | 800 | 738 | 65.9 | |
| 2840 | 810 | 748 | 66.3 | 87 |
| 2870 | 820 | 753 | 66.7 | 88 |
| 2910 | 830 | 763 | 67 | |
| 2940 | 840 | 768 | 67.4 | 89 |
| 2980 | 850 | | 67.7 | |
| 3010 | 860 | | 68.1 | 90 |
| 3050 | 870 | | 68.4 | |
| 3080 | 880 | | 68.7 | 91 |
| 3120 | 890 | | 69 | |
| 3150 | 900 | | 69.3 | 92 |
| 3190 | 910 | | 69.6 | |
| 3220 | 920 | | 69.9 | |
| 3260 | 930 | | 70.1 | |

Umrechnungswerte sind angenähert nach DIN EN ISO18265 (02-2004)

# Werkstoffvergleichstabelle

| DIN | Wks Nr. | BS | AFNOR | SS | AISI | Japan JIS | Kc1.1 N/mm² | mc | VDI 3323 Gruppe |
|---|---|---|---|---|---|---|---|---|---|
| 10 SPb 20 | 1.0722 | | 10 PbF 2 | | 11 L 08 | | 1350 | 0,20 | **1** |
| 100 Cr 6 | 1.2067 | BL 3 | Y 100 C 6 | | L 3 | SUJ2 | 1775 | 0,24 | **6/9** |
| 105 WCr 6 | 1.2419 | | 105 WC 13 | | | SKS31 | 1775 | 0,24 | **6/9** |
| 12 CrMo 9 10 | 1.7380 | 1501-622 Gr. 31; 45 | 10 CD 9.10 | 2218 | A 182-F22 | SPVA,SCMV4 | 1675 | 0,24 | **6/7** |
| 12 Ni 19 | 1.5680 | | Z 18 N 5 | | 2515 | | 2450 | 0,23 | **10/11** |
| 13 CrMo 4 4 | 1.7335 | 1501-620 Gr. 27 | 15 CD 3.5 | 2216 | A 182-F11; F12 | SPVAF12 | 1675 | 0,24 | **6/7** |
| 14 MoV 6 3 | 1.7715 | 1503-660-440 | | | | | 1675 | 0,24 | **6/7** |
| 14 Ni 6 | 1.5622 | | 16 N 6 | | A 350-LF 5 | | 1675 | 0,24 | **6/7** |
| 14 NiCr 10 | 1.5732 | | 14 NC 11 | | 3415 | SNC415(H) | 1675 | 0,24 | **6/7** |
| 14 NiCr 14 | 1.5752 | 655 M 13 | 12 NC 15 | | 3310; 9314 | SNC815(H) | 1675 | 0,24 | **6/7** |
| 14 NiCrMo 13 4 | 1.6657 | | | | | | 1675 | 0,24 | **6/7** |
| 15 Cr 3 | 1.7015 | 523 M 15 | 12 C 3 | | 5015 | | 1675 | 0,24 | **6/7** |
| 15 CrMo 5 | 1.7262 | | 12 CD 4 | | | SCM415(H) | 1675 | 0,24 | **6/7** |
| 15 Mo 3 | 1.5415 | 1501-240 | 15 D 3 | 2912 | A 204 Gr. A | | 1675 | 0,24 | **6/7** |
| 16 MnCr 5 | 1.7131 | 527 M 17 | 16 MC 5 | 2511 | 5115 | SCR415 | 1675 | 0,24 | **6/7** |
| 16 Mo 5 | 1.5423 | 1503-245-420 | | | 4520 | SB450M | 1675 | 0,24 | **6/7** |
| 17 CrNiMo 6 | 1.6587 | 820 A 16 | 18 NCD 6 | | | | 1675 | 0,24 | **6/7** |
| 21 NiCrMo 2 | 1.6523 | 805 M 20 | 20 NCD 2 | 2506 | 8620 | SNCM220(H) | 1725 | 0,24 | **6/8** |
| 25 CrMo 4 | 1.7218 | 1717 CDS 110 | 25 CD 4 S | 2225 | 4130 | SM420;SCM430 | 1725 | 0,24 | **6/8** |
| 28 Mn 6 | 1.1170 | 150 M 28 | 20 M 5 | | 1330 | | 1500 | 0,22 | **2** |
| 32 CrMo 12 | 1.7361 | 722 M 24 | 30 CD 12 | 2240 | | | 1775 | 0,24 | **6/9** |
| 34 Cr 4 | 1.7033 | 530 A 32 | 32 C 4 | | 5132 | SCR430(H) | 1725 | 0,24 | **6/8** |
| 34 CrMo 4 | 1.7220 | 708 A 37 | 35 CD 4 | 2234 | 4135; 4137 | SCM432;SCCRM3 | 1775 | 0,24 | **6/9** |
| 34 CrNiMo 6 | 1.6582 | 817 M 40 | 35 NCD 6 | 2541 | 4340 | SNCM447 | 1775 | 0,24 | **6/9** |
| 35 S 20 | 1.0726 | 212 M 36 | 35 MF 4 | 1957 | 1140 | | 1525 | 0,22 | **2/3** |
| 36 CrNiMo 4 | 1.6511 | 816 M 40 | 40 NCD 3 | | 9840 | SNCM447 | 1775 | 0,24 | **6/9** |
| 36 Mn 5 | 1.1167 | | | | | | 1525 | 0,22 | **2/3** |
| 36 NiCr 6 | 1.5710 | 640 A 35 | 35 NC 6 | | 3135 | SNC236 | 1800 | 0,24 | **3/9** |
| 38 MnSi 4 | 1.5120 | | | | | | 1800 | 0,24 | **3/9** |
| 39 CrMoV 13 9 | 1.8523 | 897 M 39 | | | | | 1775 | 0,24 | **6/9** |
| 40 Mn 4 | 1.1157 | 150 M 36 | 35 M 5 | | 1039 | | 1525 | 0,22 | **2/3** |
| 40 NiCrMo 2 2 | 1.6546 | 311-Type 7 | 40 NCD 2 | | 8740 | SNCM240 | 1775 | 0,24 | **6/9** |
| 41 Cr 4 | 1.7035 | 530 M 40 | 42 C 4 | | 5140 | SCR440(H) | 1775 | 0,24 | **6/9** |
| 41 CrAlMo 7 | 1.8509 | 905 M 39 | 40 CAD 6.12 | 2940 | A 355 Cl. A | SACM645 | 1775 | 0,24 | **6/9** |
| 41 CrMo 4 | 1.7223 | 708 M 40 | 42 CD 4 TS | 2244 | 4142; 4140 | SCM440 | 1775 | 0,24 | **6/9** |
| 42 Cr 4 | 1.7045 | 530 A 40 | 42 C 4 TS | 2245 | 5140 | SCr440 | 1775 | 0,24 | **6/9** |
| 42 CrMo 4 | 1.7225 | 708 M 40 | 42 CD 4 | 2244 | 4142; 4140 | SCM440(H) | 1775 | 0,24 | **6/9** |
| 45 WCrV 7 | 1.2542 | BS 1 | | 2710 | S 1 | | 1775 | 0,24 | **6/9** |
| 50 CrV 4 | 1.8159 | 735 A 50 | 50 CV 4 | 2230 | 6150 | SUP10 | 1775 | 0,24 | **6/9** |
| 55 Cr 3 | 1.7176 | 527 A 60 | 55 C 3 | 2253 | 5155 | SUP9(A) | 1775 | 0,24 | **6/9** |
| 55 NiCrMoV 6 | 1.2713 | | 55 NCDV 7 | | L 6 | SKH1;SKT4 | 1775 | 0,24 | **6/9** |
| 55 Si 7 | 1.0904 | 250 A 53 | 55 S 7 | 2085; 2090 | 9255 | | 1775 | 0,24 | **6/9** |
| 58 CrV 4 | 1.8161 | | | | | | 1775 | 0,24 | **6/9** |
| 60 SiCr 7 | 1.0961 | | 60 SC 7 | | 9262 | | 1775 | 0,24 | **6/9** |
| 9 SMn 28 | 1.0715 | 230 M 07 | S 250 | 1912 | 1213 | SUM22 | 1350 | 0,21 | **1** |
| 9 SMn 36 | 1.0736 | 240 M 07 | S 300 | | 1215 | | 1350 | 0,21 | **1** |
| 9 SMnPb 28 | 1.0718 | | S 250 Pb | 1914 | 12 L 13 | SUM22L | 1350 | 0,21 | **1** |
| 9 SMnPb 36 | 1.0737 | | S 300 Pb | 1926 | 12 L 14 | | 1350 | 0,21 | **1** |
| Al99 | 3.0205 | | | | | | 700 | 0,25 | **21** |
| AlCuMg1 | 3.1325 | | | | | | 700 | 0,25 | **22** |
| AlMg1 | 3.3315 | | | | | | 700 | 0,25 | **21** |

# Werkstoffvergleichstabelle



| DIN | Wks Nr. | BS | AFNOR | SS | AISI | Japan JIS | Kc1.1 N/mm² | mc | VDI 3323 Gruppe |
|---|---|---|---|---|---|---|---|---|---|
| AlMgSi1 | 3.2315 | | | | | | 700 | 0,25 | **22** |
| C 105 W1 | 1.1545 | | Y1 105 | 1880 | W 110 | SK3 | 1675 | 0,24 | **3** |
| C 125 W | 1.1663 | | Y2 120 | | W 112 | | 1675 | 0,24 | **3** |
| C 15 | 1.0401 | 080 M 15 | AF3 7 C 12; XC 18 | 1350 | 1015 | S15C | 1350 | 0,21 | **1** |
| C 22 | 1.0402 | 050 A 20 | AF 42 C 20 | 1450 | 1020 | S20C, S22C | 1350 | 0,21 | **1** |
| C 35 | 1.0501 | 060 A 35 | AF 55 C 35 | 1550 | 1035 | S35C | 1525 | 0,22 | **2/3** |
| C 45 | 1.0503 | 080 M 46 | AF 65 C 45 | 1650 | 1045 | S45C | 1525 | 0,22 | **2/3** |
| C 55 | 1.0535 | 070 M 55 | | 1655 | 1055 | S55C | 1675 | 0,24 | **3** |
| C 60 | 1.0601 | 080 A 62 | CC 55 | | 1060 | S60C | 1675 | 0,24 | **3** |
| Cf 35 | 1.1183 | | | | | S35C | 1525 | 0,22 | **2/3** |
| Cf 53 | 1.1213 | | | | | S50C | 1525 | 0,22 | **2/3** |
| Ck 101 | 1.1274 | 060 A 96 | | 1870 | 1095 | | 1675 | 0,24 | **3** |
| Ck 15 | 1.1141 | 080 M 15 | XC 15; XC 18 | 1370 | 1015 | S15C | 1350 | 0,21 | **1** |
| Ck 55 | 1.1203 | 070 M 55 | XC 55 | | 1055 | S55C | 1675 | 0,24 | **3** |
| Ck 60 | 1.1221 | 080 A 62 | XC 60 | 1665; 1678 | 1060 | S58C | 1675 | 0,24 | **3** |
| CoCr20W15Ni | 2.4764 | | | | | | 3300 | 0,24 | **35** |
| CuZn15 | 2.0240 | | | | | | 700 | 0,27 | **27** |
| CuZn36Pb3 | 2.0375 | | | | | | 700 | 0,27 | **26** |
| E-Cu57 | 2.0060 | | | | | | 700 | 0,27 | **28** |
| G-AlSi10Mg | 3.2381 | | | | | | 700 | 0,25 | **24** |
| G-AlSi12 | 3.2581 | | | | | | 700 | 0,25 | **23** |
| G-AlSi9Cu3 | 3.2163 | | | | | | 700 | 0,25 | **23** |
| G-CuSn5ZnPb | 2.1096 | | | | | | 700 | 0,27 | **26** |
| G-CuZn40Fe | 2.0590 | | | | | | 700 | 0,27 | **28** |
| G-X 120 Mn 12 | 1.3401 | Z 120 M 12 | Z 120 M 12 | | A 128 (A) | | 3300 | 0,24 | **35** |
| G-X 20 Cr 14 | 1.4027 | 420 C 29 | Z 20 C 13 M | | | SCS2 | 1875 | 0,21 | **12/13** |
| G-X 40 NiCrSi 38 18 | 1.4865 | 330 C 40 | | | | | 2600 | 0,24 | **31** |
| G-X 45 CrSi 9 3 | 1.4718 | 401 S 45 | Z 45 CS 9 | | HNV 3 | | 2450 | .23 | **10/11** |
| G-X 5 CrNi 13 4 | 1.4313 | 425 C 11 | Z 5 CN 13.4 | 2385 | CA 6-NM | | 1875 | 0,21 | **12/13** |
| G-X 5 CrNiMoNb 18 10 | 1.4581 | 318 C 17 | Z 4 CNDNb 18.12 M | | | | 2150 | .0,2 | **14** |
| G-X 6 CrNi 18 9 | 1.4308 | 304 C 15 | Z 6 CN 18.10 M | 2333 | CF-8 | | 2150 | .0,2 | **14** |
| G-X 6 CrNiMo 18 10 | 1.4408 | | | | | | 2150 | .0,2 | **14** |
| G-X 7 Cr 13 | 1.4001 | | | | | | 1875 | 0,21 | **12/13** |
| GG-10 | .6010 | | Ft 10 D | 01 10-00 | A48-20 B | FC100 | 1150 | .0,2 | **15** |
| GG-15 | .6015 | Grade 150 | Ft 15 D | 01 15-00 | A48-25 B | FC150 | 1150 | .0,2 | **15** |
| GG-20 | .6020 | Grade 220 | Ft 20 D | 01 20-00 | A48-30 B | FC200 | 1150 | .0,2 | **15** |
| GG-25 | .6025 | Grade 260 | Ft 25 D | 01 25-00 | A48-40 B | FC250 | 1250 | 0,24 | **15/16** |
| GG-30 | .6030 | Grade 300 | Ft 30 D | 01 30-00 | A48-45 B | FC300 | 1350 | 0,28 | **16** |
| GG-35 | .6035 | Grade 350 | Ft 35 D | 01 35-00 | A48-50 B | FC350 | 1350 | 0,28 | **16** |
| GG-40 | .6040 | Grade 400 | Ft 40 D | 01 40-00 | A48-60 B | FC400 | 1350 | 0,28 | **16** |
| GGG-35.3 | .7033 | | | | | FCD350 | 1225 | 0,25 | **17** |
| GGG-40 | .7040 | SNG 420/12 | FGS 400-12 | 0717-02 | 60-40-18 | FCD400 | 1225 | 0,25 | **17** |
| GGG-40.3 | .7043 | SNG 370/17 | FGS 370-17 | 0717-15 | | FCD400 | 1225 | 0,25 | **17** |
| GGG-50 | .7050 | SNG 500/7 | FGS 500-7 | 0727-02 | 65-45-12 | FCD500 | 1350 | 0,28 | **18** |
| GGG-60 | .7060 | SNG 600/3 | FGS 600-3 | 0732-03 | 80-55-06 | FCD600 | 1350 | 0,28 | **18** |
| GGG-70 | .7070 | SNG 700/2 | FGS 700-2 | 0737-01 | 100-70-03 | FCD700 | 1350 | 0,28 | **18** |
| GGG-NiCr 20 2 | .7660 | S-NiCr 20 2 | S-NC 20 2 | | A 439 Type D-2 | | 1350 | 0,28 | **18** |
| GGG-NiMn 13 7 | .7652 | S-NiMn 13 7 | S-NM 13 7 | | | | 1350 | 0,28 | **18** |
| GS-Ck 45 | 1.1191 | 080 M 46 | XC 42 | 1672 | 1045 | S45C | 1525 | 0,22 | **2/3** |
| GTS-35-10 | .8135 | B 340/12 | MN 35-10 | | | | 1225 | 0,25 | **19** |
| GTS-45-06 | .8145 | P 440/7 | | | | | 1420 | 0,3 | **20** |

| DIN | Wks Nr. | BS | AFNOR | SS | AISI | Japan JIS | Kc1.1 N/mm² | mc | VDI 3323 Gruppe |
|---|---|---|---|---|---|---|---|---|---|
| GTS-55-04 | .8155 | P 510/4 | MP 50-5 | | | | 1420 | 0,3 | **20** |
| GTS-65-02 | .8165 | P 570/3 | MP 60-3 | | | | 1420 | 0,3 | **20** |
| GTS-70-02 | .8170 | P 690/2 | IP 70-2 | | | | 1420 | 0,3 | **20** |
| NiCr20TiAl | 2.4631 | HR 401; 601 | Nimonic 80 A | | | | 3300 | 0,24 | **33** |
| NiCr22Mo9Nb | 2.4856 | | Inconel 625 | | | | 3300 | 0,24 | **33** |
| NiCu30Al | 2.4375 | | Monel K 500 | | | | 3300 | 0,24 | **34** |
| NiFe25Cr20NbTi | 2.4955 | | | | | | 3300 | 0,24 | **34** |
| S 18-0-1 | 1.3355 | BT 1 | Z 80 WCV 18-04-01 | | T 1 | | 2450 | 0,23 | **10/11** |
| S 18-1-2-5 | 1.3255 | BT 4 | Z 80 WKCV 18-05-04-0 | | T 4 | | 2450 | 0,23 | **10/11** |
| S 2-9-2 | 1.3348 | | Z 100 DCWV 09-04-02- | 2782 | M 7 | | 2450 | 0,23 | **10/11** |
| S 6-5-2 | 1.3343 | BM 2 | Z 85 WDCV 06-05-04-0 | 2722 | M 2 | SKH9; SKH51 | 2450 | 0,23 | **10/11** |
| S 6-5-2-5 | 1.3243 | | Z 85 WDKCV 06-05-05- | 2723 | | SKH55 | 2450 | 0,23 | **10/11** |
| TiAl6V4 | 3.7165 | TA 10 bis TA 13 | T-A 6 V | | | | 2110 | 0,22 | **37** |
| X 10 Cr 13 | 1.4006 | 410 S 21 | Z 12 C 13 | 2302 | 410; CA-15 | SUS410 | 1875 | 0,21 | **12/13** |
| X 10 CrNiMoNb 18 12 | 1.4583 | | | | 318 | | 2150 | 0,2 | **14** |
| X 10 CrNiS 18 9 | 1.4305 | 303 S 21 | Z 10 CNF 18.09 | 2346 | 303 | | 2150 | 0,2 | **14** |
| X 100 CrMoV 5 1 | 1.2363 | BA 2 | Z 100 CDV 5 | 2260 | A 2 | | 2450 | 0,23 | **10/11** |
| X 12 CrMoS 17 | 1.4104 | | Z 10 CF 17 | 2383 | 430 F | SUS430F | 1875 | 0,21 | **12/13** |
| X 12 CrNi 17 7 | 1.4310 | 301 S 21 | Z 12 CN 17.07 | | 301 | | 2150 | 0,2 | **14** |
| X 12 CrNi 22 12 | 1.4829 | | | | | SUS301 | 1350 | 0,28 | **16** |
| X 12 CrNi 25 21 | 1.4845 | 310 S24 | Z 12 CN 25.20 | 2361 | 310 S | SUH310; SUS310S | 2150 | 0,2 | **14** |
| X 12 CrNiTi 18 9 | 1.4878 | 321 S 20 | Z 6 CNT 18.12 (B) | 2337 | 321 | | 2150 | 0,2 | **14** |
| X 12 NiCrSi 36 16 | 1.4864 | NA 17 | Z 12 NCS 37.18 | | 330 | SUH330 | 2600 | 0,24 | **31** |
| X 15 CrNiSi 20 12 | 1.4828 | 309 S 24 | Z 15 CNS 20.12 | | 309 | SUH309 | 1350 | 0,28 | **16** |
| X 165 CrMoV 12 | 1.2601 | | | 2310 | | | 2450 | 0,23 | **10/11** |
| X 2 CrNiMo 18 13 | 1.4440 | | | | | | 2150 | 0,2 | **14** |
| X 2 CrNiMoN 17 13 3 | 1.4429 | 316 S 62 | Z 2 CND 17.13 Az | 2375 | 316 LN | SUS316LN | 2150 | 0,2 | **14** |
| X 2 CrNiN 18 10 | 1.4311 | 304 S 62 | Z 2 CN 18 .10 | 2371 | 304 LN | SUS304LN | 2150 | 0,2 | **14** |
| X 20 CrNi 17 2 | 1.4057 | 431 S 29 | Z 15 CN 16.02 | 2321 | 431 | SUS431 | 1875 | 0,21 | **12/13** |
| X 210 Cr 12 | 1.2080 | BD 3 | Z 200 C 12 | | D 3 | | 2450 | 0,23 | **10/11** |
| X 210 CrW 12 | 1.2436 | | | 2312 | | | 2450 | 0,23 | **10/11** |
| X 30 WCrV 9 3 | 1.2581 | BH 21 | Z 30 WCV 9 | | H 21 | SKD5 | 2450 | 0,23 | **10/11** |
| X 40 CrMoV 5 1 | 1.2344 | BH 13 | Z 40 CDV 5 | 2242 | H 13 | SKD61 | 2450 | 0,23 | **10/11** |
| X 46 Cr 13 | 1.4034 | 420 S 45 | Z 40 C 14 | | | | 1875 | 0,21 | **12/13** |
| X 5 CrNi 18 9 | 1.4301 | 304 S 15 | Z 6 CN 18.09 | 2332; 2333 | 304; 304 H | SUS304 | 2150 | 0,2 | **14** |
| X 5 CrNiMo 17 13 3 | 1.4436 | 316 S 16 | Z 6 CND 17.12 | 2343 | 316 | SUS316 | 2150 | 0,2 | **14** |
| X 5 CrNiMo 18 10 | 1.4401 | 316 S 16 | Z 6 CND 17.11 | 2347 | 316 | SUS316 | 2150 | 0,2 | **14** |
| X 53 CrMnNiN 21 9 | 1.4871 | 349 S 54 | Z 52 CMN 21.09 | | EV 8 | | 1875 | 0,21 | **12/13** |
| X 6 Cr 13 | 1.4000 | 403 S 17 | Z 6 C 13 | 2301 | 403 | SUS403 | 1875 | 0,21 | **12/13** |
| X 6 Cr 17 | 1.4016 | 430 S 15 | Z 8 C 17 | 2320 | 430 | SUS430 | 1875 | 0,21 | **12/13** |
| X 6 CrMo 17 | 1.4113 | 434 S 17 | Z 8 CD 17.01 | 2325 | 434 | SUS434 | 1875 | 0,21 | **12/13** |
| X 6 CrNiMoTi 17 12 2 | 1.4571 | 320 S 31 | Z 6 CNT 17.12 | 2350 | 316 Ti | | 2150 | 0,2 | **14** |
| X 6 CrNiNb 18 10 | 1.4550 | 347 S 17 | Z 6 CNNb 18.10 | 2338 | 347 | | 2150 | 0,2 | **14** |
| X 6 CrNiTi 18 10 | 1.4541 | 321 S 12 | Z 6 CNT 18.10 | 2337 | 321 | | 2150 | 0,2 | **14** |
| X2 CrNi 18-8 | 1.4317 | | | | | | 2150 | 0,2 | **14** |

# Schnittdatenrichtwerte



| | Werkstück-werkstoff | Behandlungsart / Legierung | | VDI 3323 Gruppe | Härte HB |
|---|---|---|---|---|---|
| P | unlegierter Stahl | geglüht | ≤ 0,15 % C | 1 | 125 |
| | | geglüht | 0,15 % - 0,45 % C | 2 | 150 - 250 |
| | | vergütet | ≥ 0,45 % C | 3 | 300 |
| | niedriglegierter Stahl | geglüht | | 6 | 180 |
| | | vergütet | | 7 / 8 | 250 - 300 |
| | | vergütet | | 9 | 350 |
| | hochlegierter Stahl | geglüht | | 10 | 200 |
| | | vergütet | | 11 | 350 |
| | rostfreier Stahl | geglüht | ferritisch / martensitisch | 12 | 200 |
| | | vergütet | martensitisch | 13 | 325 |
| | | wärmebehandelt | ferritisch / martensitisch | 13 | 200 |
| M | rostfreier Stahl | abgeschreckt | austenitisch | 14 | 180 |
| | | abgeschreckt | ferritisch / austenitisch (Duplex) | 14 | 230 - 260 |
| | | ausgehärtet | austenitisch ausscheidungsgehärtet (PH) | 14 | 330 |
| K | Grauguss | | perlitisch / ferritisch | 15 | 180 |
| | | | perlitisch / martensitisch | 16 | 260 |
| | Grauguss mit Kugelgraphit | | ferritisch | 17 | 160 |
| | | | perlitisch | 18 | 250 |
| | Temperguss | | ferritisch | 19 | 130 |
| | | | perlitisch | 20 | 230 |
| N | Aluminium Knetlegierung | nicht aushärtbar | | 21 | 60 |
| | | aushärtbar | | 22 | 100 |
| | Aluminium Gusslegierung | nicht aushärtbar | < 12 % Si | 23 | 75 |
| | | aushärtbar | < 12 % Si | 24 | 90 |
| | | nicht aushärtbar | > 12 % Si | 25 | 130 |
| | Kupfer und Kupferlegierungen (Bronze, Messing) | | Automatenlegierung (1% Pb) | 26 | (110) |
| | | | Messing, Rotguss | 27 | 90 |
| | | | Bronze | 28 | 100 |
| | | | bleifreies Kupfer und Elektrolytkupfer | 28 | 100 |
| | nichtmetallische Werkstoffe | | Duroplast | 29 | – |
| | | | faserverstärkter Kunststoff | 29 | – |
| | | | Hartgummi | 30 | – |
| S | warmfeste Legierungen | geglüht | Fe-Basis | 31 | 200 |
| | | ausgehärtet | Fe-Basis | 32 | 280 |
| | | geglüht | Ni- oder Co-Basis | 33 | 250 |
| | | ausgehärtet | Ni- oder Co-Basis 30 - 58 HRC | 34 | (350) |
| | | gegossen | Ni- oder Co-Basis 1500 - 2200 N/mm² | 35 | (320) |
| | Titanlegierungen | | Reintitan | 36 | $R_m$ 440* |
| | | | Alpha- + Beta-Legierung | 37 | $R_m$ 1050* |
| H | gehärteter Stahl | gehärtet u. angelassen | | 38 | 55 HRC |
| | | gehärtet u. angelassen | | 39 | 60 HRC |
| | Hartguss | gegossen | | 40 | 400 |
| | gehärtetes Gusseisen | gehärtet u. angelassen | | 41 | 55 HRC |

* $R_m$ = maximale Festigkeit, gemessen in MPa

| CTCP325 $v_c$ [m/min] | CTP1340 $v_c$ [m/min] | CTCP335 $v_c$ [m/min] | CTPP345 $v_c$ [m/min] | H216T $v_c$ [m/min] |
|---|---|---|---|---|
| 150 - 280 | 120 - 250 | 130 - 250 | 110 - 190 | |
| 130 - 240 | 80 - 180 | 110 - 190 | 80 - 150 | |
| 100 - 200 | 60 - 150 | 70 - 170 | 70 - 140 | |
| 140 - 220 | 80 - 180 | 120 - 200 | 70 - 140 | |
| 130 - 180 | 60 - 150 | 110 - 180 | 70 - 120 | |
| 100 - 160 | 60 - 120 | 70 - 150 | 60 - 120 | |
| 120 - 170 | 80 - 160 | 90 - 170 | 60 - 100 | |
| 100 - 150 | 50 - 120 | 70 - 160 | 60 - 100 | |
| 150 - 250 | 50 - 200 | 120 - 200 | 90 - 160 | |
| 60 - 100 | 50 - 150 | 60 - 100 | 60 - 100 | |
| 140 - 220 | 50 - 200 | 120 - 200 | 100 - 180 | |
| 120 - 200 | 50 - 180 | 100 - 170 | 80 - 150 | |
| 80 - 130 | 50 - 100 | 70 - 110 | 70 - 110 | |
| 60 - 100 | 50 - 80 | 60 - 90 | 60 - 90 | |
| 120 - 220 | 100 - 200 | 90 - 180 | | 120 - 160 |
| 100 - 200 | 90 - 160 | 80 - 150 | | 90 - 140 |
| 130 - 190 | 100 - 180 | 100 - 160 | | 130 - 170 |
| 100 - 190 | 80 - 160 | 70 - 140 | | 90 - 130 |
| 140 - 280 | 110 - 230 | 100 - 200 | | 140 - 200 |
| 90 - 190 | 80 - 160 | 80 - 150 | | 120 - 160 |
| | 100 - 500 | | | 300 - 2500 |
| | 100 - 300 | | | 200 - 2000 |
| | 100 - 500 | | | 400 - 1500 |
| | 100 - 300 | | | 400 - 1500 |
| | 100 - 200 | | | 200 - 800 |
| | 100 - 500 | | | 250 - 600 |
| | 100 - 500 | | | 200 - 600 |
| | 100 - 300 | | | 150 - 400 |
| | 100 - 300 | | | 150 - 300 |
| | 80 - 180 | | | 80 - 180 |
| | 60 - 150 | | | 60 - 150 |
| | 100 - 250 | | | 100 - 250 |
| 25 - 45 | 20 - 50 | | | 30 - 45 |
| 20 - 40 | 20 - 40 | | 20 - 40 | 20 - 35 |
| 15 - 25 | 15 - 25 | | 20 - 30 | 20 - 35 |
| 10 - 20 | 10 - 20 | | | 18 - 30 |
| 10 - 20 | 10 - 20 | | | 15 - 25 |
| | 50 - 120 | | | 60 - 120 |
| | 30 - 50 | | | 30 - 80 |
| 10 - 20 | | | | |
| | | | | |
| 10 - 20 | | | | |
| 10 - 20 | | | | |

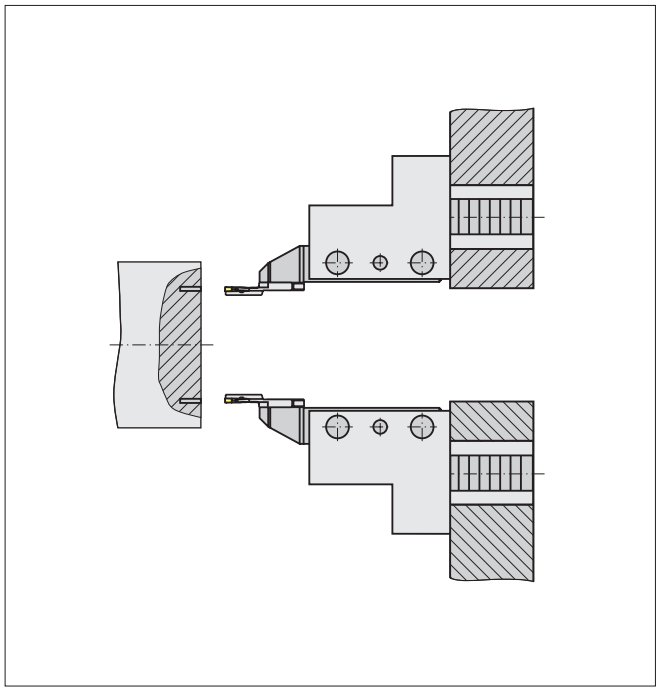
Die Schnittdaten sind unverbindliche Angaben für den Anwender. Eine Anpassung an die aktuellen Gegebenheiten ist zu empfehlen!

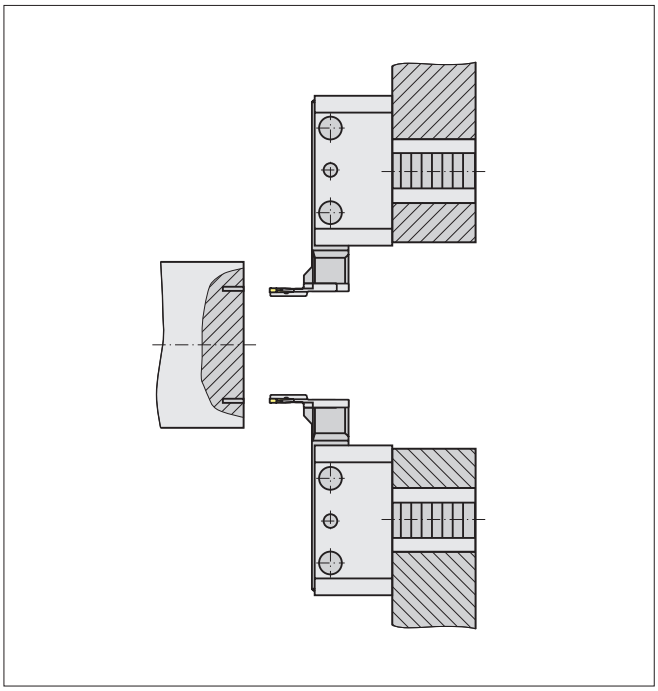
# Einsatzmöglichkeiten

System GX



## Werkzeuganordnung





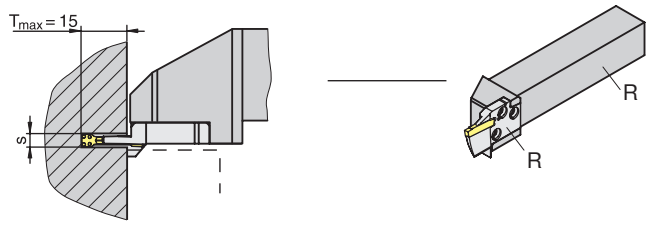
### MSS-Werkzeuge 0°

- Große Auskragung
- Kollisionsgefahr
- Eigene VDI-Aufnahme notwendig

### MSS-Werkzeuge 90°

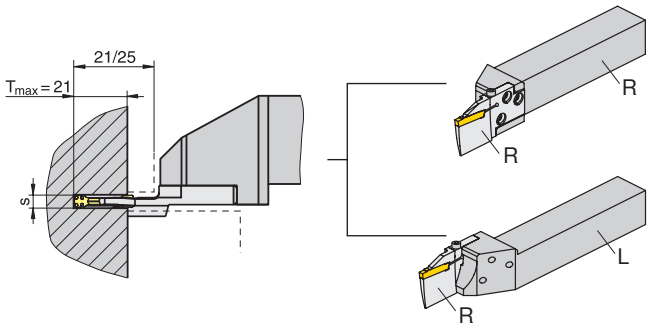
- Kurze Auskragung
- Erhöhte Stabilität
- Normale Spannung in vorhandener VDI-Aufnahme möglich

## Stechtiefen




### Axialmodul kurz

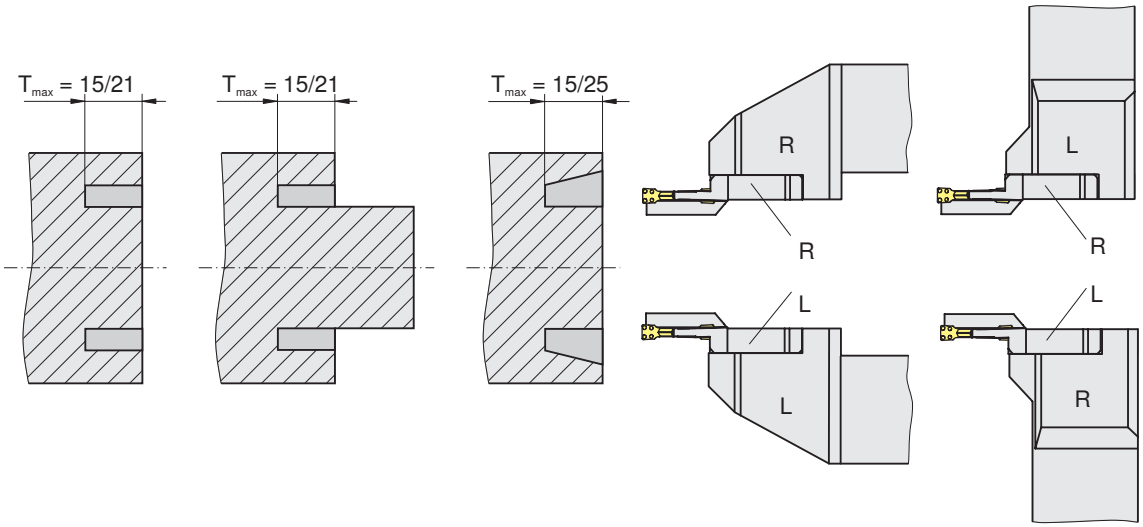
- Nur einseitig spannbar
- Stechtiefe max. 15 mm

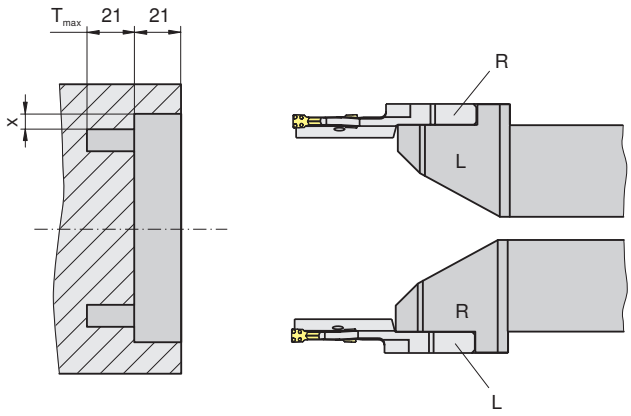



### Axialmodul lang

- Beidseitig spannbar
- Stechtiefe max. 21 mm

## Bearbeitungsmöglichkeiten mit Axialmodul kurz/lang



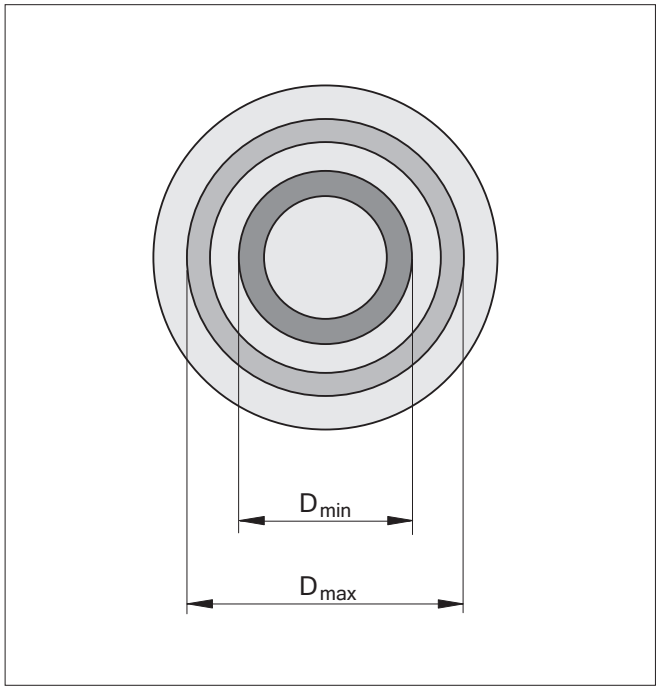

## Bearbeitungsmöglichkeiten nur mit Axialmodul lang

Beim Stechen der zweiten Nut ist je nach Durchmesserbereich bzw. eingesetzter Breitenklasse ein radialer Versatz (Maß „x“) notwendig.
Das Maß „x“ ist abhängig vom Einstechdurchmesser und der Schafthöhe.

# Bearbeitungshinweise

System GX



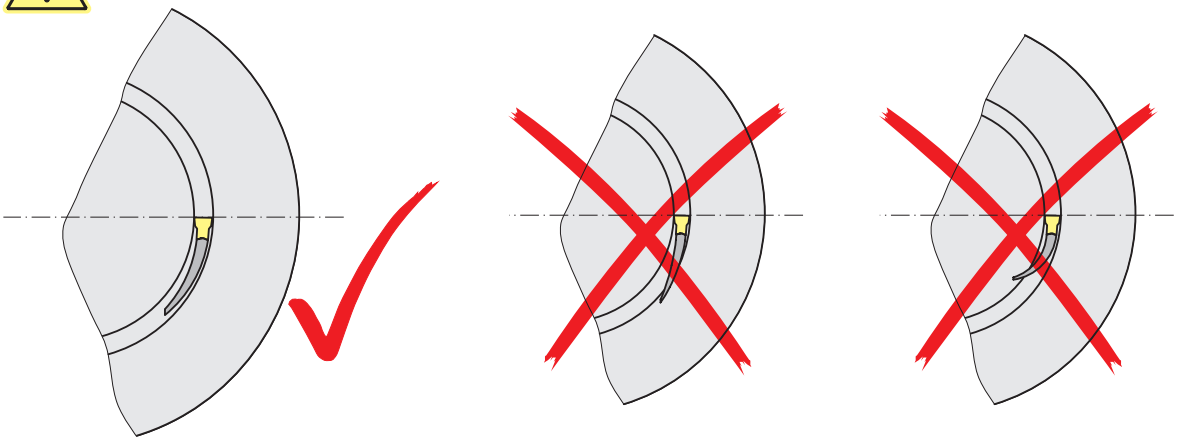



| Durchmesserbereich ($D_{min}$ - $D_{max}$) |
|---|
| 50 - 70 mm |
| 70 - 100 mm |
| 100 - 150 mm |
| 150 - 300 mm |
| 300 - 900 mm |

**Wichtig: Die angegebenen Durchmesser beziehen sich auf den Nut-Außendurchmesser.**

| | MSS-Baugröße | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 20 | 25 | | | | | 32 | |
| | Stechbreite | Stechbreite | | | | | Stechbreite | |
| | | Modul kurz | | | Modul lang | | | |
| **Durchmesserbereich** | 2,76 - 3,75 | 2,76 - 3,75 | 3,76 - 5,00 | 5,01 - 6,50 | 3,76 - 5,00 | 5,01 - 6,50 | 3,76 - 5,00 | 5,01 - 6,50 |
| 50 - 70 | ● | ● | ● | ● | | | | |
| 70 - 100 | ● | ● | ● | ● | ● | ● | ● | ● |
| 100 - 150 | ● | ● | ● | ● | ● | ● | ● | ● |
| 150 - 300 | | | ● | ● | ● | ● | ● | ● |
| 300 - 900 | | | | | | | | ● |
| max. Einstechtiefe | 14 | 15 | | | 21 | | 15 | |

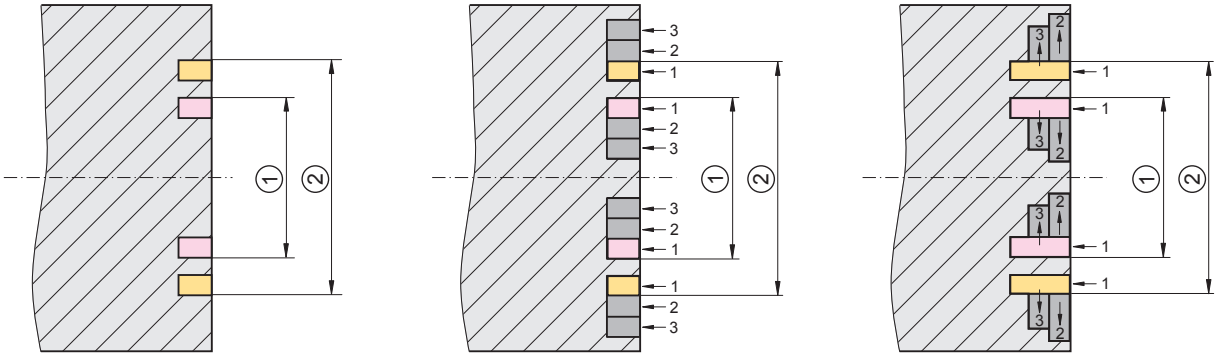
**Achtung:** Der Durchmesser stirnseitiger Einstiche muss innerhalb des am Modul angegebenen Durchmesserbereichs liegen. Andernfalls kann es zur Beschädigung oder Zerstörung des Werkzeuges kommen.



Richtiges Axialstechmodul

Falsches Axialstechmodul

## Anwendungshinweise für das Axialstechen und Plandrehen




① kleinster Einstechdurchmesser
② größter Einstechdurchmesser

### Axialstechen

Ist nur mit Modulen innerhalb des festgelegten Durchmesserbereiches (z.B. 50 - 70 mm) möglich.

**Wichtig:** Der angegebene Durchmesserbereich gilt immer für den Außendurchmesser der Nut!

### Axialstechen - Nutverbreiterung

Nutverbreiterungen über den am Modul angegebenen Durchmesserbereich sind nach oben und nach unten möglich.

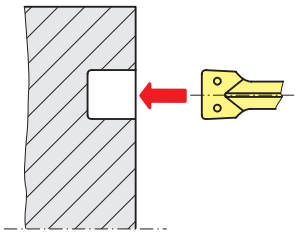
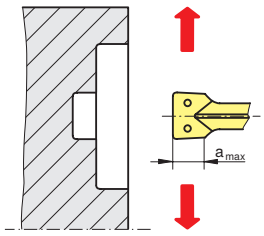
**Wichtig:** Nur der erste Einstich muss im angegebenen Durchmesserbereich des Moduls liegen. Die Tiefe der Nutverbreiterungseinstiche darf nicht größer als der erste Einstich sein.

### Axialstechen und Plandrehen

Nutverbreiterungen durch Plandrehen sind über und unter dem am Modul angegebenen Durchmesserbereich möglich.

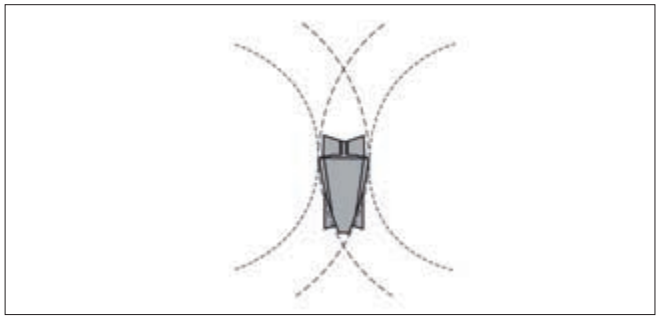
**Wichtig:** Nur der erste Einstich muss im angegebenen Durchmesserbereich des Moduls liegen.

**Axialstechen und Plandrehen**

| |  |  | |
|---|---|---|---|
| **Bezeichnung** | **f [mm/rev]** | **$a_{max}$ [mm]** | **f [mm/rev]** |
| GX24-2E3.00N0.30 | 0,05 - 0,15 | 2,5 | 0,05 - 0,20 |
| GX24-3E4.00N0.40 | 0,05 - 0,15 | 3,0 | 0,05 - 0,25 |
| GX24-3E5.00N0.40 | 0,05 - 0,15 | 3,0 | 0,10 - 0,25 |
| GX24-4E6.00N0.50 | 0,05 - 0,20 | 3,5 | 0,10 - 0,30 |
| GX24-2E3.00N0.30-F2 | 0,025 - 0,125 | 2,5 | 0,05 - 0,15 |
| GX24-2E3.50N0.30-F2 | 0,025 - 0,125 | 2,5 | 0,05 - 0,15 |
| GX24-3E4.00N0.40-F2 | 0,05 - 0,15 | 3,0 | 0,10 - 0,20 |
| GX24-3E4.50N0.40-F2 | 0,05 - 0,15 | 3,0 | 0,10 - 0,20 |
| GX24-3E5.00N0.40-F2 | 0,075 - 0,20 | 3,5 | 0,10 - 0,20 |
| GX24-4E6.00N0.50-F2 | 0,05 - 0,15 | 4,0 | 0,10 - 0,25 |

# MSS-AX

Produktmerkmale / Kundennutzen



## Neutrale Stechplatte

- Einsatz auf rechten und linken Werkzeugen möglich
- Einsatz unabhängig von der Nutenkrümmung Werkzeugposition in x+ oder x- möglich)
- Einschränkung nur durch $D_{min}$ beim Ersteinstich



## Geometrie -F50

- Universell geeignet für unterschiedliche Werkstoffe
- Zum Stechen und Drehen geeignet



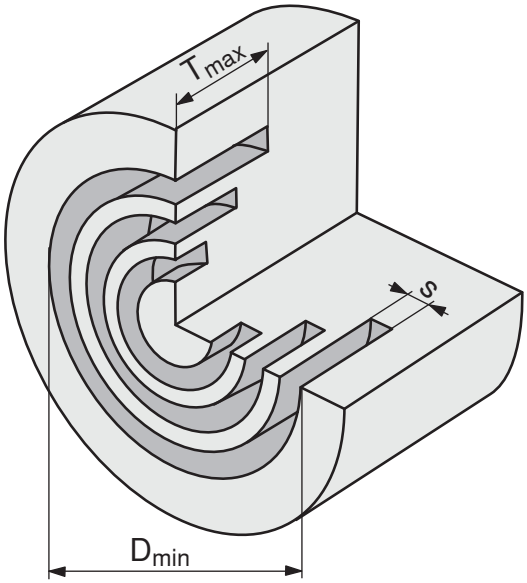

## Werkzeuge mit „hard & tough“ Beschichtung

- Höchster Verschleißschutz
- Beste Korrosionsbeständigkeit




## Monoblock und Modularwerkzeuge

- Hohe Flexibilität
- Für jede Anwendung die kostenoptimalste Lösung




## System GX



| $D_{min} – D_{max}$ \ $T_{max}$ | 15 [mm] | 21 [mm] |
|---|---|---|
| **50 - 70** | x | x |
| **70 - 100** | x | x |
| **100 - 150** | x | x |
| **150 - 300** | x | x |
| **300 - 900** | x | |
| **S** [mm] | 2,76 - 6,5 | 3,76 - 6,5 |

## System AX



| | AX05 | AX10 | AX15 |
|---|---|---|---|
| $D_{min} – D_{max}$ | 10 – ∞ | 20 – ∞ | 30 – ∞ |
| $T_{max}$ | 5,0 | 10,0 | 15,0 |
| **S** [mm] | 3,0 | 3,0 | 3,0 |

## System LX



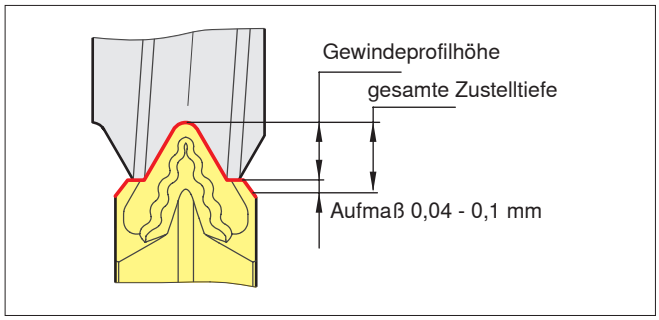
| | E32N25 | E32N32 | E32N45 |
|---|---|---|---|
| $D_{min} – D_{max}$ | 500 – ∞ | 500 – ∞ | 500 – ∞ |
| $T_{max}$ | 19 | 26 | 39 |
| **S** [mm] | 8 - 10 | 8 - 10 | 8 - 10 |

# TC - Gewinde

Grundlagen Gewindebearbeitung

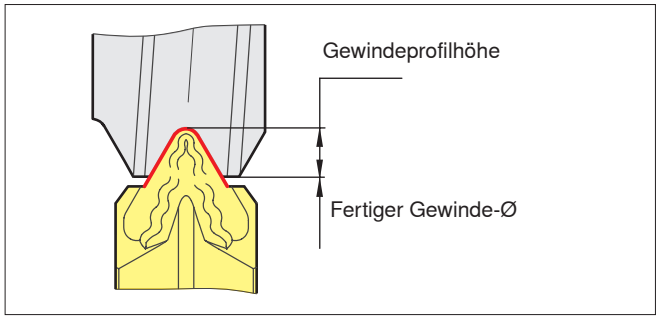


## Unterschied zwischen Voll- und Teilprofil-Wendeplatten




### Vollprofil-Wendeschneidplatte

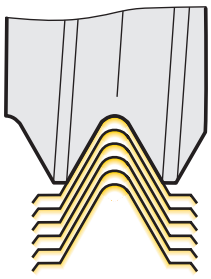
+ Das gesamte Gewindeprofil inklusive dem Außen-Ø wird bearbeitet (Aufmaß 0,04 - 0,1 mm auf Fertig-Ø)+ hohe Profilgenauigkeit
+ Höhere Standzeit wegen größerer Spitzenradien
+ Gratfreie Gewinde
- Eigene Wendeplatte für jede Steigung




### Teilprofil-Wendeschneidplatte

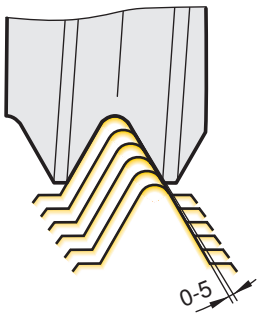
+ Eine Wendeschneidplatte für mehrere Steigungen
- Gewindeprofil entspricht daher nicht exakt der Norm
- Der Außen-Ø (bzw. der Kern-Ø bei Innengewinde) wird nicht mitgeschnitten

## Wahl der Zustellung



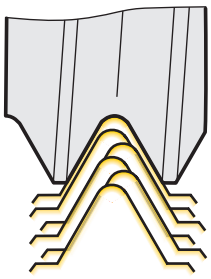
### Radiale Zustellung

+ Konventionelle Drehmaschinen
+ Bei Steigungen < 2 mm
+ Bei kurzspanenden Werkstoffen
- Schlechtere Spankontrolle




### Flankenzustellung

+ Bevorzugte Zustellung auf CNC-Maschinen
+ Bei Steigungen von 2 bis 4 mm
+ Langspanende Werkstoffe
+ Gute Spankontrolle



### Wechselweise Zustellung

+ Bei Steigungen > 4 mm
+ Langspanende Werkstoffe
+ Gleichmäßiger Verschleiß der Wendeplatte
+ Hohe Standzeit
+ Gute Spankontrolle
- NC-Programmierung aufwendig

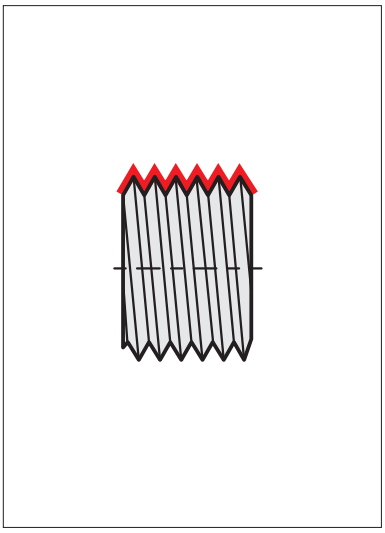
| Problemstellung | | | | | | | | | | | Abhilfe, Maßnahmen | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Verschleißtyp | | | | Werkstückprobleme | | | | Spanbruch | | | | |
| Freiflächenverschleiß | Schneidenausbrüche | Plastische Verformung | Aufbauschneiden | Gratbildung am Gewindeaußen-Ø | Profilgenauigkeit | Oberflächengüte | Rattermarken, Vibrationen | Spanquerschnitt zu dick | Spanquerschnitt zu dünn | Spanform (Wirrspan) | | |
| ⇩ | | ⇩ | ⇧ | | | ⇧ | ⇩ | | | | Schnittgeschwindigkeit | Schnittwerte |
| a,b | a,b | | a,b | a,b | | a,b | a,b | a,b | | a,b | Zustellung a) über die Flanken b) wechselweise über die Flanken | |
| ⇧ | ⇩ | ⇩ | | ⇩ | ⇩ | ⇩ | ⇩ | ⇩ | ⇧ | ≈ | Zustellung (Schnitttiefe) | |
| ⇩ | ⇧ | ⇧ | | ≈ | ≈ | ⇧ | ≈ | ⇧ | ⇩ | ⇩ | Anzahl der Durchgänge | Wendeschneidplatten - Auswahl |
| | | | | ▢ | ▢ | ▢ | | | | | Schlichtschnitt (Leerschnitt) | |
| | | | ▢ | | | ▢ | ▢ | | | ▢ | Spanleitstufe | |
| ⇧ | ⇩ | ⇧ | | | | | | | | | Schneidstoff ↓ Verschleißfestigkeit ↑ Zähigkeit | |
| | | | | ▢ | ▢ | ▢ | | | | | Vollprofil | |
| | | | | | | | | | | | Teilprofil | Allgemeine Kriterien |
| | ≈ | | | | | ≈ | ≈ | | | | Stabilität Werkzeug / WSP | |
| | ≈ | | | | | ≈ | ≈ | | | | Stabilität Werkstück | |
| | ⇩ | | | | | ⇩ | ⇩ | | | | Auskragung | |
| ≈ | ≈ | ≈ | | | ≈ | ≈ | ≈ | | | | Spitzenhöhe | |
| ▢ | ▢ | ▢ | ▢ | ▢ | | ▢ | | | | | Kühlschmierstoff | |

⇧ erhöhen, vergrößern, großer Einfluss
⇩ vermeiden, verkleinern, großer Einfluss
≈ kontrollieren, optimieren
⇧ erhöhen, vergrößern, kleiner Einfluss
⇩ vermeiden, verkleinern, kleiner Einfluss
▢ verwenden

# TC - Gewindedrehen

Richtwerte für Zustelltiefe und Anzahl der Schnitte

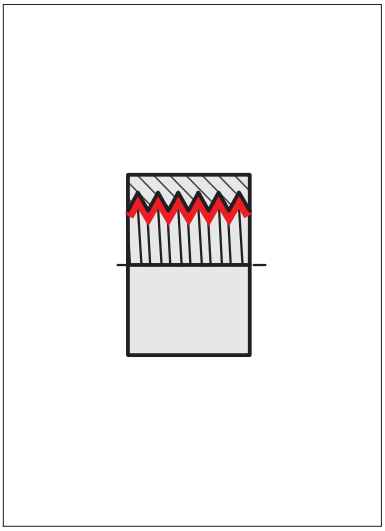
## Vollprofil



### Metrisch ISO 60° Außengewinde

| Steigung [mm] | 0,5 | 0,75 | 1,0 | 1,25 | 1,5 | 1,75 | 2,0 | 2,5 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Anzahl der Schnitte | 4 ↓ 6 | 4 ↓ 7 | 5 ↓ 8 | 5 ↓ 9 | 6 ↓ 10 | 7 ↓ 11 | 8 ↓ 12 | 9 ↓ 14 | 10 ↓ 18 | 10 ↓ 18 | 12 ↓ 20 | 12 ↓ 20 | 12 ↓ 20 |
| Gewindeprofilhöhe | 0,32 | 0,48 | 0,64 | 0,80 | 0,95 | 1,10 | 1,26 | 1,58 | 1,89 | 2,21 | 2,53 | 2,84 | 3,16 |

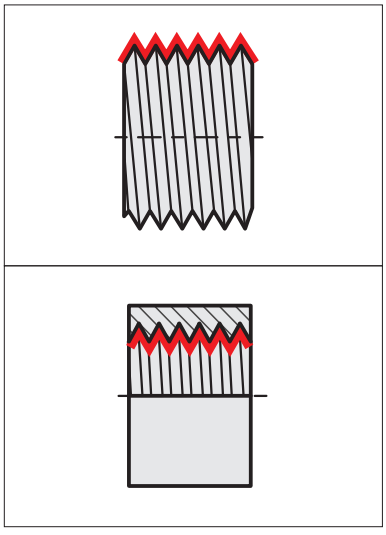
**Angeführte Werte sind Richtwerte für die Stahlbearbeitung**



### Metrisch ISO 60° Innengewinde

| Steigung [mm] | 0,5 | 0,75 | 1,0 | 1,25 | 1,5 | 1,75 | 2,0 | 2,5 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Anzahl der Schnitte | 4 ↓ 6 | 4 ↓ 7 | 5 ↓ 8 | 5 ↓ 9 | 6 ↓ 10 | 7 ↓ 11 | 8 ↓ 12 | 9 ↓ 14 | 10 ↓ 18 | 10 ↓ 18 | 12 ↓ 20 | 12 ↓ 20 | 12 ↓ 20 |
| Gewindeprofilhöhe | 0,30 | 0,45 | 0,59 | 0,74 | 0,89 | 1,02 | 1,17 | 1,46 | 1,76 | 2,02 | 2,35 | 2,64 | 2,93 |

**Angeführte Werte sind Richtwerte für die Stahlbearbeitung**

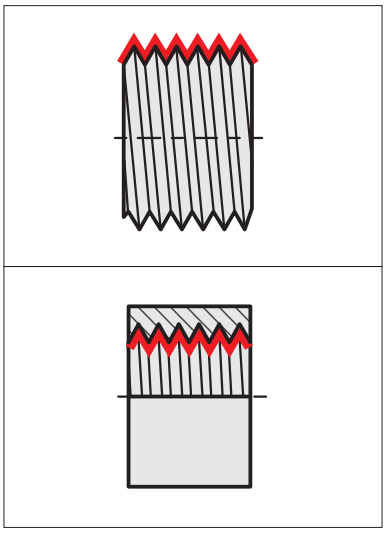


### Whitworth 55° Außen- und Innengewinde

| Steigung [Gänge/ Zoll] | 28 | 26 | 24 | 20 | 19 | 18 | 16 | 14 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Anzahl der Schnitte | 5 ↓ 8 | 5 ↓ 8 | 5 ↓ 9 | 5 ↓ 9 | 6 ↓ 10 | 6 ↓ 10 | 7 ↓ 11 | 8 ↓ 12 | 9 ↓ 14 | 9 ↓ 14 | 10 ↓ 17 | 10 ↓ 18 | 10 ↓ 18 | 12 ↓ 20 | 12 ↓ 20 | 12 ↓ 20 |
| Gewindeprofilhöhe | 0,60 | 0,65 | 0,70 | 0,84 | 0,88 | 0,93 | 1,05 | 1,20 | 1,40 | 1,53 | 1,68 | 1,87 | 2,11 | 2,41 | 2,81 | 3,37 |

**Angeführte Werte sind Richtwerte für die Stahlbearbeitung**

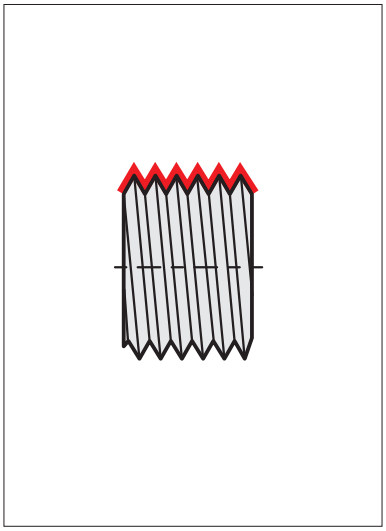
## Teilprofil



### 60° Außen- und Innengewinde

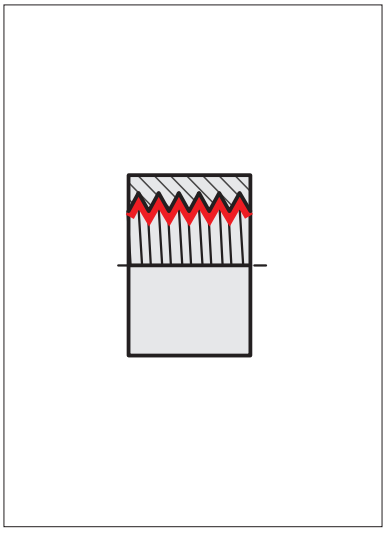
| Gewindeplatte | TC16-2EI-AG60 | | | | | | | | | TC16-2EI-G60 | | | | TC16-3EI-N60 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TC16-1EI-A60 | | | | | | | | | | | | | | | | |
| **Steigung [mm]** | 0,5 | 0,75 | 1,0 | 1,25 | 1,5 | 1,75 | 2,0 | 2,5 | 3,0 | 1,75 | 2,0 | 2,5 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 |
| **Anzahl der Schnitte** | 4 ↓ 6 | 4 ↓ 7 | 5 ↓ 9 | 6 ↓ 10 | 7 ↓ 11 | 8 ↓ 12 | 9 ↓ 14 | 10 ↓ 15 | 12 ↓ 19 | 8 ↓ 12 | 9 ↓ 14 | 10 ↓ 15 | 12 ↓ 20 | 12 ↓ 20 | 13 ↓ 21 | 14 ↓ 22 | 14 ↓ 22 |
| **Gewindeprofilhöhe Außen** | 0,33 | 0,52 | 0,71 | 0,90 | 1,09 | 1,28 | 1,47 | 1,84 | 2,22 | 1,23 | 1,42 | 1,79 | 2,17 | 2,45 | 2,83 | 3,21 | 3,59 |
| **Gewindeprofilhöhe Innen** | 0,27 | 0,44 | 0,60 | 0,76 | 0,92 | 1,09 | 1,25 | 1,57 | 1,90 | 1,04 | 1,20 | 1,52 | 1,85 | 2,07 | 2,4 | 2,72 | 3,05 |

**Angeführte Werte sind Richtwerte für die Stahlbearbeitung**



### 55° Außengewinde

| | TC16-2EI-AG55 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TC16-1EI-A55 | | | | | | | | | | | | |
| **Steigung [Gänge/Zoll]** | 28 | 26 | 24 | 20 | 19 | 18 | 16 | 14 | 12 | 11 | 10 | 9 | 8 |
| **Anzahl der Schnitte** | 5 ↓ 8 | 5 ↓ 8 | 6 - 9 | 6 ↓ 9 | 7 ↓ 12 | 7 ↓ 12 | 8 ↓ 14 | 9 ↓ 14 | 10 ↓ 16 | 10 ↓ 16 | 11 ↓ 18 | 12 ↓ 20 | 12 ↓ 20 |
| **Gewindeprofilhöhe** | 0,66 | 0,72 | 0,79 | 0,95 | 1,01 | 1,07 | 1,21 | 1,39 | 1,63 | 1,79 | 1,97 | 2,20 | 2,48 |



### 55° Innengewinde

| Gewindeplatte | TC16-2EI-G55 | | | | | | TC16-3EI-N55 | | |
|---|---|---|---|---|---|---|---|---|---|
| **Steigung [Gänge/Zoll]** | 14 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 |
| **Anzahl der Schnitte** | 8 ↓ 12 | 9 ↓ 14 | 10 ↓ 15 | 11 ↓ 18 | 12 ↓ 20 | 12 ↓ 20 | 12 ↓ 20 | 12 ↓ 20 | 14 ↓ 22 |
| **Gewindeprofilhöhe** | 1,22 | 1,46 | 1,56 | 1,80 | 2,03 | 2,31 | 2,40 | 2,89 | 3,56 |

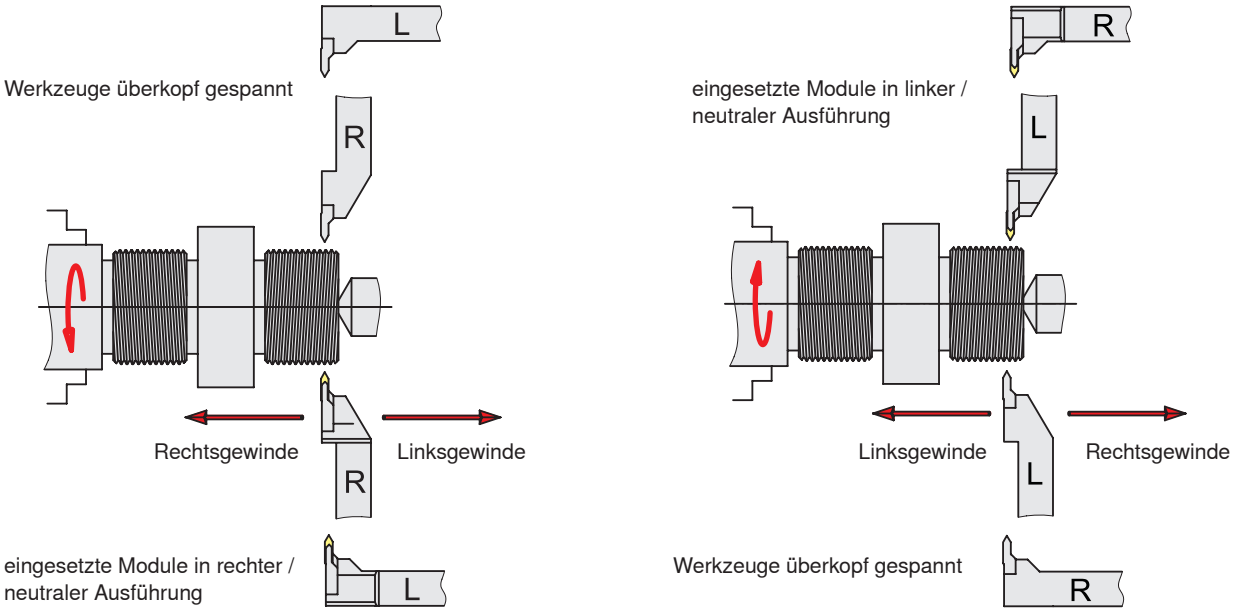
**Angeführte Werte sind Richtwerte für die Stahlbearbeitung**

# MSS - TC

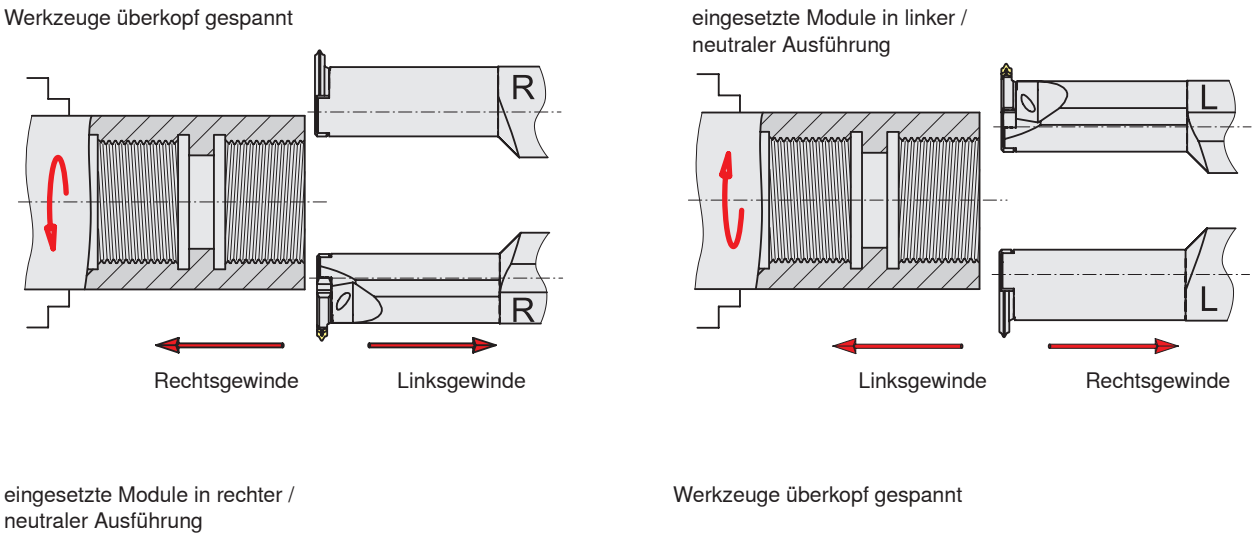
Bearbeitungsmethode Gewindedrehen



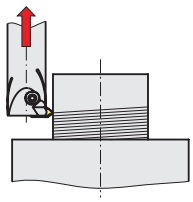
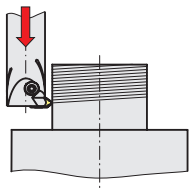
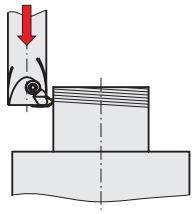
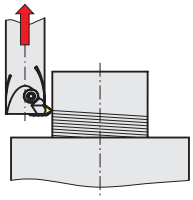
## Anwendungsmethoden für die Außenbearbeitung



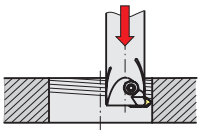
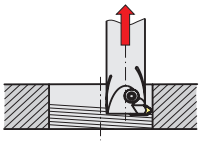
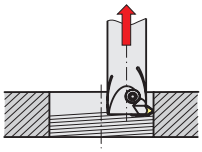
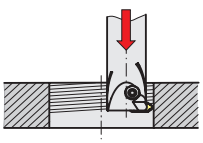

## Anwendungsmethoden für die Innenbearbeitung



## Außengewinde

| | Gegenlauffräsen | Gleichlauffräsen |
|---|---|---|
| **Rechtsgewinde** |  |  |
| **Linksgewinde** |  |  |

## Innengewinde

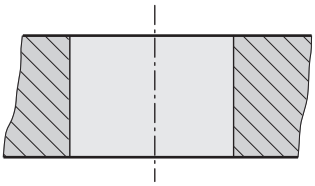
| | Gegenlauffräsen | Gleichlauffräsen |
|---|---|---|
| **Rechtsgewinde** |  |  |
| **Linksgewinde** |  |  |

# MSS - TC

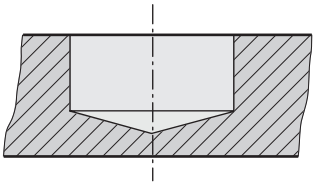
Bearbeitungsmethode Gewindefräsen



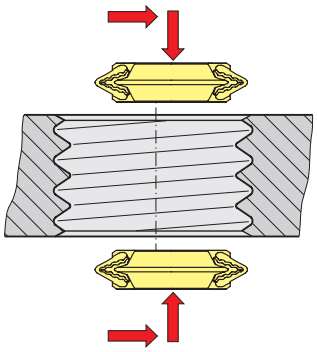
## Bohren - Durchgangsgewinde



## Bohren - Sacklochgewinde

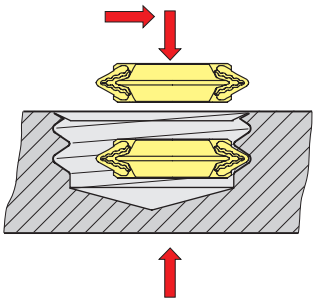


Durchgangsgewinde



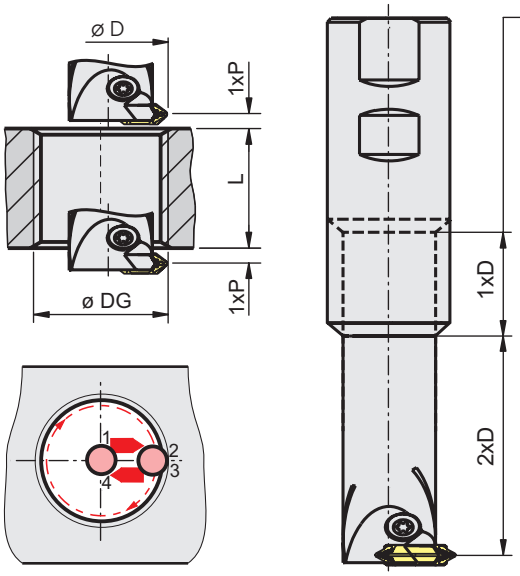
Kein radiales Eintauchen notwendig, Werkzeug über bzw. unter dem Werkzeug radial zustellen + Spiralbewegung

Sacklochgewinde



Radiales Zustellen auf volle Profiltiefe + Spiralbewegung
Radiales Eintauchen + Spiralbewegung

## Vorteile gegenüber Mehrzahn-Gewinde-WSP




- gleiche WSP zum Gewindedrehen und -fräsen
- deutlich niedrigere Kosten der TC-WSP
- Gewinde wird durchgehend von außen nach innen oder umgekehrt geschnitten daher kein Übergang (Stufe) im Gewinde
- geringe Schnittkräfte durch Einzahn-Gewindefräsen ermöglicht
- stabile Verhältnisse
- mögliche höhere Ausladung Standard = 2xD - Nachsetzen bis 3xD möglich
- höhere Schnittwerte (vc + f), dadurch werden ähnliche Bearbeitungszeiten wie mit Mehrzahn-WSP erreicht
- einfache Programmierung

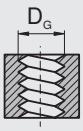

CERATIZIT

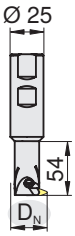
# Gewindefräsen

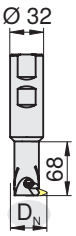
Fräswerkzeug System MSS-TC



| $D_N$ | Type, Bestellbezeichnung | $D_G$ [mm] | Vollprofil Metrisch ISO 60° – TC-Gewindeplatten: TC16-1 **I 0,5** ISO | TC16-1 **I 0,75** ISO | TC16-1 **I 1,0** ISO | TC16-1 **I 1,5** ISO | TC16-1 **I 2,0** ISO | TC16-1 **I 2,5** ISO | TC16-1 **I 3,0** ISO | TC16-1 **I 3,5** ISO | TC16-1 **I 4,0** ISO | TC16-1 **I 4,5** ISO | TC16-1 **I 5,0** ISO | $D_G$ [Zoll] | Vollprofil Whitworth 55° – TC-Gewindeplatten: TC16-2 **EI** 14W | TC16-2 **EI** 12W | TC16-2 **EI** 11W | TC16-2 **EI** 10W | TC16-2 **EI** 9W | TC16-2 **EI** 8W | TC16-3 **EI** 7W | TC16-3 **EI** 6W | TC16-3 **EI** 5W |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | **I25**R90-2D-TC16-W | M27 | x | x | | | | | | | | | | | | | | | | | | | |
| | | M28 | x | x | x | | | | | | | | | | | | | | | | | | |
| | | **M30** | x | x | x | x | | | | | | | | | | | | | | | | | |
| | | M32 | x | x | x | x | x | | | | | | | R $1^1/_4$ | | | x | | | | | | |
| | | M33 | x | x | x | x | x | | | | | | | | | | | | | | | | |
| | | M34 | x | x | x | x | x | | x | | | | | | | | | | | | | | |
| | | M35 | x | x | x | x | x | | x | | | | | | | | | | | | | | |
| | | **M36** | x | x | x | x | x | | x | | x | | | | | | | | | | | | |
| | | M38 | x | x | x | x | x | | x | | | | | $1^1/_2$ | | | | | | | | x | |
| | | M39 | x | x | x | x | x | | x | | x | | | | | | | | | | | | |
| | | M40 | x | x | x | x | x | | x | | x | | | R $1^1/_2$ | | | x | | | | | | |
| | | **M42** | x | x | x | x | x | | x | | x | x | | $1^5/_8$ | | | | | | | | | x |
| | | M45 | x | x | x | x | x | | x | | x | x | | $1^3/_4$ | | | | | | | | | x |
| | | **M48** | x | x | x | x | x | | x | | x | | x | | | | | | | | | | |
| 32 | **I32**R90-2D-TC16-W | **M36** | x | x | x | | | | | | | | | | | | | | | | | | |
| | | M38 | x | x | x | x | | | | | | | | | | | | | | | | | |
| | | M39 | x | x | x | x | x | | | | | | | | | | | | | | | | |
| | | M40 | x | x | x | x | x | | | | | | | | | | | | | | | | |
| | | **M42** | x | x | x | x | x | | x | | | | | | | | | | | | | | |
| | | M45 | x | x | x | x | x | | x | | | | | | | | | | | | | | |
| | | **M48** | x | x | x | x | x | | x | | x | | | | | | | | | | | | |
| | | M50 | x | x | x | x | x | | x | | x | | | R2 | | | x | | | | | | |
| | | M52 | | x | x | x | x | | x | | x | | x | | | | | | | | | | |
| | | M55 | | x | x | x | x | | x | | x | | | | | | | | | | | | |
| | | **M56** | | x | x | x | x | | x | | x | | | | | | | | | | | | |
| | | M58 | | x | x | x | x | | x | | x | | | | | | | | | | | | |
| | | M60 | | x | x | x | x | | x | | x | | | | | | | | | | | | |
| | | M62 | | x | x | x | x | | x | | x | | | | | | | | | | | | |
| | | **M64** | | x | x | x | x | | x | | x | | | | | | | | | | | | |
| | | M65 | | x | x | x | x | | x | | x | | | R $2^1/_4$ | | | x | | | | | | |
| | | M68 | | x | x | x | x | | x | | x | | | | | | | | | | | | |
| | | M70 | | x | x | x | x | | x | | x | | | | | | | | | | | | |
| | | **M72** | | x | x | x | x | | x | | x | | | | | | | | | | | | |
| | | M75 | | x | x | x | x | | x | | x | | | R $2^1/_2$ | | | x | | | | | | |
| | | M76 | | x | x | x | x | | x | | x | | | | | | | | | | | | |
| | | M78 | | x | x | x | x | | x | | x | | | | | | | | | | | | |
| | | M80 | | x | x | x | x | | x | | x | | | | | | | | | | | | |




$D_N$ = Fräser-Nenn-Ø

= Regelgewinde

| Bgr. | Type, Bestellbezeichnung | $D_G$ [mm] | Vollprofil Metrisch ISO 60° | | | Vollprofil Whitworth 55° | |
|---|---|---|---|---|---|---|---|
| | | | MSS-**I32R**-TC16-2 | | MSS-**I32N**-TC16-3 | MSS-**I32R**-TC16-2 | |
| | | | TC16-2 **I 2,0** ISO | TC16-2 **I 3,0** ISO | TC16-3 **I 4,0** ISO | $D_G$ [Zoll] | TC16-2 **EI** 11W |
| 32 | **1.5D**<br>MSS-**I32R**90-1.5D | M82 | x | x | x | R 2 3/4 | x |
| | | M85 | x | x | x | | |
| | | M90 | x | x | x | R3 | x |
| | | M95 | x | x | x | R3 1/4 | x |
| | | M100 | x | x | x | R3 1/2 | x |
| | | M105 | x | x | x | R3 3/4 | x |
| | | M110 | x | x | x | R4 | x |
| | | M115 | x | x | x | | |
| | | M120 | x | x | x | | |
| | | M125 | x | x | x | R4 1/2 | x |
| | | M130 | x | x | x | | |
| | | M135 | x | x | x | | |
| | | M140 | x | x | x | R5 | x |
| | | M145 | x | x | x | | |
| | | M150 | x | x | x | R5 1/2 | x |
| | | M155 | | x | x | | |
| | | M160 | | x | x | | |
| | | M165 | | x | x | R6 | x |
| | | M170 | | x | x | | |
| | **2.5D**<br>MSS-**I32R**90-2.5D | M175 | | x | x | | |
| | | M180 | | x | x | | |
| | | M185 | | x | x | | |
| | | M190 | | x | x | | |
| | | M195 | | x | x | | |
| | | M200 | | x | x | | |
| | | M205 | | x | x | | |
| | | M210 | | x | x | | |
| | | M215 | | x | x | | |
| | | M220 | | x | x | | |
| | | M225 | | x | x | | |
| | | M230 | | x | x | | |
| | | M235 | | x | x | | |
| | | M240 | | x | x | | |
| | | M245 | | x | x | | |
| | | M250 | | x | x | | |
| | | ↓ | | ↓ | ↓ | | |
| | | M300 | | x | x | | |

**Bgr.** = Baugröße

# Gewindefräsen

Fräswerkzeug System MSS-TC

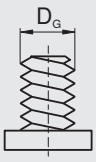


| $D_N$ | Type, Bestellbezeichnung | $D_G$ [mm] | Vollprofil Metrisch ISO 60° – TC-Gewindeplatten: TC16-1 **I 0,5** ISO | TC16-1 **I 0,75** ISO | TC16-1 **I 1,0** ISO | TC16-1 **I 1,5** ISO | TC16-1 **I 2,0** ISO | TC16-1 **I 2,5** ISO | TC16-1 **I 3,0** ISO | TC16-1 **I 3,5** ISO | TC16-1 **I 4,0** ISO | TC16-1 **I 4,5** ISO | TC16-1 **I 5,0** ISO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | **I25**R90-2D-TC16-W<br>Ø 25, 54, $D_N$ | ↓<br>M16<br>↓ | | | | | | | | | | | |
| 32 | **I32**R90-2D-TC16-W<br>Ø 32, 68, $D_N$ | ↓<br>↓<br>M80 | | | | | | | | | | | |

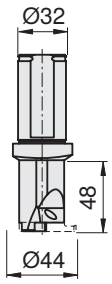
**Außengewinde im Bereich "M16 bis M80" können mit beiden Fräswerkzeugen (I25... oder I32...) gefräst werden. Wählen Sie dazu die entsprechende Gewindeplatte mit der benötigten Gewindesteigung.**

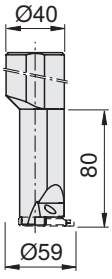
| $D_G$ [Zoll] | Vollprofil Whitworth 55° – TC-Gewindeplatten: TC16-2 **EI** 14W | TC16-2 **EI** 12W | TC16-2 **EI** 11W | TC16-2 **EI** 10W | TC16-2 **EI** 9W | TC16-2 **EI** 8W | TC16-3 **EI** 7W | TC16-3 **EI** 6W | TC16-3 **EI** 5W |
|---|---|---|---|---|---|---|---|---|---|
| ↓ | | | | | | | | | |
| $^5/_8$ | | | x | | | | | | |
| $^3/_4$ | | | | x | | | | | |
| $^7/_8$ | | | | | x | | | | |
| 1 | | | | | | x | | | |
| $1^1/_8$ | | | | | | | x | | |
| $1^3/_8$ | | | | | | | | x | |
| $1^1/_2$ | | | | | | | | x | |
| $1^5/_8$ | | | | | | | | | x |
| $1^3/_4$ | | | | | | | | | x |

$D_N$ = Fräser-Nenn-Ø




| Bgr. | Type, Bestellbezeichnung | $D_G$ [mm] | Vollprofil Metrisch ISO 60° | | |
|---|---|---|---|---|---|
| | | |  MSS-**I32R**-TC16-2 | | MSS-**I32N**-TC16-3 |
| | | | TC16-2 **I 2,0** ISO | TC16-2 **I 3,0** ISO | TC16-3 **I 4,0** ISO |
| 32 | **1.5D** MSS-**I32R**90-1.5D | M82 | x | x | x |
| | | M85 | x | x | x |
| | | M90 | x | x | x |
| | | M95 | x | x | x |
| | | M100 | x | x | x |
| | | M105 | x | x | x |
| | | M110 | x | x | x |
| | | M115 | x | x | x |
| | | M120 | x | x | x |
| | | M125 | x | x | x |
| | | M130 | x | x | x |
| | | M135 | x | x | x |
| | | M140 | x | x | x |
| | | M145 | x | x | x |
| | | M150 | x | x | x |
| | | M155 | | x | x |
| | | M160 | | x | x |
| | | M165 | | x | x |
| | | M170 | | x | x |
| | **2.5D** MSS-**I32R**90-2.5D | M175 | | x | x |
| | | M180 | | x | x |
| | | M185 | | x | x |
| | | M190 | | x | x |
| | | M195 | | x | x |
| | | M200 | | x | x |
| | | M205 | | x | x |
| | | M210 | | x | x |
| | | M215 | | x | x |
| | | M220 | | x | x |
| | | M225 | | x | x |
| | | M230 | | x | x |
| | | M235 | | x | x |
| | | M240 | | x | x |
| | | M245 | | x | x |
| | | M250 | | x | x |
| | | ↓ | | ↓ | ↓ |
| | | M300 | | x | x |




**Bgr.** = Baugröße

# Schnittdatenrichtwerte – Gewinde



| Werkstück-werkstoff | | Behandlungsart / Legierung | | VDI 3323 Gruppe | Härte HB |
|---|---|---|---|---|---|
| P | unlegierter Stahl | geglüht | ≤ 0,15 % C | 1 | 125 |
| | | geglüht | 0,15 % - 0,45 % C | 2 | 150 - 250 |
| | | vergütet | ≥ 0,45 % C | 3 | 300 |
| | niedriglegierter Stahl | geglüht | | 6 | 180 |
| | | vergütet | | 7 / 8 | 250 - 300 |
| | | vergütet | | 9 | 350 |
| | hochlegierter Stahl | geglüht | | 10 | 200 |
| | | vergütet | | 11 | 350 |
| | rostfreier Stahl | geglüht | ferritisch / martensitisch | 12 | 200 |
| | | vergütet | martensitisch | 13 | 325 |
| | | wärmebehandelt | ferritisch / martensitisch | 13 | 200 |
| M | rostfreier Stahl | abgeschreckt | austenitisch | 14 | 180 |
| | | abgeschreckt | ferritisch / austenitisch (Duplex) | 14 | 230 - 260 |
| | | ausgehärtet | austenitisch ausscheidungsgehärtet (PH) | 14 | 330 |
| K | Grauguss | | perlitisch / ferritisch | 15 | 180 |
| | | | perlitisch / martensitisch | 16 | 260 |
| | Grauguss mit Kugelgraphit | | ferritisch | 17 | 160 |
| | | | perlitisch | 18 | 250 |
| | Temperguss | | ferritisch | 19 | 130 |
| | | | perlitisch | 20 | 230 |
| N | Aluminium Knetlegierung | nicht aushärtbar | | 21 | 60 |
| | | aushärtbar | | 22 | 100 |
| | Aluminium Gusslegierung | nicht aushärtbar | < 12 % Si | 23 | 75 |
| | | aushärtbar | < 12 % Si | 24 | 90 |
| | | nicht aushärtbar | > 12 % Si | 25 | 130 |
| | Kupfer und Kupferlegierungen (Bronze, Messing) | | Automatenlegierung (1% Pb) | 26 | (110) |
| | | | Messing, Rotguss | 27 | 90 |
| | | | Bronze | 28 | 100 |
| | | | bleifreies Kupfer und Elektrolytkupfer | 28 | 100 |
| | nichtmetallische Werkstoffe | | Duroplast | 29 | – |
| | | | faserverstärkter Kunststoff | 29 | – |
| | | | Hartgummi | 30 | – |
| S | warmfeste Legierungen | geglüht | Fe-Basis | 31 | 200 |
| | | ausgehärtet | Fe-Basis | 32 | 280 |
| | | geglüht | Ni- oder Co-Basis | 33 | 250 |
| | | ausgehärtet | Ni- oder Co-Basis 30 - 58 HRC | 34 | (350) |
| | | gegossen | Ni- oder Co-Basis 1500 - 2200 N/mm² | 35 | (320) |
| | Titanlegierungen | | Reintitan | 36 | $R_m$ 440* |
| | | | Alpha- + Beta-Legierung | 37 | $R_m$ 1050* |
| H | gehärteter Stahl | gehärtet u. angelassen | | 38 | 55 HRC |
| | | gehärtet u. angelassen | | 39 | 60 HRC |
| | Hartguss | gegossen | | 40 | 400 |
| | gehärtetes Gusseisen | gehärtet u. angelassen | | 41 | 55 HRC |

* $R_m$ = maximale Festigkeit, gemessen in MPa

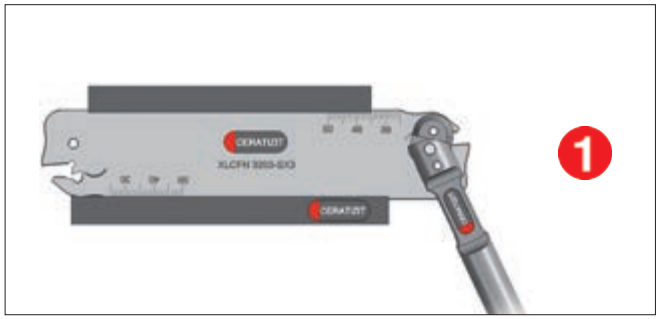
| GM213 $v_c$ [m/min] | GM240 $v_c$ [m/min] | H216T $v_c$ [m/min] |
|---|---|---|
| 150 - 250 | 200 - 270 | |
| 110 - 180 | 180 - 230 | |
| 90 - 160 | 140 - 190 | |
| 100 - 170 | 180 - 240 | |
| 80 - 150 | 120 - 190 | |
| 70 - 120 | 120 - 160 | |
| 90 - 130 | 140 - 200 | |
| 70 - 110 | 100 -160 | |
| 110 - 170 | 170 - 230 | |
| 90 - 140 | 130 - 190 | |
| 110 - 180 | 150 - 200 | |
| 80 - 140 | | |
| 70 - 100 | | |
| 70 - 120 | | |
| 120 - 160 | 130 - 200 | |
| 100 - 130 | 120 - 180 | |
| 160 - 200 | 120 - 170 | |
| 90 - 140 | 120 - 190 | |
| 120 - 140 | 150 - 230 | |
| 90 - 130 | 120 - 170 | |
| | | 100 - 800 |
| | | 100 - 800 |
| | | 100 - 500 |
| | | 100 - 500 |
| | | 100 - 350 |
| | | 80 - 300 |
| | | 80 - 500 |
| | | 80 - 500 |
| | | 80 - 500 |
| | | 80 - 500 |
| | | 80 - 500 |
| | | 80 - 500 |
| 30 - 50 | 20 - 40 | |
| 25 - 35 | 20 - 30 | |
| 15 - 25 | 10 - 20 | |
| 10 - 20 | 10 - 20 | |
| 10 - 25 | 10 - 20 | |
| 100 - 150 | 70 - 100 | |
| 40 - 60 | 25 - 45 | |
| 35 - 45 | | 30 - 40 |
| | | |
| 10 - 20 | | 5 - 15 |
| 35 - 45 | | 30 - 40 |

Die Schnittdaten sind unverbindliche Angaben für den Anwender. Eine Anpassung an die aktuellen Gegebenheiten ist zu empfehlen!

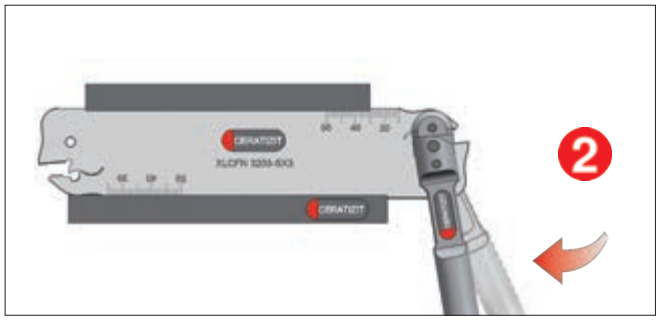
# MSS-SX

Systemfunktion

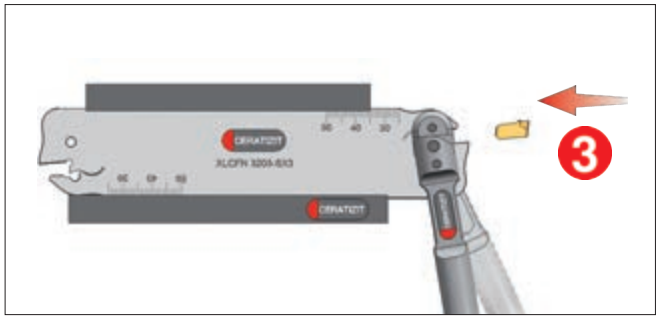




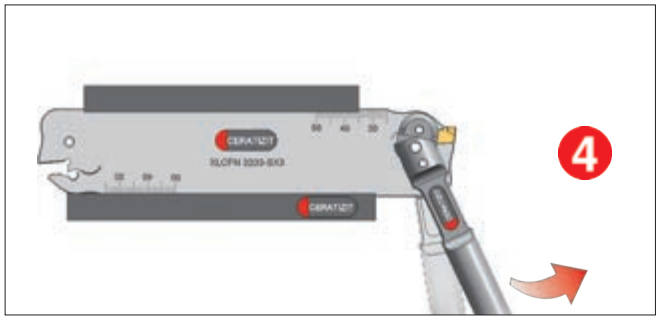

Montageschlüssel mit Griff nach vorne in die 2 Ausnehmungen stecken.



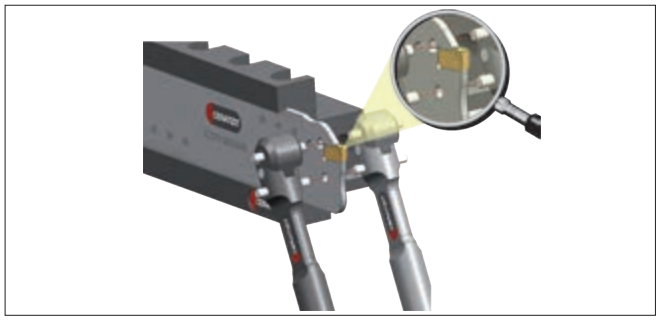

Durch Bewegung des Montageschlüssels in Pfeilrichtung wird der Plattensitz im Werkzeug geöffnet.




Stechplatte einlegen und durch Andrücken gegen den Anschlag positionieren.

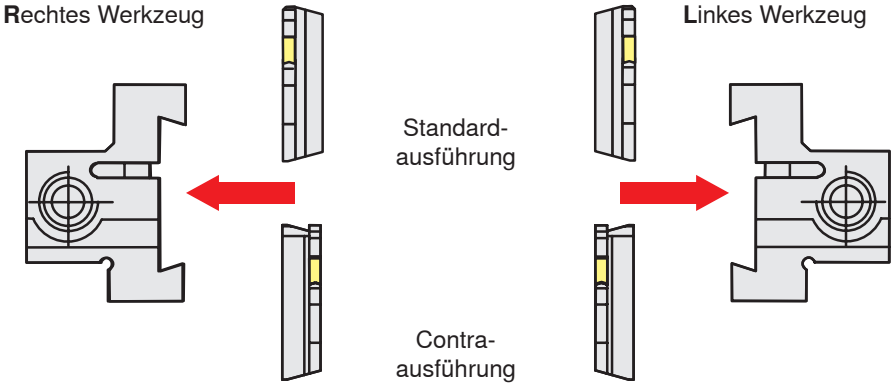


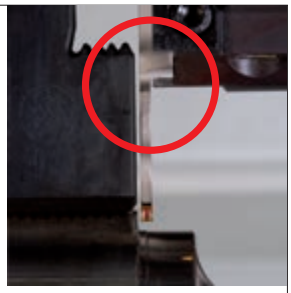

Montageschlüssel nach vorne bewegen. Plattensitz schließt sich wieder und Stechplatte wird gespannt.



Die Klemmung ist so konzipiert, dass der Montageschlüssel entsprechend der Zugängigkeit von beiden Seiten in die Klinge gesteckt werden kann.

## Richtige Werkzeugauswahl

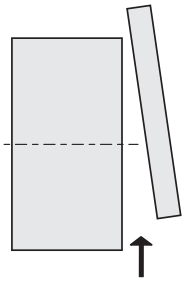
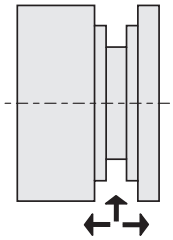
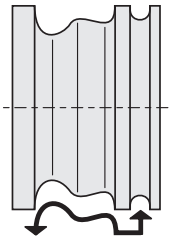
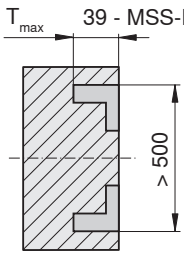
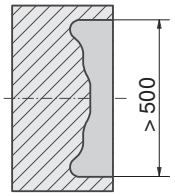
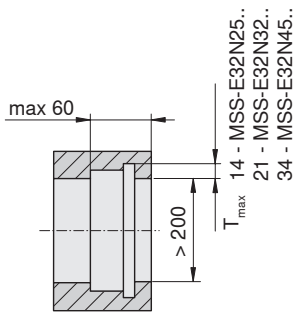
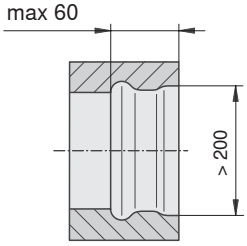


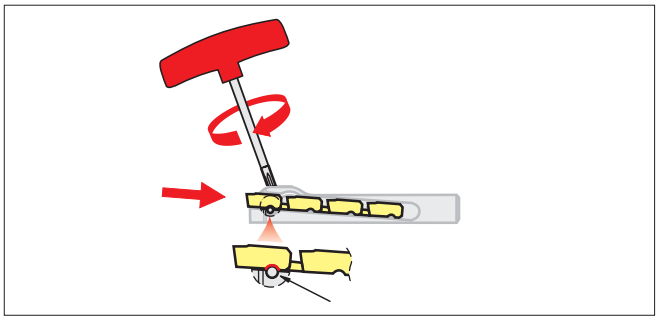





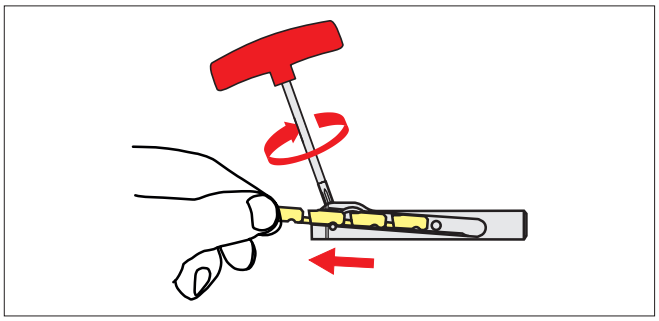
# LX - Anwendungsmöglichkeiten



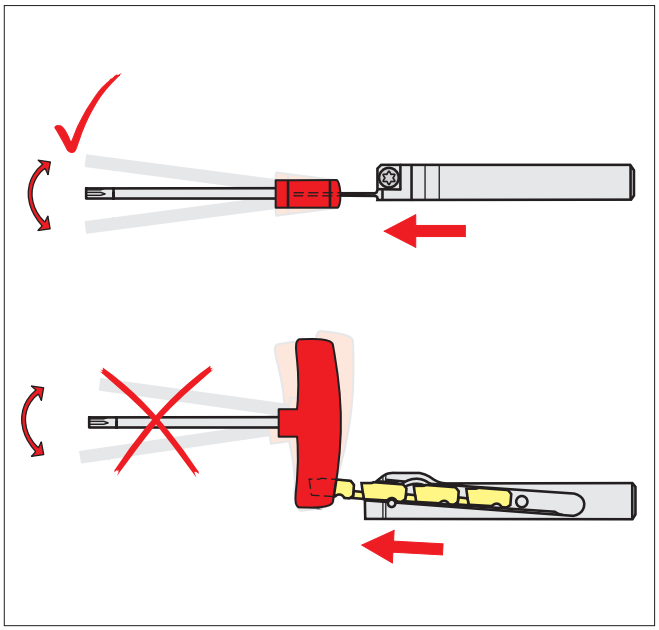
| Anwendung \ Stechplatte | 8-10 | R 4 |
|---|---|---|
| **Abstechen** |  | |
| **Einstechen / Drehen** |  |  |
| **Axialstechen** | 19 - MSS-E32N25..<br>26 - MSS-E32N32..<br>39 - MSS-E32N45..<br>  |  |
| **Innenstechen / Drehen** |  |  |



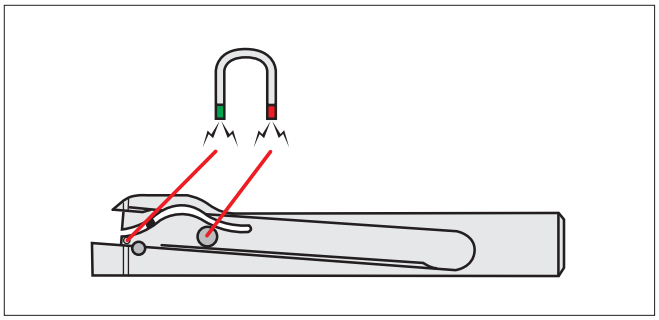
Richtiges Einsetzen des Schneideinsatzes in die Arretierung



Herausziehen des Schneideinsatzes



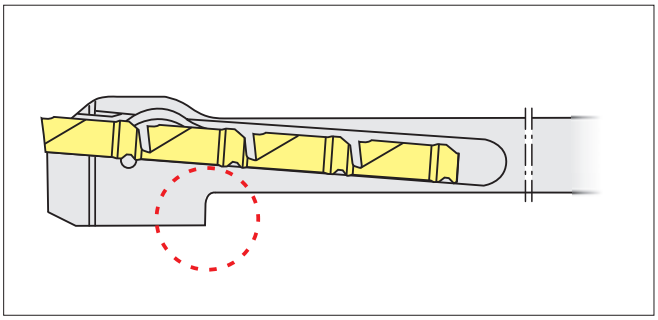
Verbrauchten Schneideinsatz nach links oder rechts abbrechen



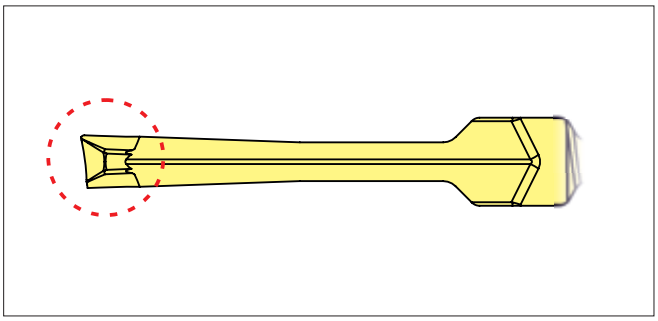
Magnete verhindern das Herausfallen des Schneideinsatzes aus dem Werkzeughalter während des Positionierens

# MaxiClick

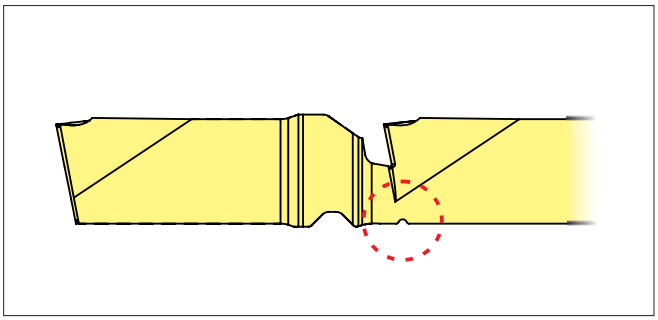
Produktmerkmale



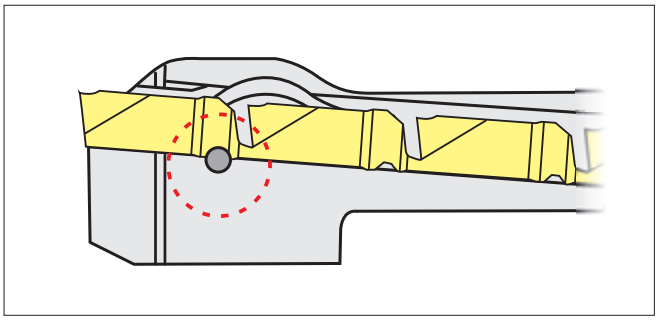
Verstärkter Schaft für zusätzliche Stabilität



12° Schrägschliff für gratfreies Abstechen



Bruchkerbe für einen definierten Bruchverlauf



Hartmetall-Positionierstift für hohe Wechselgenauigkeit

Company: Customer code:

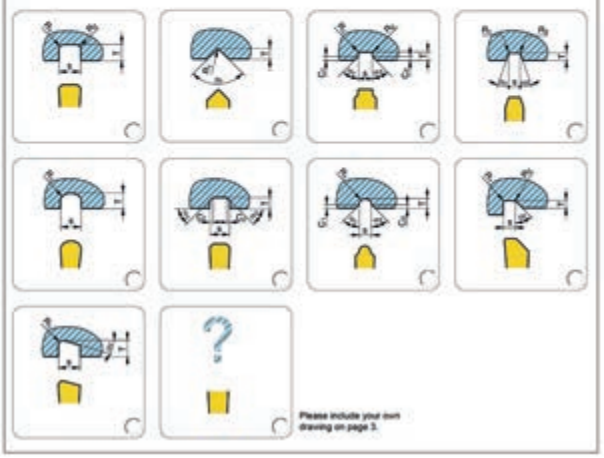
Contact: Date:

E-Mail: Phone:

Quantity: Tool / Module:

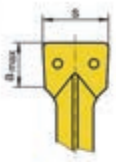
Material: Strength: [N/mm²]

GX indexable inserts are available in special shapes upon request. In the following overview you will find the most important ones. The indicated dimensions show the details which are necessary for ordering the special shapes.
**Important:** indicate dimensions and tolerances of work piece!



Please include your own drawing on page 3.

| Base insert for special shapes | | | |
|---|---|---|---|
| Width class | Insert size | s | Rmax |
| 1 | 09 | 2,00 - 2,75 | 1,5 |
| 2 | 09 | 2,76 - 3,75 | 2,0 |
| 1 | 16 | 2,00 - 2,75 | 2,5 |
| 2 | 16 | 2,76 - 3,75 | 3,0 |
| 3 | 16 | 3,76 - 5,00 | 3,5 |
| 4 | 16 | 5,01 - 6,50 | 4,0 |
| 1 | 24 | 2,00 - 2,75 | 2,5 |
| 2 | 24 | 2,76 - 3,75 | 2,5 |
| 3 | 24 | 3,76 - 5,00 | 3,5 |
| 4 | 24 | 5,01 - 6,50 | 4,0 |




Insert size: 09 16 24

Width class:

Dimensions:

| | Dim. | Tolerance | |
|---|---|---|---|
| s | | | [mm] |
| T | | | [mm] |
| $R_1$ | | | [mm] |
| $R_2$ | | | [mm] |
| $C_1$ | | | [mm] |
| $C_2$ | | | [mm] |
| $\varphi_1$ | | | [°] |
| $\varphi_2$ | | | [°] |

Internal machining - drilling Ø [mm]



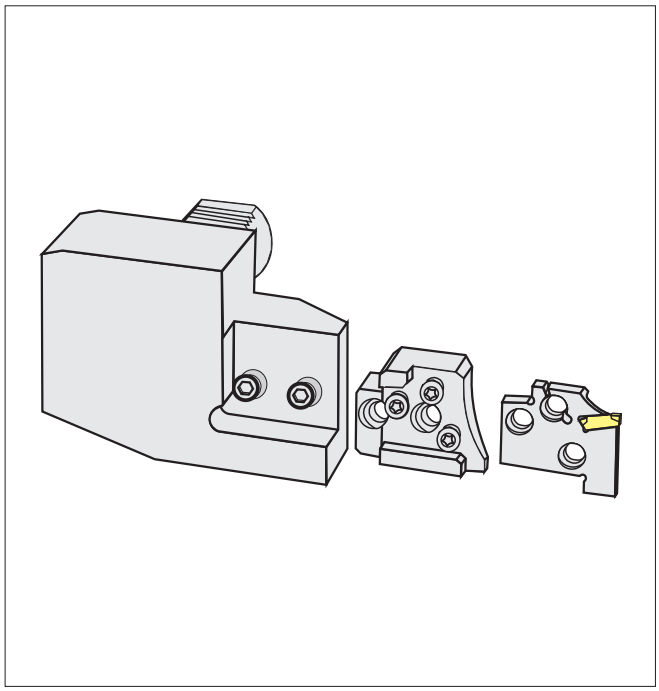

Notes:

Das oben sichtbare Formular können Sie auf unserer Homepage unter dem Link: **https://www.e-techstore.com/ALLG/CT-BUZ-103.zip** oder mittels des QR-Codes herunterladen.

# Einsatzmöglichkeiten

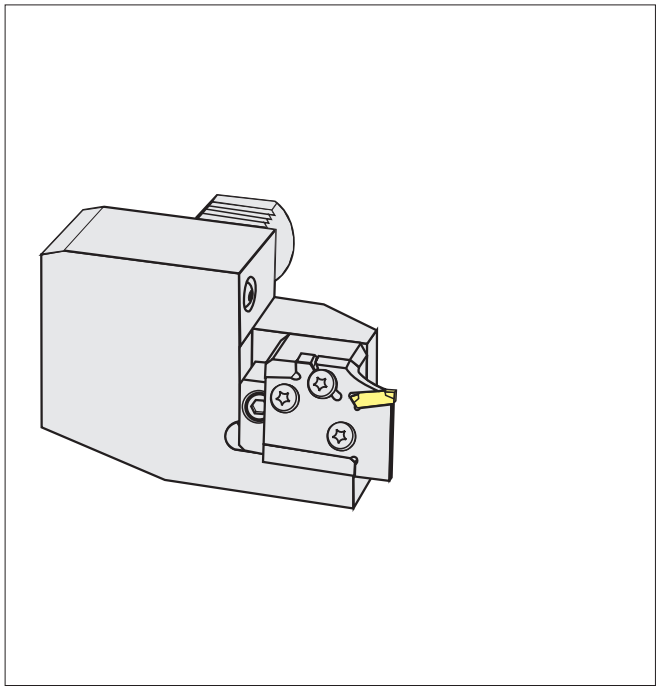
## Einsatzmöglichkeiten für MSS-Adapter

MSS-Adapter bieten die Möglichkeit, das modulare Stechsystem auch dort einzusetzen, wo herkömmliche Werkzeugschäfte oder Maxiflex UTS-Werkzeugköpfe nicht angewendet werden können.



## Beispiele

- Sonderlösungen aller Art
- Speziellen Werkzeugen und Aufnahmen
- Rotierenden Werkzeugen zum Zirkularfräsen
- Sondermaschinen
- Platzproblemen

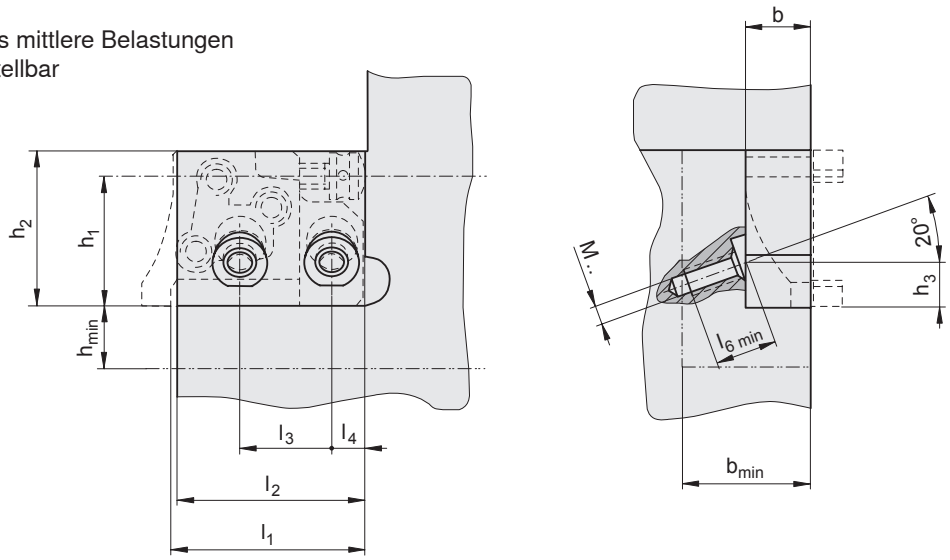


## Einbaubeispiele

Adapter in Kombination mit VDI-Aufnahme

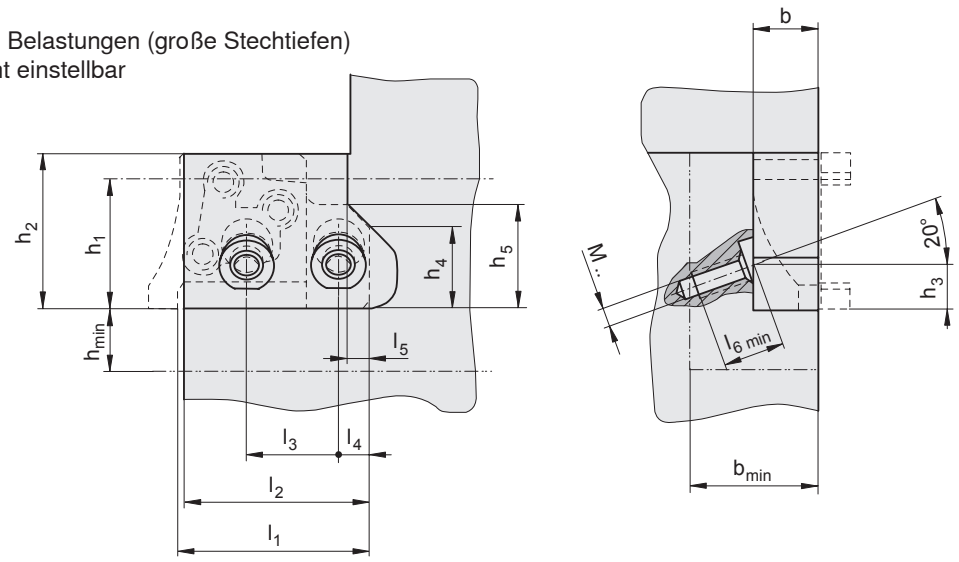
## Einbauvariante A

- Für leichte bis mittlere Belastungen
- Adapter einstellbar




## Einbauvariante B

- Für schwere Belastungen (große Stechtiefen)
- Adapter nicht einstellbar




| | $h_1$ | $h_2$ | $h_3^{\pm 0,1}$ | $h_4$ | $h_5$ | $h_{min.}$ | b | $b_{min.}$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | $l_5$ | $l_{6\ min.}$ | M.. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MSS-E20R00-AD<br>MSS-E20L00-AD | 20 | 24 | 6,0 | 13 | 16 | 10 | 10,7 | 19 | 30 | 29,0 | 14,25 | 5,0 | 3 | 8 | M4 |
| MSS-E25R00-AD<br>MSS-E25L00-AD | 25 | 30 | 8,5 | 16 | 20 | 12 | 12,6 | 25 | 37 | 36,0 | 18,00 | 6,5 | 4 | 12 | M5 |
| MSS-E32R00-AD<br>MSS-E32L00-AD | 32 | 38 | 13,5 | 22 | 26 | 16 | 14,6 | 30 | 46 | 44,5 | 23,50 | 7,5 | 4 | 15 | M6 |

# Ersatzteile

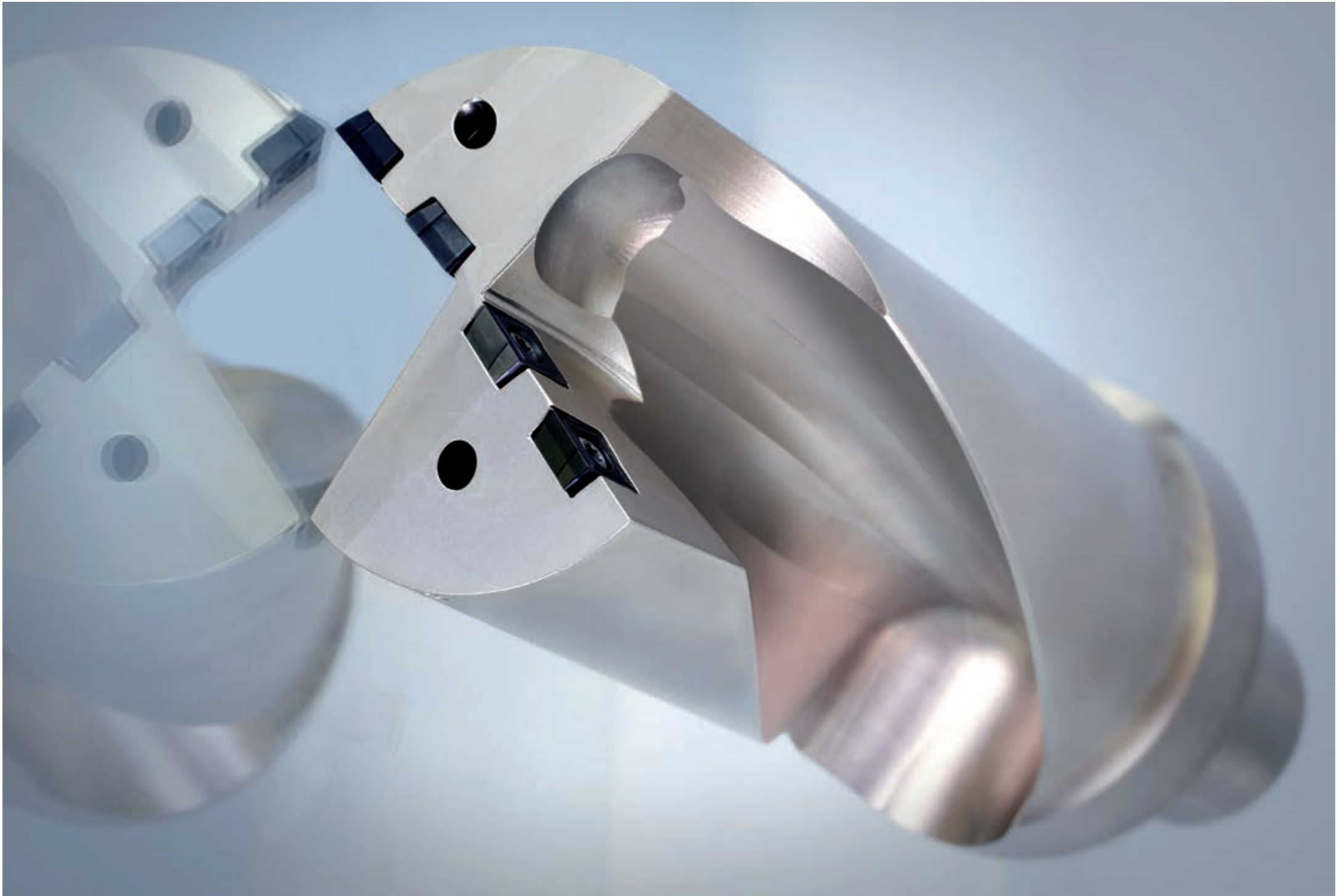


| | Material | Type, Bezeichnung | Schlüsselgröße | Drehmoment [Nm] | Drehmoment [in.lbs] |
|---|---|---|---|---|---|
|  | 11149570 | DMSD 3,2Nm/SORT T15 | T15 | 3,2 | 28,3 |
| | 11149571 | DMSD 4,0Nm/SORT T20 | T20 | 4,0 | 35,4 |

| | Material | Type, Bezeichnung | Schlüsselgröße |
|---|---|---|---|
|  | 154461 | 7802180/A 2,2 | A2,2 |
| | 154463 | 7802181/A 3,1 | A3,1 |
| | 154464 | 7802182/A 8,2 | A8,2 |
|  | 11366865 | 10005884/S12-3 | S12-3 |
| | 11366866 | 10001365/S15-4 | S15-4 |
|  | 4496 | 7812301/SW 5 | SW5 |
| | 4497 | 7812302/SW 6 | SW6 |
|  | 8095010200 | SD-T08-60mm | T08 |
| | 8095010400 | SD-T10-80mm | T10 |
|  | 11224503 | S-15IP-T | T15IP |
| | 200317 | 7883304/TORX T25 T | T25 |
| | 220983 | 7897208/TORX T15 T | T15 |
| | 220985 | 7897207/TORX T20 T | T20 |

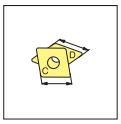
| | Material | Type, Bezeichnung | Länge [mm] | Gewindegröße | Schlüsselgröße |
|---|---|---|---|---|---|
|  | 219981 | 7897209/M4,0X11/T15 | 11 | M4 | T15 |
| | 219982 | 7897210/M5,0X13,5/T20 | 13,5 | M5 | T20 |
|  | 195068 | 7897203/M4,0X14/T15 | 14 | M4 | T15 |
| | 195069 | 7897205/M5,0X18/T20 | 18 | M5 | T20 |
| | 195070 | 7897206/M6,0X20/T25 | 20 | M6 | T25 |
| | 228617 | 7897200/M2,5X10/T08 | 10 | M2,5 | T08 |
| | 228619 | 7897201/M3,0X11/T10 | 11 | M3 | T15 |
| | 228620 | 7897202/M3,5X12,5/T15 | 12,5 | M3,5 | T15 |
| | 228621 | 7897204/M4,5X17/T20 | 17 | M4,5 | T20 |
|  | 11042274 | 7818429/M4,0X11/T15 | 11 | M4 | T15 |
|  | 11007006 | 7897218/M4,0X18/T20 | 18 | M4 | T20 |
| | 11081190 | 7897221/M3,5X14,0/T15 | 16,5 | M3,5 | T15 |
| | 11187405 | 10001938/M5X20/T25 | 20 | M5 | T25 |
| | 11207638 | M5x18-15IP/10002133 | 20,5 | M5 | T15IP |
| | 11776816 | 10010029/M6X12 DIN912- 12.9 | 12 | M12 | SW10 |
| | 22485 | 7802115/M6X25 DIN 912 | 25 | M6 | SW5 |
| | 229126 | 7897213/M6X20 12.9 DIN 912 | 20 | M6 | SW5 |
| | 229131 | 7897211/M4X12 DIN 912 - 12.9 | 12 | M4 | SW3 |
| | 284518 | 7818319/M5,0X16,0/DIN912-12.9 | 16 | M5 | SW4 |
| | 81158 | 7802133/M8X35 DIN 912 | 35 | M8 | SW6 |

# Notizen



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|  | Spanleitstufen/Sorten | D7-D11 |

## MaxiDrill 900

| | | |
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|  | Systemübersicht | D14 |
|  | MaxiDrill 900 2xD | D16 |
|  | MaxiDrill 900 3xD | D17-D18 |
|  | MaxiDrill 900 4xD | D20-D21 |
|  | MaxiDrill 900 5xD | D22 |
|  | SONT... | D23 |

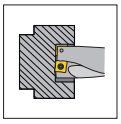
## MaxiDrill Classic

| | | |
|---|---|---|
|  | Systemübersicht | D26 |
|  | MaxiDrill Classic 2xD | D27-D28 |
|  | MaxiDrill Classic 3xD | D30 |
|  | MaxiDrill Classic 4xD | D31-D32 |

## MaxiDrill Classic

| | | |
|---|---|---|
|  | WC.. XO.. | D34 |

## Technische Informationen

| | | |
|---|---|---|
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## Index

| | | |
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C 900 . 5D . 260 . R . 08

1 2 3 4 5 6

3D . 260 . R . 05

3 4 5 6

1

**Aufnahme**

C = Zylindrischer Schaft
UT40 = UTS-Aufnahme

2

**System**

MaxiDrill 900

3

**Länge**

2D
3D
4D
5D

4

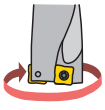
**Bohrdurchmesser**

260 = 26,0 mm

5

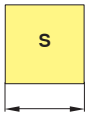
**Drehrichtung**

R = rechts



6

**Plattengröße**



# Bezeichnungssystem CERATIZIT

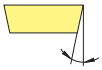
Wendeplatten

| S | O | N | T | 06 | 25 | 06 | E | R | - | M30 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | | 6 | 7 | 8 | 9 | 10 |

## 1 Plattenform

| | | |
|---|---|---|
| A | 85° |  |
| B | 82° | |
| K | 55° | |
| H | 120° |  |
| L | 90° |  |
| O | 135° |  |
| P | 108° |  |
| C | 80° |  |
| D | 55° | |
| E | 75° | |
| M | 86° | |
| V | 35° | |
| R | - |  |
| S | 90° |  |
| T | 60° |  |
| W | 80° |  |
| X Z | Sonderformen | |

## 2 Freiwinkel

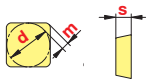


| | α |
|---|---|
| A | 3° |
| B | 5° |
| C | 7° |
| D | 15° |
| E | 20° |
| F | 25° |
| G | 30° |
| N | 0° |
| P | 11° |
| O | Sonderaus-führung |

## 3 Toleranzen

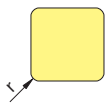


| | d [±mm] | m [±mm] | s [±mm] | d=6,35/9,52 | d=12,7 | d=15,8/19,05 |
|---|---|---|---|---|---|---|
| A | 0,025 | 0,005 | 0,025 | ● | ● | ● |
| C | 0,025 | 0,013 | 0,025 | ● | ● | ● |
| E | 0,025 | 0,025 | 0,025 | ● | ● | ● |
| F | 0,013 | 0,005 | 0,025 | ● | ● | ● |
| G | 0,025 | 0,025 | 0,13 | ● | ● | ● |
| H | 0,013 | 0,013 | 0,025 | ● | ● | ● |
| | 0,05 | 0,005 | 0,025 | ● | | |
| J | 0,08 | 0,005 | 0,025 | | ● | |
| | 0,10 | 0,005 | 0,025 | | | ● |
| | 0,05 | 0,013 | 0,025 | ● | | |
| K | 0,08 | 0,013 | 0,02 | | ● | |
| | 0,10 | 0,013 | 0,02 | | | ● |



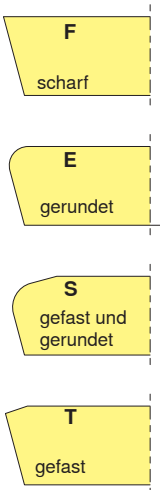
| | d [±mm] | m [±mm] | s [±mm] | d=6,35/9,52 | d=12,7 | d=15,8/19,05 |
|---|---|---|---|---|---|---|
| | 0,05 | 0,08 | 0,13 | ● | | |
| M | 0,08 | 0,13 | 0,13 | | ● | |
| | 0,10 | 0,15 | 0,13 | | | ● |
| | 0,05 | 0,08 | 0,025 | ● | | |
| N | 0,08 | 0,13 | 0,025 | | ● | |
| | 0,10 | 0,15 | 0,025 | | | ● |
| | 0,08 | 0,13 | 0,13 | ● | | |
| U | 0,13 | 0,20 | 0,13 | | ● | |
| | 0,18 | 0,27 | 0,13 | | | ● |

## 7 Eckenradius

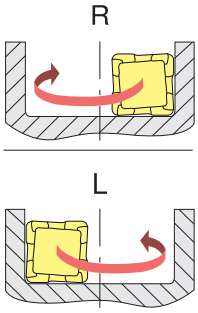


| Kennzahl | r [mm] |
|---|---|
| **04** | 0,4 |
| **05** | 0,5 |
| **06** | 0,6 |
| **07** | 0,7 |
| **08** | 0,8 |
| **10** | 1,0 |
| **12** | 1,2 |

## 8 Schneidkante




## 9 Schneidrichtung



4

## Merkmal

| | |
|---|---|
| **A** |  |
| **F** |  |
| **G** |  |
| **M** |  |
| **N** |  |
| **Q** |  |
| **R** |  |
| **T** |  |
| **U** |  |
| **W** |  |
| **X** | Sonderformen |

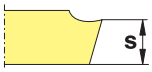
5

## Plattengröße

| Typ | Kennzahl | [mm] |
|---|---|---|
| **W**  | **02** | 3,39 |
| | **03** | 3,97 |
| | **05** | 5,29 |
| | **06** | 6,62 |
| | **07** | 7,94 |
| **S**  | **03** | 4,30 |
| | **04** | 4,20 |
| | **05** | 4,80 |
| | **06** | 5,50 |
| | **07** | 6,10 |
| | **08** | 7,30 |
| | **09** | 8,90 |
| | **10** | 9,60 |
| | **12** | 11,60 |
| | **13** | 12,20 |
| | **15** | 14,40 |
| | **17** | 16,70 |

6

## Plattenstärke




| Kennzahl | s [mm] |
|---|---|
| **02** | 2,3 |
| **02** | 2,5 |
| **03** | 3,0 |
| **T3** | 3,8 |
| **18** | 1,8 |
| **21** | 2,1 |
| **23** | 2,3 |
| **25** | 2,5 |
| **29** | 2,9 |
| **33** | 3,3 |
| **38** | 3,8 |
| **44** | 4,4 |
| **48** | 4,8 |
| **50** | 5,0 |
| **53** | 5,3 |
| **56** | 5,6 |

10

## Spanleitstufe

**Stufenbezeichnung**
**F**.. = Fein
**M**.. = Mittel
**R**.. = Grob

**zusätzliche Merkmale:**
R = Übergangsradius Haupt-/ Nebenschneide
Q = Masterfinish

# Spanleitstufen

**M 30**

[1] [2]

[1] Keilwinkel
[2] Schneidkantenausführung

Schneidkantenausführung

| Code | | | scharf 10 | scharf 20 | mittel 30 | mittel 40 | robust 50 | robust 60 |
|---|---|---|---|---|---|---|---|---|
| fein | F | | | | | | | |
| mittel | M | | -FN | | -M30 | | -SN | |
| grob | R | | | | | | | |

Zunehmender Keilwinkel

| | | | |
|---|---|---|---|
| P | ■ | □ | Stahl |
| M | ■ | □ | Rostfreier Stahl |
| K | ■ | □ | Eisenguss |
| N | ■ | □ | Nichteisen Metalle |
| S | ■ | □ | Schwerzerspanbare Werkstoffe |
| H | ■ | □ | Harte Werkstoffe |

[1] [2]

[1] Hauptanwendung
[2] Nebenanwendung

Beispiel:

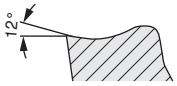
SONT 083308ER-M30



## -M30

- Universell einsetzbar
- Für allgemeine Stahlwerkstoffe

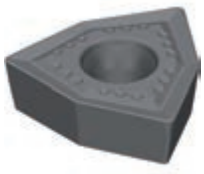


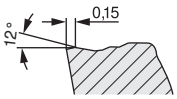



| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTPP430** CTCP420 | **CTPP430** CTCP420 | **CTPP430** |
| **CTPP430** | **CTPP430** | **CTPP430** |
| **CTPP430** CTCP420 | **CTPP430** CTCP420 | **CTPP430** |
| f [mm] 0,05 - 0,20 | | |
| **CTPP430** | **CTPP430** | **CTPP430** |
| **CTPP430** | **CTPP430** | **CTPP430** |
| | | |

## -SN

- Universell einsetzbar
- Für allgemeine Stahlwerkstoffe

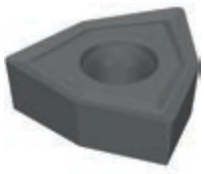


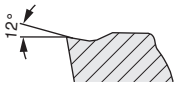



| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTPP430** | **CTPP430** | **CTPP430** |
| **CTPP430** | **CTPP430** | **CTPP430** |
| **CTPP430** | **CTPP430** | **CTPP430** |
| f [mm] 0,05 - 0,15 | | |
| **CTPP430** | **CTPP430** | **CTPP430** |
| | | |

## -FN

- Scharfe Schneidkante
- Erste Wahl für Nichteisenmetalle






| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| f [mm] 0,05 - 0,15 | | |
| **CTWN415** | **CTWN415** | **CTWN415** |
| | | |
| | | |

# Bezeichnungssystem CERATIZIT

Schneidstoffe

CUTTING SOLUTIONS BY CERATIZIT

C T P P 4 3 0

1 2 3 4 5

## 1 Hersteller: CERATIZIT

## 2 Schneidstoffart

W Hartmetall unbeschichtet
C Hartmetall beschichtet CVD
P Hartmetall beschichtet PVD
T Cermet unbeschichtet
E Cermet beschichtet
N Siliziumnitrid unbeschichtet
M Siliziumnitrid beschichtet
S Mischkeramik
I Sialon
D PKD
B CBN
L CBN beschichtet
H PM-HSS

## 3 Primäre Eignung für Werkstoff Variante 1: Nummer

1 Stahl
2 rostfreier Stahl
3 Eisenguss
4 Leicht- und Buntmetalle/Nichtmetalle
5 Superlegierungen/Titan
6 harte Werkstoffe
7 Mehrbereichssorte ohne besonderen Werkstoffschwerpunkt

## Primäre Eignung für Werkstoff Variante 2: ISO-Buchstabe

P Stahl
M rostfreier Stahl
K Eisenguss
N Leicht- und Buntmetalle/Nichtmetalle
S Superlegierungen/Titan
H harte Werkstoffe
X Mehrbereichssorte ohne besonderen Werkstoffschwerpunkt

## 4 Primäre Eignung für Anwendung

1 Drehen
2 Fräsen
3 Stechen
4 Bohren
5 Gewindedrehen
6 Andere
7 Mehrbereichssorte ohne besonderen Anwendungsschwerpunkt

## 5 ISO 513 Anwendungsbereich

z.B.
05
10
15
25
35 ISO P35
.
.
.

| Sortenbezeichnung | Normbezeichnung | | Schneidstoffart | Anwendungsbereich 01 05 10 15 20 25 30 35 40 45 50 | P Stahl | M Rostfrei | K Eisenguss | N NE-Metalle | S Hochwarmfest | H Harte Werkstoffe |
|---|---|---|---|---|---|---|---|---|---|---|
| | ISO | ANSI | | | | | | | | |
| **CTCP420** BLACKSTAR™ | HC-P20 | C7 | C | | ● | | | | | |
| | HC-K20 | C2 | C | | | | ● | | | |
| **CTPP430** SILVERSTAR™ | HC-P30 | C6 | P | | ● | | | | | |
| | HC-M25 | - | P | | | ● | | | | |
| | HC-S25 | - | P | | | | | | ● | |
| | HC-K30 | C1 | P | | | | ○ | | | |
| | HC-N25 | C2 | P | | | | | ○ | | |
| **CTWN415** | HW-N15 | C3 | W | | | | | ● | | |
| | HW-K15 | C3 | W | | | | ● | | | |
| | HW-S25 | - | W | | | | | | ○ | |

● Hauptanwendung

○ Erweiterte Anwendung

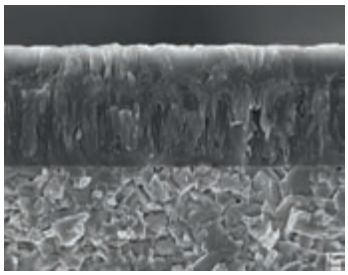
# Sortenbeschreibung



## CTCP420
BLACKSTAR™

HC-P20 | HC-K20

● ●



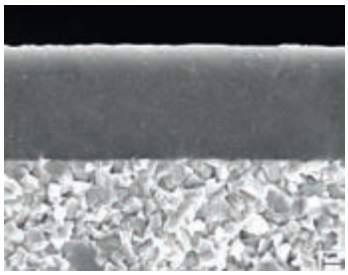
**Spezifikation:**
Zusammensetzung: Co 8,0%; Mischkarbide 2,0%; WC Rest | Korngröße: 1-2 $\mu$m | Härte: $HV_{30}$ 1500 | Schichtsystem: CVD TiCN-$Al_2O_3$

**Einsatzempfehlung:**
Die verschleißfeste Lösung für Stahl und Gusswerkstoffe für hohe Schnittgeschwindigkeiten.

## CTPP430
SILVERSTAR™

HC-P30 | HC-M25 | HC-S25 | HC-K30 | HC-N25

● ● ● ○ ○



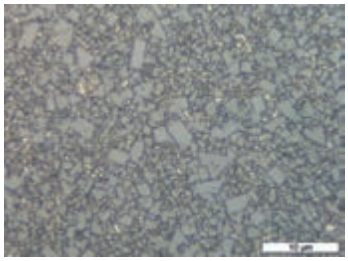
**Spezifikation:**
Zusammensetzung: Co 9,0%; Andere 0,75%; WC Rest | Korngröße: 0,85 $\mu$m | Härte: $HV_{30}$ 1590 | Schichtsystem: PVD TiAlTaN

**Einsatzempfehlung:**
Die universell einsetzbare Hochleistungssorte für Stahlwerkstoffe, austenitischen Stahl und hochwarmfeste Legierungen.

## CTWN415

HW-N15 | HW-K15 | HW-S25

● ● ○



**Spezifikation:**
Zusammensetzung: Co 6,0%; Andere 0,2%; WC Rest | Korngröße: Feinst | Härte: $HV_{30}$ 1650

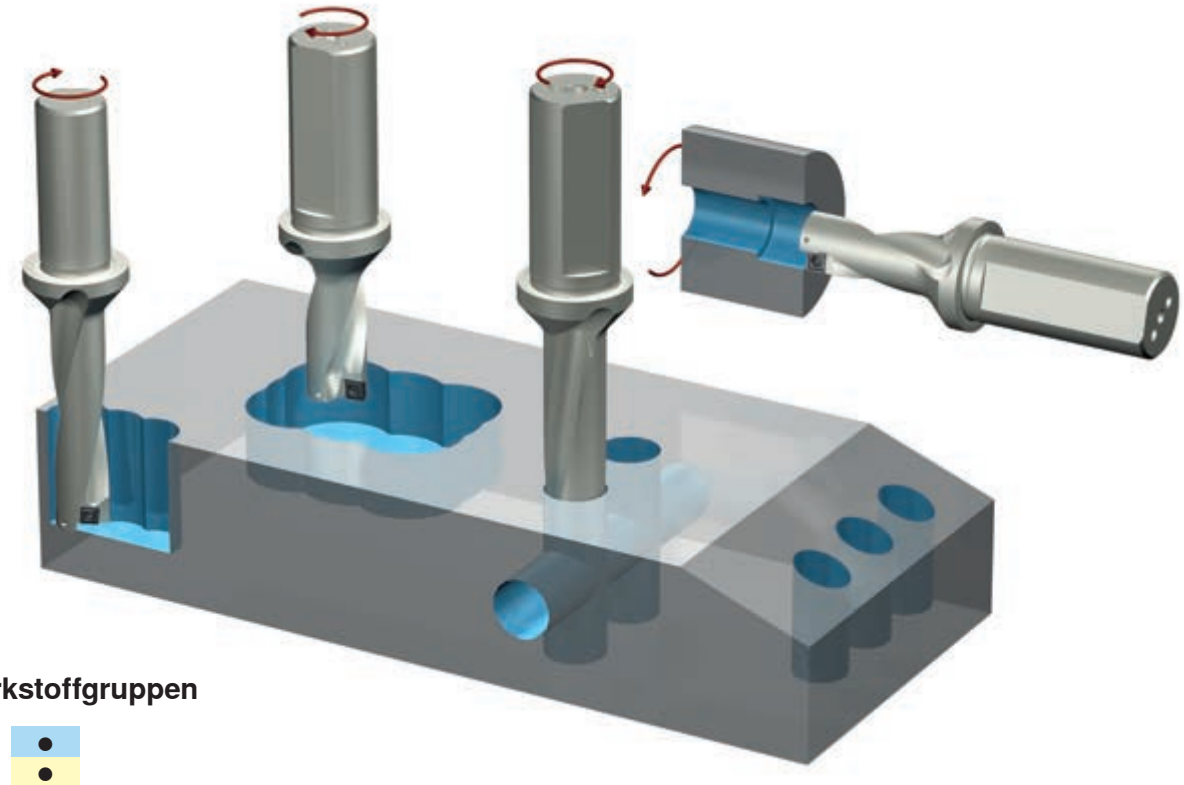
**Einsatzempfehlung:**
Die unbeschichtete Hartmetallsorte für die Bearbeitung von Aluminium und anderen Nichteisenmetallen.

# Notizen



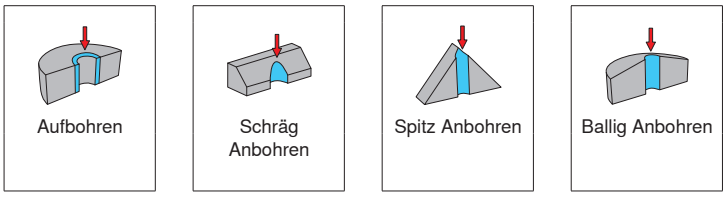
## Hohe Produktivität und Prozesssicherheit

- Hohe Vorschubwerte bei Bohrungen bis 5xD
- Hohe Wirtschaftlichkeit durch Wendeplatten mit 4 nutzbaren Schneidkanten
- Eine Wendeplatte für Zentrums- und Umfangschneide

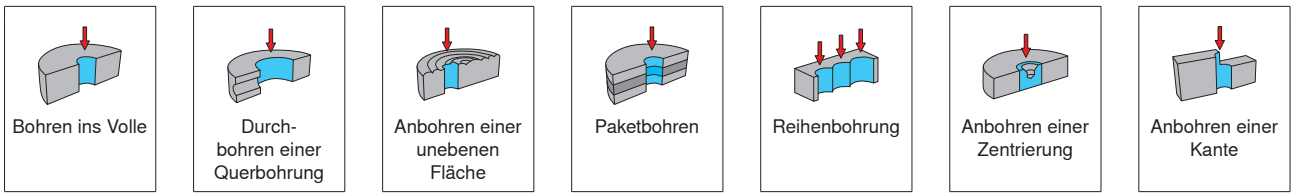


## Werkstoffgruppen

| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ○ |
| S | ● |
| H | |




## Einsatzmöglichkeiten

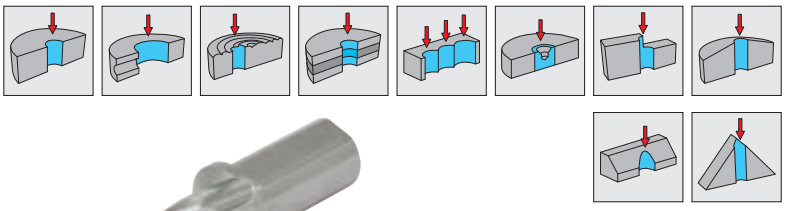



## Detailinformationen

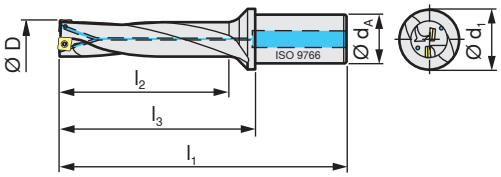
| Durchmesser / Längenverhältins | Ø-Bereich | Schneidplatten |
|---|---|---|
| 2 x D<br>3 x D<br>4 x D<br>5 x D | Ø 12 - 63 mm<br>Ø 12 - 63 mm<br>Ø 12 - 54 mm<br>Ø 12 - 41 mm | SONT 03..<br>..<br>SONT 17.. |

# MaxiDrill 900 – 2D

Ø 12 – 36 mm



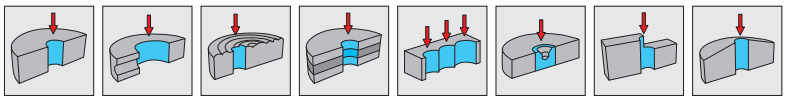




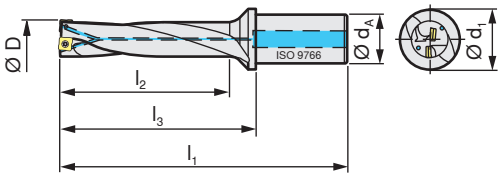

| D [mm] | Type, Bezeichnung | LNR | $d_A$ [mm] | $d_1$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 12,0 | C900.2D.120.R.03 | R | 20 | 28 | 90 | 24 | 40 | SONT 03.. | E01 |
| 12,5 | C900.2D.125.R.03 | R | 20 | 28 | 91 | 25 | 41 | SONT 03.. | E01 |
| 13,0 | C900.2D.130.R.03 | R | 20 | 28 | 92 | 26 | 42 | SONT 03.. | E01 |
| 13,5 | C900.2D.135.R.03 | R | 20 | 28 | 93 | 27 | 43 | SONT 03.. | E01 |
| 14,0 | C900.2D.140.R.04 | R | 20 | 30 | 96 | 28 | 46 | SONT 04.. | E02 |
| 14,5 | C900.2D.145.R.04 | R | 20 | 30 | 97 | 29 | 47 | SONT 04.. | E02 |
| 15,0 | C900.2D.150.R.04 | R | 20 | 30 | 98 | 30 | 48 | SONT 04.. | E02 |
| 15,5 | C900.2D.155.R.04 | R | 20 | 30 | 99 | 31 | 49 | SONT 04.. | E02 |
| 16,0 | C900.2D.160.R.05 | R | 20 | 30 | 100 | 32 | 50 | SONT 05.. | E02 |
| 16,5 | C900.2D.165.R.05 | R | 20 | 30 | 101 | 33 | 51 | SONT 05.. | E02 |
| 17,0 | C900.2D.170.R.05 | R | 20 | 30 | 102 | 34 | 52 | SONT 05.. | E02 |
| 17,5 | C900.2D.175.R.05 | R | 20 | 30 | 103 | 35 | 53 | SONT 05.. | E02 |
| 18,0 | C900.2D.180.R.06 | R | 25 | 32 | 111 | 36 | 55 | SONT 06.. | E03 |
| 18,5 | C900.2D.185.R.06 | R | 25 | 32 | 112 | 37 | 56 | SONT 06.. | E03 |
| 19,0 | C900.2D.190.R.06 | R | 25 | 32 | 113 | 38 | 57 | SONT 06.. | E03 |
| 19,5 | C900.2D.195.R.06 | R | 25 | 32 | 114 | 39 | 58 | SONT 06.. | E03 |
| 20,0 | C900.2D.200.R.06 | R | 25 | 32 | 115 | 40 | 59 | SONT 06.. | E03 |
| 20,5 | C900.2D.205.R.06 | R | 25 | 32 | 116 | 41 | 60 | SONT 06.. | E03 |
| 21,0 | C900.2D.210.R.07 | R | 25 | 32 | 118 | 42 | 62 | SONT 07.. | E03 |
| 22,0 | C900.2D.220.R.07 | R | 25 | 32 | 120 | 44 | 64 | SONT 07.. | E03 |
| 23,0 | C900.2D.230.R.07 | R | 25 | 32 | 122 | 46 | 66 | SONT 07.. | E03 |
| 24,0 | C900.2D.240.R.08 | R | 32 | 40 | 132 | 48 | 72 | SONT 08.. | E04 |
| 25,0 | C900.2D.250.R.08 | R | 32 | 40 | 134 | 50 | 74 | SONT 08.. | E04 |
| 26,0 | C900.2D.260.R.08 | R | 32 | 40 | 136 | 52 | 76 | SONT 08.. | E04 |
| 27,0 | C900.2D.270.R.08 | R | 32 | 40 | 138 | 54 | 78 | SONT 08.. | E04 |
| 28,0 | C900.2D.280.R.09 | R | 32 | 40 | 140 | 56 | 80 | SONT 09.. | E05 |
| 29,0 | C900.2D.290.R.09 | R | 32 | 40 | 142 | 58 | 82 | SONT 09.. | E05 |
| 30,0 | C900.2D.300.R.09 | R | 32 | 40 | 144 | 60 | 84 | SONT 09.. | E05 |
| 31,0 | C900.2D.310.R.09 | R | 32 | 40 | 146 | 62 | 86 | SONT 09.. | E05 |
| 32,0 | C900.2D.320.R.09 | R | 32 | 40 | 148 | 64 | 88 | SONT 09.. | E05 |
| 33,0 | C900.2D.330.R.10 | R | 40 | 50 | 163 | 66 | 93 | SONT 10.. | E06 |
| 34,0 | C900.2D.340.R.10 | R | 40 | 50 | 165 | 68 | 95 | SONT 10.. | E06 |
| 35,0 | C900.2D.350.R.10 | R | 40 | 50 | 167 | 70 | 97 | SONT 10.. | E06 |
| 36,0 | C900.2D.360.R.10 | R | 40 | 50 | 169 | 72 | 99 | SONT 10.. | E06 |

| | | | |
|---|---|---|---|
| E01 | 11807484 | 12016459 | 8095011600 |
| E02 | 11807480 | 11817562 | 8095011600 |
| E03 | 11684214 | 11450898 | 8095011700 |
| E04 | 11684216 | 11690144 | 8095003900 |
| E05 | 11227305 | 11690146 | 8095011800 |
| E06 | 11610311 | 11450867 | 8095012000 |

D37-D38 D51 D23







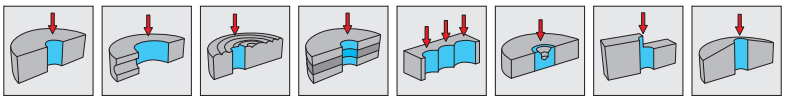

| D [mm] | Type, Bezeichnung | LNR | $d_A$ [mm] | $d_1$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 37,0 | C900.2D.370.R.12 | R | 40 | 56 | 174 | 74 | 104 | SONT 12.. | E01 |
| 38,0 | C900.2D.380.R.12 | R | 40 | 56 | 176 | 76 | 106 | SONT 12.. | E01 |
| 39,0 | C900.2D.390.R.12 | R | 40 | 56 | 178 | 78 | 108 | SONT 12.. | E01 |
| 40,0 | C900.2D.400.R.12 | R | 40 | 56 | 180 | 80 | 110 | SONT 12.. | E01 |
| 41,0 | C900.2D.410.R.12 | R | 40 | 56 | 182 | 82 | 112 | SONT 12.. | E01 |
| 42,0 | C900.2D.420.R.13 | R | 40 | 60 | 187 | 84 | 117 | SONT 13.. | E02 |
| 43,0 | C900.2D.430.R.13 | R | 40 | 60 | 189 | 86 | 119 | SONT 13.. | E02 |
| 44,0 | C900.2D.440.R.13 | R | 40 | 60 | 191 | 88 | 121 | SONT 13.. | E02 |
| 45,0 | C900.2D.450.R.13 | R | 40 | 60 | 193 | 90 | 123 | SONT 13.. | E02 |
| 46,0 | C900.2D.460.R.13 | R | 40 | 60 | 195 | 92 | 125 | SONT 13.. | E02 |
| 47,0 | C900.2D.470.R.15 | R | 40 | 60 | 198 | 94 | 128 | SONT 15.. | E02 |
| 48,0 | C900.2D.480.R.15 | R | 40 | 60 | 200 | 96 | 130 | SONT 15.. | E02 |
| 49,0 | C900.2D.490.R.15 | R | 40 | 60 | 202 | 98 | 132 | SONT 15.. | E02 |
| 50,0 | C900.2D.500.R.15 | R | 40 | 60 | 204 | 100 | 134 | SONT 15.. | E02 |
| 51,0 | C900.2D.510.R.15 | R | 40 | 60 | 206 | 102 | 136 | SONT 15.. | E02 |
| 52,0 | C900.2D.520.R.15 | R | 40 | 60 | 208 | 104 | 138 | SONT 15.. | E02 |
| 53,0 | C900.2D.530.R.15 | R | 40 | 60 | 210 | 106 | 140 | SONT 15.. | E02 |
| 54,0 | C900.2D.540.R.15 | R | 40 | 60 | 212 | 108 | 142 | SONT 15.. | E02 |
| 55,0 | C900.2D.550.R.17 | R | 40 | 60 | 215 | 110 | 145 | SONT 17.. | E02 |
| 56,0 | C900.2D.560.R.17 | R | 40 | 60 | 217 | 112 | 147 | SONT 17.. | E02 |
| 57,0 | C900.2D.570.R.17 | R | 40 | 60 | 219 | 114 | 149 | SONT 17.. | E02 |
| 58,0 | C900.2D.580.R.17 | R | 40 | 60 | 221 | 116 | 151 | SONT 17.. | E02 |
| 59,0 | C900.2D.590.R.17 | R | 40 | 60 | 223 | 118 | 153 | SONT 17.. | E02 |
| 60,0 | C900.2D.600.R.17 | R | 40 | 62 | 225 | 120 | 155 | SONT 17.. | E02 |
| 61,0 | C900.2D.610.R.17 | R | 40 | 62 | 227 | 122 | 157 | SONT 17.. | E02 |
| 62,0 | C900.2D.620.R.17 | R | 40 | 64 | 229 | 124 | 159 | SONT 17.. | E02 |
| 63,0 | C900.2D.630.R.17 | R | 40 | 64 | 231 | 126 | 161 | SONT 17.. | E02 |

| | | | |
|---|---|---|---|
| E01 | 11610311 | 11450867 | 8095012000 |
| E02 | 11801441 | 11816987 | 8095012100 |

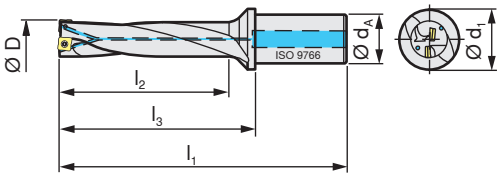
D37-D38
D51
D23

# MaxiDrill 900 – 3D

Ø 12 – 28,5 mm



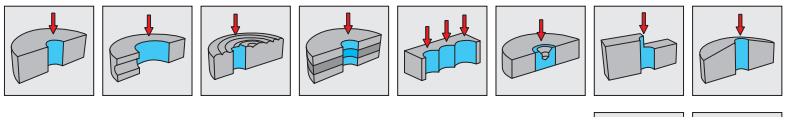




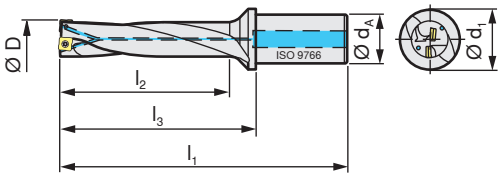

| D [mm] | Type, Bezeichnung | LNR | $d_A$ [mm] | $d_1$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 12,0 | C900.3D.120.R.03 | R | 20 | 28 | 102 | 36 | 52 | SONT 03.. | E01 |
| 12,5 | C900.3D.125.R.03 | R | 20 | 28 | 104 | 37,5 | 54 | SONT 03.. | E01 |
| 13,0 | C900.3D.130.R.03 | R | 20 | 28 | 105 | 39 | 55 | SONT 03.. | E01 |
| 13,5 | C900.3D.135.R.03 | R | 20 | 28 | 107 | 40,5 | 57 | SONT 03.. | E01 |
| 14,0 | C900.3D.140.R.04 | R | 20 | 30 | 109 | 42 | 59 | SONT 04.. | E02 |
| 14,5 | C900.3D.145.R.04 | R | 20 | 30 | 111 | 44 | 61 | SONT 04.. | E02 |
| 15,0 | C900.3D.150.R.04 | R | 20 | 30 | 112 | 45 | 62 | SONT 04.. | E02 |
| 15,5 | C900.3D.155.R.04 | R | 20 | 30 | 114 | 47 | 64 | SONT 04.. | E02 |
| 16,0 | C900.3D.160.R.05 | R | 20 | 30 | 115 | 48 | 65 | SONT 05.. | E02 |
| 16,5 | C900.3D.165.R.05 | R | 20 | 30 | 117 | 50 | 67 | SONT 05.. | E02 |
| 17,0 | C900.3D.170.R.05 | R | 20 | 30 | 118 | 51 | 68 | SONT 05.. | E02 |
| 17,5 | C900.3D.175.R.05 | R | 20 | 30 | 120 | 53 | 70 | SONT 05.. | E02 |
| 18,0 | C900.3D.180.R.06 | R | 25 | 32 | 128 | 54 | 72 | SONT 06.. | E03 |
| 18,5 | C900.3D.185.R.06 | R | 25 | 32 | 130 | 56 | 74 | SONT 06.. | E03 |
| 19,0 | C900.3D.190.R.06 | R | 25 | 32 | 131 | 57 | 75 | SONT 06.. | E03 |
| 19,5 | C900.3D.195.R.06 | R | 25 | 32 | 133 | 59 | 77 | SONT 06.. | E03 |
| 20,0 | C900.3D.200.R.06 | R | 25 | 32 | 134 | 60 | 78 | SONT 06.. | E03 |
| 20,5 | C900.3D.205.R.06 | R | 25 | 32 | 136 | 62 | 80 | SONT 06.. | E03 |
| 21,0 | C900.3D.210.R.07 | R | 25 | 32 | 138 | 63 | 82 | SONT 07.. | E03 |
| 21,5 | C900.3D.215.R.07 | R | 25 | 32 | 140 | 65 | 84 | SONT 07.. | E03 |
| 22,0 | C900.3D.220.R.07 | R | 25 | 32 | 141 | 66 | 85 | SONT 07.. | E03 |
| 22,5 | C900.3D.225.R.07 | R | 25 | 32 | 143 | 68 | 87 | SONT 07.. | E03 |
| 23,0 | C900.3D.230.R.07 | R | 25 | 32 | 144 | 69 | 88 | SONT 07.. | E03 |
| 23,5 | C900.3D.235.R.07 | R | 25 | 32 | 146 | 71 | 90 | SONT 07.. | E03 |
| 24,0 | C900.3D.240.R.08 | R | 32 | 40 | 155 | 72 | 95 | SONT 08.. | E04 |
| 24,5 | C900.3D.245.R.08 | R | 32 | 40 | 157 | 74 | 97 | SONT 08.. | E04 |
| 25,0 | C900.3D.250.R.08 | R | 32 | 40 | 158 | 75 | 98 | SONT 08.. | E04 |
| 25,5 | C900.3D.255.R.08 | R | 32 | 40 | 160 | 77 | 100 | SONT 08.. | E04 |
| 26,0 | C900.3D.260.R.08 | R | 32 | 40 | 161 | 78 | 101 | SONT 08.. | E04 |
| 26,5 | C900.3D.265.R.08 | R | 32 | 40 | 163 | 80 | 103 | SONT 08.. | E04 |
| 27,0 | C900.3D.270.R.08 | R | 32 | 40 | 164 | 81 | 104 | SONT 08.. | E04 |
| 27,5 | C900.3D.275.R.08 | R | 32 | 40 | 166 | 83 | 106 | SONT 08.. | E04 |
| 28,0 | C900.3D.280.R.09 | R | 32 | 40 | 167 | 84 | 107 | SONT 09.. | E05 |
| 28,5 | C900.3D.285.R.09 | R | 32 | 40 | 169 | 86 | 109 | SONT 09.. | E05 |

| | | | |
|---|---|---|---|
| E01 | 11807484 | 12016459 | 8095011600 |
| E02 | 11807480 | 11817562 | 8095011600 |
| E03 | 11684214 | 11450898 | 8095011700 |
| E04 | 11684216 | 11690144 | 8095003900 |
| E05 | 11227305 | 11690146 | 8095011800 |

D37-D38 D51 D23








| D [mm] | Type, Bezeichnung | LNR | $d_A$ [mm] | $d_1$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 29,0 | C900.3D.290.R.09 | R | 32 | 40 | 170 | 87 | 110 | SONT 09.. | E01 |
| 29,5 | C900.3D.295.R.09 | R | 32 | 40 | 172 | 89 | 112 | SONT 09.. | E01 |
| 30,0 | C900.3D.300.R.09 | R | 32 | 40 | 173 | 90 | 113 | SONT 09.. | E01 |
| 30,5 | C900.3D.305.R.09 | R | 32 | 40 | 175 | 92 | 115 | SONT 09.. | E01 |
| 31,0 | C900.3D.310.R.09 | R | 32 | 40 | 176 | 93 | 116 | SONT 09.. | E01 |
| 31,5 | C900.3D.315.R.09 | R | 32 | 40 | 178 | 95 | 118 | SONT 09.. | E01 |
| 32,0 | C900.3D.320.R.09 | R | 32 | 40 | 179 | 96 | 119 | SONT 09.. | E01 |
| 32,5 | C900.3D.325.R.10 | R | 40 | 50 | 192 | 98 | 124 | SONT 10.. | E02 |
| 33,0 | C900.3D.330.R.10 | R | 40 | 50 | 193 | 99 | 125 | SONT 10.. | E02 |
| 33,5 | C900.3D.335.R.10 | R | 40 | 50 | 195 | 101 | 127 | SONT 10.. | E02 |
| 34,0 | C900.3D.340.R.10 | R | 40 | 50 | 196 | 102 | 128 | SONT 10.. | E02 |
| 34,5 | C900.3D.345.R.10 | R | 40 | 50 | 198 | 104 | 130 | SONT 10.. | E02 |
| 35,0 | C900.3D.350.R.10 | R | 40 | 50 | 199 | 105 | 131 | SONT 10.. | E02 |
| 35,5 | C900.3D.355.R.10 | R | 40 | 50 | 201 | 107 | 133 | SONT 10.. | E02 |
| 36,0 | C900.3D.360.R.10 | R | 40 | 50 | 202 | 108 | 134 | SONT 10.. | E02 |
| 36,5 | C900.3D.365.R.10 | R | 40 | 50 | 204 | 110 | 136 | SONT 10.. | E02 |
| 37,0 | C900.3D.370.R.12 | R | 40 | 56 | 211 | 111 | 141 | SONT 12.. | E02 |
| 38,0 | C900.3D.380.R.12 | R | 40 | 56 | 214 | 114 | 144 | SONT 12.. | E02 |
| 39,0 | C900.3D.390.R.12 | R | 40 | 56 | 217 | 117 | 147 | SONT 12.. | E02 |
| 40,0 | C900.3D.400.R.12 | R | 40 | 56 | 220 | 120 | 150 | SONT 12.. | E02 |
| 41,0 | C900.3D.410.R.12 | R | 40 | 56 | 223 | 123 | 153 | SONT 12.. | E02 |
| 42,0 | C900.3D.420.R.13 | R | 40 | 60 | 229 | 126 | 159 | SONT 13.. | E03 |
| 43,0 | C900.3D.430.R.13 | R | 40 | 60 | 232 | 129 | 162 | SONT 13.. | E03 |
| 44,0 | C900.3D.440.R.13 | R | 40 | 60 | 235 | 132 | 165 | SONT 13.. | E03 |
| 45,0 | C900.3D.450.R.13 | R | 40 | 60 | 238 | 135 | 168 | SONT 13.. | E03 |
| 46,0 | C900.3D.460.R.13 | R | 40 | 60 | 241 | 138 | 171 | SONT 13.. | E03 |
| 47,0 | C900.3D.470.R.15 | R | 40 | 60 | 245 | 141 | 175 | SONT 15.. | E03 |
| 48,0 | C900.3D.480.R.15 | R | 40 | 60 | 248 | 144 | 178 | SONT 15.. | E03 |
| 49,0 | C900.3D.490.R.15 | R | 40 | 60 | 251 | 147 | 181 | SONT 15.. | E03 |
| 50,0 | C900.3D.500.R.15 | R | 40 | 60 | 254 | 150 | 184 | SONT 15.. | E03 |
| 51,0 | C900.3D.510.R.15 | R | 40 | 60 | 257 | 153 | 187 | SONT 15.. | E03 |
| 52,0 | C900.3D.520.R.15 | R | 40 | 60 | 260 | 156 | 190 | SONT 15.. | E03 |
| 53,0 | C900.3D.530.R.15 | R | 40 | 60 | 263 | 159 | 193 | SONT 15.. | E03 |
| 54,0 | C900.3D.540.R.15 | R | 40 | 60 | 266 | 162 | 196 | SONT 15.. | E03 |
| 55,0 | C900.3D.550.R.17 | R | 40 | 60 | 270 | 165 | 200 | SONT 17.. | E03 |
| 56,0 | C900.3D.560.R.17 | R | 40 | 60 | 273 | 168 | 203 | SONT 17.. | E03 |
| 57,0 | C900.3D.570.R.17 | R | 40 | 60 | 276 | 171 | 206 | SONT 17.. | E03 |
| 58,0 | C900.3D.580.R.17 | R | 40 | 60 | 279 | 174 | 209 | SONT 17.. | E03 |

| | | | |
|---|---|---|---|
| E01 | 11227305 | 11690146 | 8095011800 |
| E02 | 11610311 | 11450867 | 8095012000 |
| E03 | 11801441 | 11816987 | 8095012100 |

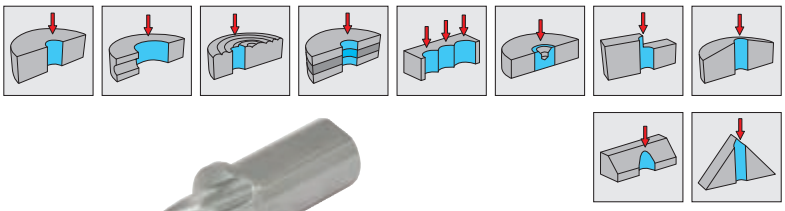

D37-D38

D51

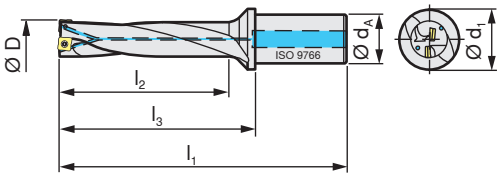
D23

# MaxiDrill 900 – 3D

Ø 59 – 63 mm







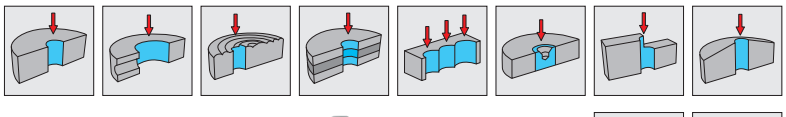

| D [mm] | Type, Bezeichnung | LNR | $d_A$ [mm] | $d_1$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 59,0 | C900.3D.590.R.17 | R | 40 | 60 | 282 | 177 | 212 | SONT 17.. | E01 |
| 60,0 | C900.3D.600.R.17 | R | 40 | 62 | 285 | 180 | 215 | SONT 17.. | E01 |
| 61,0 | C900.3D.610.R.17 | R | 40 | 62 | 288 | 183 | 218 | SONT 17.. | E01 |
| 62,0 | C900.3D.620.R.17 | R | 40 | 64 | 291 | 186 | 221 | SONT 17.. | E01 |
| 63,0 | C900.3D.630.R.17 | R | 40 | 64 | 294 | 189 | 224 | SONT 17.. | E01 |

| | | | |
|---|---|---|---|
| E01 | 11801441 | 11816987 | 8095012100 |

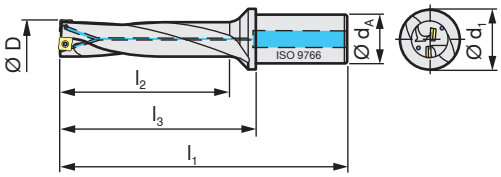
D37-D38 D51 D23

# MaxiDrill 900 – 4D

Ø 12 – 36 mm







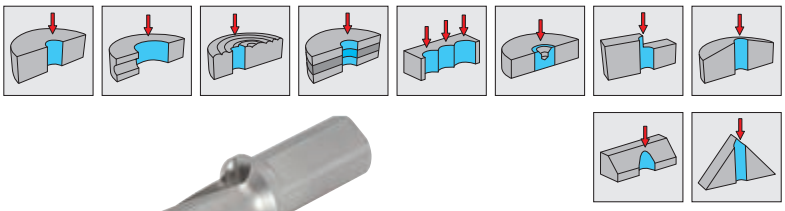

| D [mm] | Type, Bezeichnung | LNR | $d_A$ [mm] | $d_1$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 12,0 | C900.4D.120.R.03 | R | 20 | 28 | 114 | 48 | 64 | SONT 03.. | E01 |
| 13,0 | C900.4D.130.R.03 | R | 20 | 28 | 118 | 52 | 68 | SONT 03.. | E01 |
| 14,0 | C900.4D.140.R.04 | R | 20 | 30 | 123 | 56 | 73 | SONT 04.. | E02 |
| 15,0 | C900.4D.150.R.04 | R | 20 | 30 | 127 | 60 | 77 | SONT 04.. | E02 |
| 16,0 | C900.4D.160.R.05 | R | 20 | 30 | 131 | 64 | 81 | SONT 05.. | E02 |
| 17,0 | C900.4D.170.R.05 | R | 20 | 30 | 135 | 68 | 85 | SONT 05.. | E02 |
| 18,0 | C900.4D.180.R.06 | R | 25 | 32 | 146 | 72 | 90 | SONT 06.. | E03 |
| 19,0 | C900.4D.190.R.06 | R | 25 | 32 | 150 | 76 | 94 | SONT 06.. | E03 |
| 20,0 | C900.4D.200.R.06 | R | 25 | 32 | 154 | 80 | 98 | SONT 06.. | E03 |
| 21,0 | C900.4D.210.R.07 | R | 25 | 40 | 159 | 84 | 103 | SONT 07.. | E03 |
| 22,0 | C900.4D.220.R.07 | R | 25 | 40 | 163 | 88 | 107 | SONT 07.. | E03 |
| 23,0 | C900.4D.230.R.07 | R | 25 | 40 | 167 | 92 | 111 | SONT 07.. | E03 |
| 24,0 | C900.4D.240.R.08 | R | 32 | 40 | 179 | 96 | 119 | SONT 08.. | E04 |
| 25,0 | C900.4D.250.R.08 | R | 32 | 40 | 183 | 100 | 123 | SONT 08.. | E04 |
| 26,0 | C900.4D.260.R.08 | R | 32 | 40 | 187 | 104 | 127 | SONT 08.. | E04 |
| 27,0 | C900.4D.270.R.08 | R | 32 | 40 | 191 | 108 | 131 | SONT 08.. | E04 |
| 28,0 | C900.4D.280.R.09 | R | 32 | 40 | 195 | 112 | 135 | SONT 09.. | E05 |
| 29,0 | C900.4D.290.R.09 | R | 32 | 40 | 199 | 116 | 139 | SONT 09.. | E05 |
| 30,0 | C900.4D.300.R.09 | R | 32 | 40 | 203 | 120 | 143 | SONT 09.. | E05 |
| 31,0 | C900.4D.310.R.09 | R | 32 | 40 | 207 | 124 | 147 | SONT 09.. | E05 |
| 32,0 | C900.4D.320.R.09 | R | 32 | 40 | 211 | 128 | 151 | SONT 09.. | E05 |
| 33,0 | C900.4D.330.R.10 | R | 40 | 50 | 226 | 132 | 159 | SONT 10.. | E06 |
| 34,0 | C900.4D.340.R.10 | R | 40 | 50 | 230 | 136 | 162 | SONT 10.. | E06 |
| 35,0 | C900.4D.350.R.10 | R | 40 | 50 | 234 | 140 | 166 | SONT 10.. | E06 |
| 36,0 | C900.4D.360.R.10 | R | 40 | 50 | 238 | 144 | 170 | SONT 10.. | E06 |

| | | | |
|---|---|---|---|
| E01 | 11807484 | 12016459 | 8095011600 |
| E02 | 11807480 | 11817562 | 8095011600 |
| E03 | 11684214 | 11450898 | 8095011700 |
| E04 | 11684216 | 11690144 | 8095003900 |
| E05 | 11227305 | 11690146 | 8095011800 |
| E06 | 11610311 | 11450867 | 8095012000 |

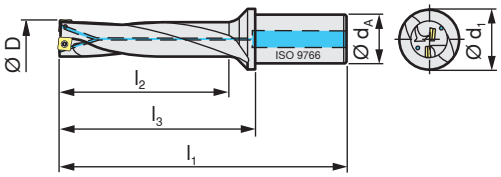
D39-D40 D51 D23

# MaxiDrill 900 – 4D

Ø 37 – 54 mm







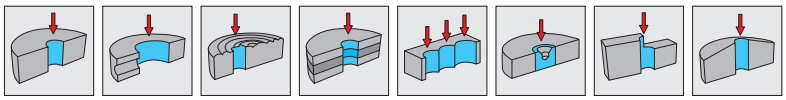

| D [mm] | Type, Bezeichnung | LNR | $d_A$ [mm] | $d_1$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 37,0 | C900.4D.370.R.12 | R | 40 | 56 | 248 | 148 | 178 | SONT 12.. | E01 |
| 38,0 | C900.4D.380.R.12 | R | 40 | 56 | 252 | 152 | 182 | SONT 12.. | E01 |
| 39,0 | C900.4D.390.R.12 | R | 40 | 56 | 256 | 156 | 186 | SONT 12.. | E01 |
| 40,0 | C900.4D.400.R.12 | R | 40 | 56 | 260 | 160 | 190 | SONT 12.. | E01 |
| 41,0 | C900.4D.410.R.12 | R | 40 | 56 | 264 | 164 | 194 | SONT 12.. | E01 |
| 42,0 | C900.4D.420.R.13 | R | 40 | 60 | 271 | 168 | 201 | SONT 13.. | E02 |
| 43,0 | C900.4D.430.R.13 | R | 40 | 60 | 275 | 172 | 205 | SONT 13.. | E02 |
| 44,0 | C900.4D.440.R.13 | R | 40 | 60 | 279 | 176 | 209 | SONT 13.. | E02 |
| 45,0 | C900.4D.450.R.13 | R | 40 | 60 | 283 | 180 | 213 | SONT 13.. | E02 |
| 46,0 | C900.4D.460.R.13 | R | 40 | 60 | 287 | 184 | 217 | SONT 13.. | E02 |
| 47,0 | C900.4D.470.R.15 | R | 40 | 60 | 292 | 188 | 222 | SONT 15.. | E02 |
| 48,0 | C900.4D.480.R.15 | R | 40 | 60 | 296 | 192 | 226 | SONT 15.. | E02 |
| 49,0 | C900.4D.490.R.15 | R | 40 | 60 | 300 | 196 | 230 | SONT 15.. | E02 |
| 50,0 | C900.4D.500.R.15 | R | 40 | 60 | 304 | 200 | 234 | SONT 15.. | E02 |
| 51,0 | C900.4D.510.R.15 | R | 40 | 60 | 308 | 204 | 238 | SONT 15.. | E02 |
| 52,0 | C900.4D.520.R.15 | R | 40 | 60 | 312 | 208 | 242 | SONT 15.. | E02 |
| 53,0 | C900.4D.530.R.15 | R | 40 | 60 | 316 | 212 | 246 | SONT 15.. | E02 |
| 54,0 | C900.4D.540.R.15 | R | 40 | 60 | 320 | 216 | 250 | SONT 15.. | E02 |

| | | | |
|---|---|---|---|
| E01 | 11610311 | 11450867 | 8095012000 |
| E02 | 11801441 | 11816987 | 8095012100 |

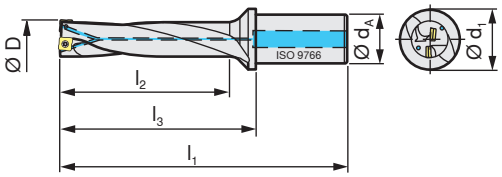
D39-D40 D51 D23

# MaxiDrill 900 – 5D

Ø 12 – 41 mm








| D [mm] | Type, Bezeichnung | LNR | $d_A$ [mm] | $d_1$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 12,0 | C900.5D.120.R.03 | R | 20 | 28 | 126 | 60 | 76 | SONT 03.. | E01 |
| 13,0 | C900.5D.130.R.03 | R | 20 | 28 | 131 | 65 | 81 | SONT 03.. | E01 |
| 14,0 | C900.5D.140.R.04 | R | 20 | 30 | 137 | 70 | 87 | SONT 04.. | E02 |
| 15,0 | C900.5D.150.R.04 | R | 20 | 30 | 142 | 75 | 92 | SONT 04.. | E02 |
| 16,0 | C900.5D.160.R.05 | R | 20 | 30 | 147 | 80 | 97 | SONT 05.. | E02 |
| 17,0 | C900.5D.170.R.05 | R | 20 | 30 | 152 | 85 | 102 | SONT 05.. | E02 |
| 18,0 | C900.5D.180.R.06 | R | 25 | 32 | 164 | 90 | 108 | SONT 06.. | E03 |
| 19,0 | C900.5D.190.R.06 | R | 25 | 32 | 169 | 95 | 113 | SONT 06.. | E03 |
| 20,0 | C900.5D.200.R.06 | R | 25 | 32 | 174 | 100 | 118 | SONT 06.. | E03 |
| 21,0 | C900.5D.210.R.07 | R | 25 | 32 | 180 | 105 | 124 | SONT 07.. | E03 |
| 22,0 | C900.5D.220.R.07 | R | 25 | 32 | 184 | 110 | 128 | SONT 07.. | E03 |
| 23,0 | C900.5D.230.R.07 | R | 25 | 32 | 189 | 115 | 133 | SONT 07.. | E03 |
| 24,0 | C900.5D.240.R.08 | R | 32 | 40 | 203 | 120 | 143 | SONT 08.. | E04 |
| 25,0 | C900.5D.250.R.08 | R | 32 | 40 | 208 | 125 | 148 | SONT 08.. | E04 |
| 26,0 | C900.5D.260.R.08 | R | 32 | 40 | 212 | 130 | 152 | SONT 08.. | E04 |
| 27,0 | C900.5D.270.R.08 | R | 32 | 40 | 217 | 135 | 157 | SONT 08.. | E04 |
| 28,0 | C900.5D.280.R.09 | R | 32 | 40 | 221 | 140 | 161 | SONT 09.. | E05 |
| 29,0 | C900.5D.290.R.09 | R | 32 | 40 | 226 | 145 | 166 | SONT 09.. | E05 |
| 30,0 | C900.5D.300.R.09 | R | 32 | 40 | 230 | 150 | 170 | SONT 09.. | E05 |
| 31,0 | C900.5D.310.R.09 | R | 32 | 40 | 235 | 155 | 175 | SONT 09.. | E05 |
| 32,0 | C900.5D.320.R.09 | R | 32 | 40 | 239 | 160 | 179 | SONT 09.. | E05 |
| 33,0 | C900.5D.330.R.10 | R | 40 | 50 | 259 | 165 | 191 | SONT 10.. | E06 |
| 34,0 | C900.5D.340.R.10 | R | 40 | 50 | 264 | 170 | 196 | SONT 10.. | E06 |
| 35,0 | C900.5D.350.R.10 | R | 40 | 50 | 269 | 175 | 201 | SONT 10.. | E06 |
| 36,0 | C900.5D.360.R.10 | R | 40 | 50 | 274 | 180 | 206 | SONT 10.. | E06 |
| 37,0 | C900.5D.370.R.12 | R | 40 | 56 | 285 | 185 | 215 | SONT 12.. | E06 |
| 38,0 | C900.5D.380.R.12 | R | 40 | 56 | 290 | 190 | 220 | SONT 12.. | E06 |
| 39,0 | C900.5D.390.R.12 | R | 40 | 56 | 295 | 195 | 225 | SONT 12.. | E06 |
| 40,0 | C900.5D.400.R.12 | R | 40 | 56 | 300 | 200 | 230 | SONT 12.. | E06 |
| 41,0 | C900.5D.410.R.12 | R | 40 | 56 | 305 | 205 | 235 | SONT 12.. | E06 |

| | | | |
|---|---|---|---|
| E01 | 11807484 | 12016459 | 8095011600 |
| E02 | 11807480 | 11817562 | 8095011600 |
| E03 | 11684214 | 11450898 | 8095011700 |
| E04 | 11684216 | 11690144 | 8095003900 |
| E05 | 11227305 | 11690146 | 8095011800 |
| E06 | 11610311 | 11450867 | 8095012000 |







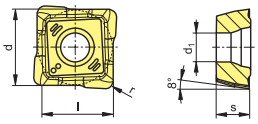


# MaxiDrill 900

SO..

| | | CTCP420 | CTPP430 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|
| -M30 |  | | | | | | | |
| | SONT 031804ER-M30 | ● | ● | 5,40 | 4,30 | 1,80 | 0,40 | 2,10 |
| | SONT 042105ER-M30 | ● | ● | 4,60 | 4,20 | 2,10 | 0,50 | 2,25 |
| | SONT 052306ER-M30 | ● | ● | 5,30 | 4,80 | 2,30 | 0,60 | 2,25 |
| | SONT 062506ER-M30 | ● | ● | 5,90 | 5,50 | 2,50 | 0,60 | 2,50 |
| | SONT 072907ER-M30 | ● | ● | 6,50 | 6,10 | 2,90 | 0,70 | 2,50 |
| | SONT 083308ER-M30 | ● | ● | 7,70 | 7,30 | 3,30 | 0,80 | 2,90 |
| | SONT 093808ER-M30 | ● | ● | 8,90 | 8,50 | 3,80 | 0,80 | 3,50 |
| | SONT 104408ER-M30 | ● | ● | 10,10 | 9,60 | 4,40 | 0,80 | 4,10 |
| | SONT 124810ER-M30 | ● | ● | 11,60 | 11,00 | 4,80 | 1,00 | 4,10 |
| | SONT 135012ER-M30 | ● | ● | 13,00 | 12,20 | 5,00 | 1,20 | 5,30 |
| | SONT 155312ER-M30 | ● | ● | 15,20 | 14,40 | 5,30 | 1,20 | 5,30 |
| | SONT 175612ER-M30 | ● | ● | 17,50 | 16,70 | 5,60 | 1,20 | 5,30 |

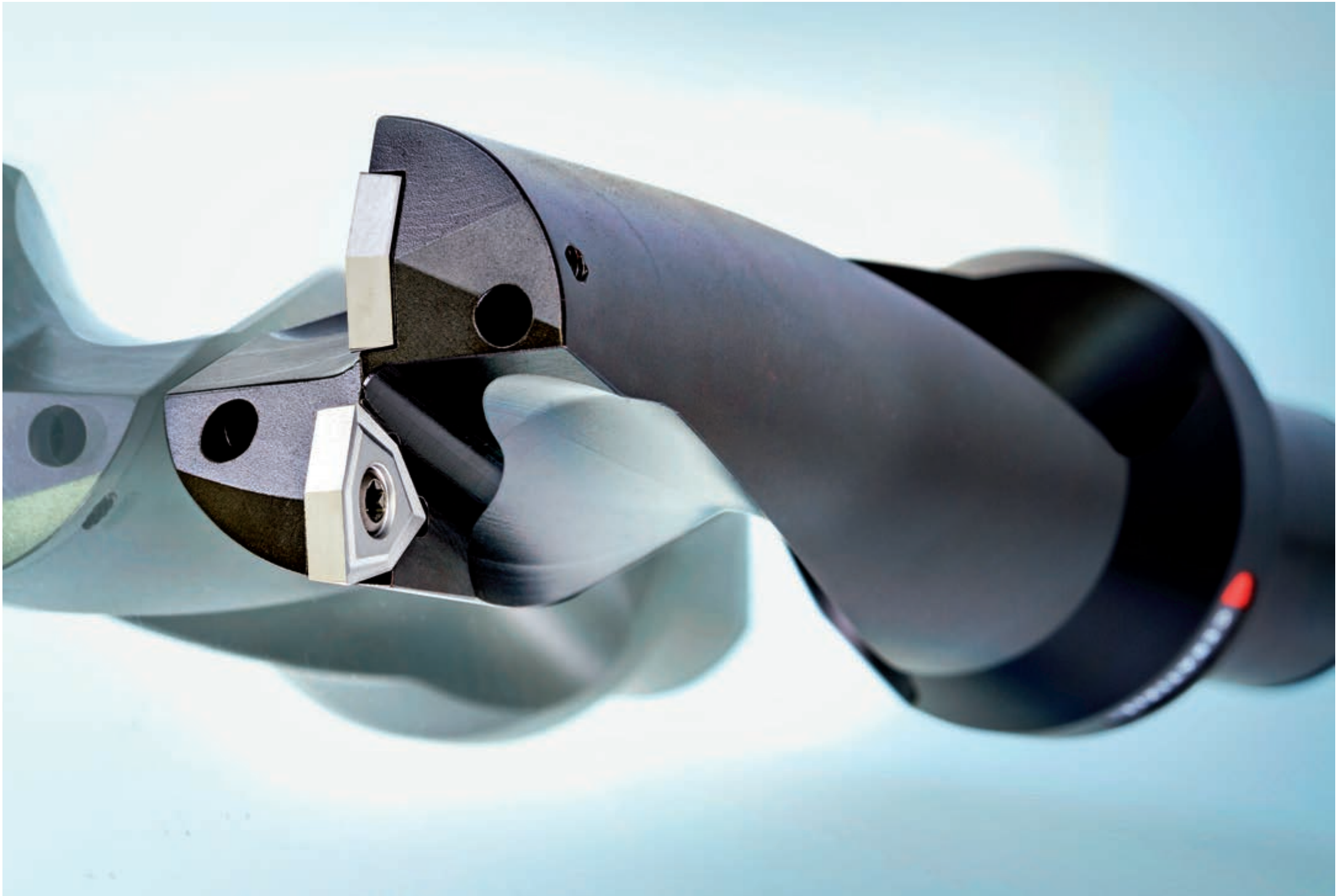
| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ● | ● | ● | | ● | |
| | ● | ○ | ○ | ● | |




CTCP420 wird ausschließlich für den Einsatz auf der Umfangschneide empfohlen!

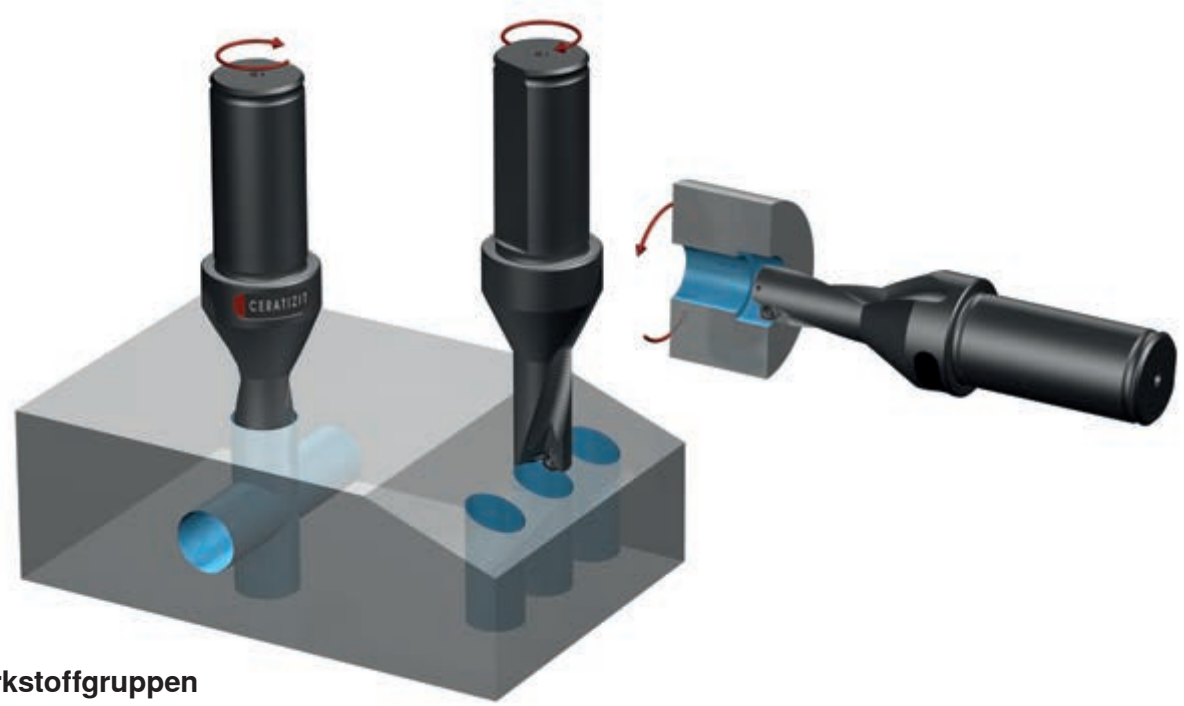
D11 D35-D36 D15-D22

# Notizen



## Vollbohrwerkzeug für den universellen Einsatz

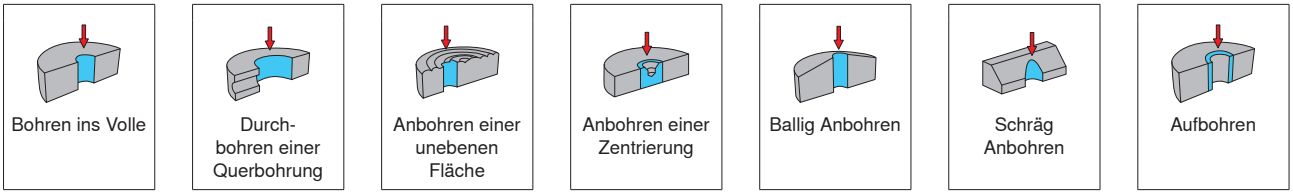
- Ideal für den Einsatz auf Maschinen mit begrenzter Antriebsleistung
- Wendeplatten mit 3 nutzbaren Schneidkanten



## Werkstoffgruppen

| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | |

## Einsatzmöglichkeiten

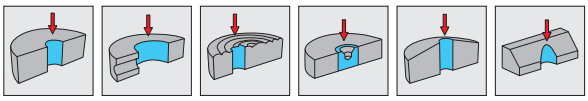



## Detailinformationen

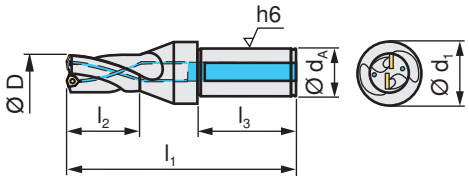
| Durchmesser / Längenverhältins | Ø-Bereich | Schneidplatten |
|---|---|---|
| 2 x D<br>3 x D<br>4 x D | Ø 14 - 53 mm<br>Ø 14 - 53 mm<br>Ø 18 - 50 mm | WC.. XO.. 02..<br>..<br>WC.. / XO.. 07.. |

# MaxiDrill Classic – 2D

Ø 14 – 36 mm



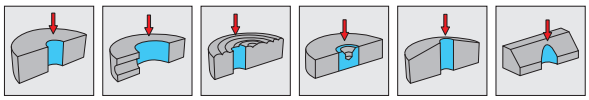




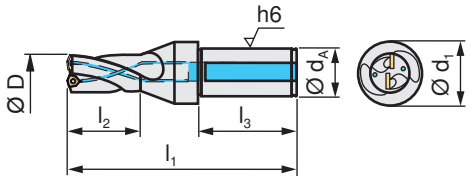

| D [mm] | Type, Bezeichnung | LNR | $d_A$ [mm] | $d_1$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 14,0 | 2D.140.R.02 | R | 25 | 32 | 114 | 30 | 60 | WC.. / XO.. 02.. | E01 |
| 14,5 | 2D.145.R.02 | R | 25 | 32 | 115 | 31 | 61 | WC.. / XO.. 02.. | E01 |
| 15,0 | 2D.150.R.02 | R | 25 | 32 | 116 | 32 | 62 | WC.. / XO.. 02.. | E01 |
| 15,5 | 2D.155.R.02 | R | 25 | 32 | 117 | 33 | 63 | WC.. / XO.. 02.. | E01 |
| 16,0 | 2D.160.R.02 | R | 25 | 32 | 118 | 34 | 64 | WC.. / XO.. 02.. | E01 |
| 16,5 | 2D.165.R.02 | R | 25 | 32 | 119 | 35 | 65 | WC.. / XO.. 02.. | E01 |
| 17,0 | 2D.170.R.02 | R | 25 | 32 | 120 | 36 | 66 | WC.. / XO.. 02.. | E01 |
| 17,5 | 2D.175.R.02 | R | 25 | 32 | 121 | 37 | 67 | WC.. / XO.. 02.. | E01 |
| 18,0 | 2D.180.R.03 | R | 25 | 32 | 122 | 38 | 68 | WC.. / XO.. 03.. | E02 |
| 19,0 | 2D.190.R.03 | R | 25 | 32 | 124 | 40 | 70 | WC.. / XO.. 03.. | E02 |
| 20,0 | 2D.200.R.03 | R | 25 | 32 | 126 | 42 | 72 | WC.. / XO.. 03.. | E02 |
| 21,0 | 2D.210.R.03 | R | 25 | 32 | 128 | 44 | 74 | WC.. / XO.. 03.. | E02 |
| 22,0 | 2D.220.R.03 | R | 25 | 32 | 130 | 46 | 76 | WC.. / XO.. 03.. | E02 |
| 23,0 | 2D.230.R.03 | R | 25 | 32 | 132 | 48 | 78 | WC.. / XO.. 03.. | E02 |
| 24,0 | 2D.240.R.05 | R | 25 | 32 | 134 | 50 | 80 | WC.. / XO.. 05.. | E03 |
| 25,0 | 2D.250.R.05 | R | 25 | 32 | 136 | 52 | 82 | WC.. / XO.. 05.. | E03 |
| 26,0 | 2D.260.R.05 | R | 25 | 32 | 138 | 54 | 84 | WC.. / XO.. 05.. | E03 |
| 27,0 | 2D.270.R.05 | R | 25 | 32 | 140 | 56 | 86 | WC.. / XO.. 05.. | E03 |
| 28,0 | 2D.280.R.05 | R | 25 | 32 | 142 | 58 | 88 | WC.. / XO.. 05.. | E03 |
| 29,0 | 2D.290.R.05 | R | 25 | 32 | 144 | 60 | 90 | WC.. / XO.. 05.. | E03 |
| 30,0 | 2D.300.R.06 | R | 32 | 49 | 150 | 62 | 92 | WC.. / XO.. 06.. | E04 |
| 31,0 | 2D.310.R.06 | R | 32 | 49 | 152 | 64 | 94 | WC.. / XO.. 06.. | E04 |
| 32,0 | 2D.320.R.06 | R | 32 | 49 | 154 | 66 | 96 | WC.. / XO.. 06.. | E04 |
| 34,0 | 2D.340.R.06 | R | 32 | 49 | 158 | 70 | 100 | WC.. / XO.. 06.. | E04 |
| 35,0 | 2D.350.R.06 | R | 32 | 49 | 160 | 72 | 102 | WC.. / XO.. 06.. | E04 |
| 36,0 | 2D.360.R.06 | R | 32 | 49 | 162 | 74 | 104 | WC.. / XO.. 06.. | E04 |

| | | | |
|---|---|---|---|
| E01 | 256680 | | 256924 |
| E02 | 56652 | 8095010100 | |
| E03 | 24645 | 8095010200 | |
| E04 | 24647 | 8095010500 | |

D43-D44 D51 D34







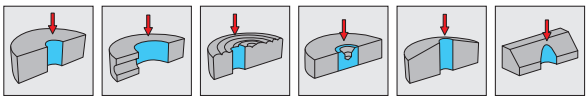

| D [mm] | Type, Bezeichnung | L N R | $d_A$ [mm] | $d_1$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 37,0 | 2D.370.R.06 | R | 32 | 49 | 164 | 76 | 106 | WC.. / XO.. 06.. | E01 |
| 38,0 | 2D.380.R.07 | R | 32 | 49 | 166 | 78 | 108 | WC.. / XO.. 07.. | E01 |
| 39,0 | 2D.390.R.07 | R | 32 | 49 | 168 | 80 | 110 | WC.. / XO.. 07.. | E01 |
| 40,0 | 2D.400.R.07 | R | 32 | 49 | 170 | 82 | 112 | WC.. / XO.. 07.. | E01 |
| 42,0 | 2D.420.R.07 | R | 32 | 49 | 174 | 86 | 116 | WC.. / XO.. 07.. | E01 |
| 44,0 | 2D.440.R.07 | R | 32 | 49 | 178 | 90 | 120 | WC.. / XO.. 07.. | E01 |
| 46,0 | 2D.460.R.07 | R | 40 | 59 | 197 | 94 | 129 | WC.. / XO.. 07.. | E01 |
| 48,0 | 2D.480.R.07 | R | 40 | 59 | 201 | 98 | 133 | WC.. / XO.. 07.. | E01 |
| 50,0 | 2D.500.R.07 | R | 40 | 59 | 205 | 102 | 137 | WC.. / XO.. 07.. | E01 |
| 53,0 | 2D.530.R.07 | R | 40 | 59 | 211 | 108 | 143 | WC.. / XO.. 07.. | E01 |

| | | |
|---|---|---|
| E01 | 24647 | 8095010500 |

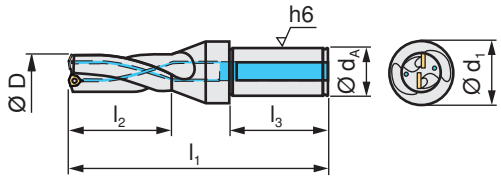

D43-D44 | D51 | D34

# MaxiDrill Classic – 3D

Ø 14 – 30 mm



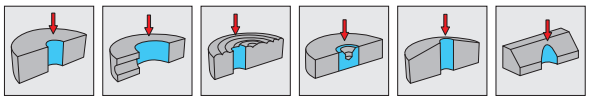




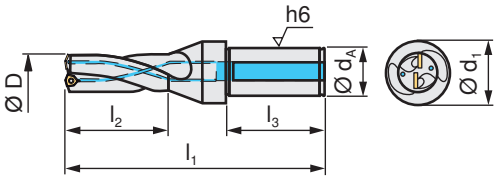

| D [mm] | Type, Bezeichnung | LNR | $d_A$ [mm] | $d_1$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 14,0 | 3D.140.R.02 | R | 25 | 32 | 128 | 44 | 74 | WC.. / XO.. 02.. | E01 |
| 14,5 | 3D.145.R.02 | R | 25 | 32 | 129,5 | 45,5 | 75,5 | WC.. / XO.. 02.. | E01 |
| 15,0 | 3D.150.R.02 | R | 25 | 32 | 131 | 47 | 77 | WC.. / XO.. 02.. | E01 |
| 15,5 | 3D.155.R.02 | R | 25 | 32 | 132,5 | 48,5 | 78,5 | WC.. / XO.. 02.. | E01 |
| 16,0 | 3D.160.R.02 | R | 25 | 32 | 134 | 50 | 80 | WC.. / XO.. 02.. | E01 |
| 16,5 | 3D.165.R.02 | R | 25 | 32 | 135,5 | 51,5 | 81,5 | WC.. / XO.. 02.. | E01 |
| 17,0 | 3D.170.R.02 | R | 25 | 32 | 137 | 53 | 83 | WC.. / XO.. 02.. | E01 |
| 17,5 | 3D.175.R.02 | R | 25 | 32 | 138,5 | 54,5 | 84,5 | WC.. / XO.. 02.. | E01 |
| 18,0 | 3D.180.R.03 | R | 25 | 32 | 140 | 56 | 86 | WC.. / XO.. 03.. | E02 |
| 18,5 | 3D.185.R.03 | R | 25 | 32 | 140,5 | 57,5 | 87,5 | WC.. / XO.. 03.. | E02 |
| 19,0 | 3D.190.R.03 | R | 25 | 32 | 143 | 59 | 89 | WC.. / XO.. 03.. | E02 |
| 19,5 | 3D.195.R.03 | R | 25 | 32 | 144,5 | 60,5 | 90,5 | WC.. / XO.. 03.. | E02 |
| 20,0 | 3D.200.R.03 | R | 25 | 32 | 146 | 62 | 92 | WC.. / XO.. 03.. | E02 |
| 20,5 | 3D.205.R.03 | R | 25 | 32 | 147,5 | 63,5 | 93,5 | WC.. / XO.. 03.. | E02 |
| 21,0 | 3D.210.R.03 | R | 25 | 32 | 149 | 65 | 95 | WC.. / XO.. 03.. | E02 |
| 21,5 | 3D.215.R.03 | R | 25 | 32 | 150,5 | 66,5 | 96,5 | WC.. / XO.. 03.. | E02 |
| 22,0 | 3D.220.R.03 | R | 25 | 32 | 152 | 68 | 98 | WC.. / XO.. 03.. | E02 |
| 22,5 | 3D.225.R.03 | R | 25 | 32 | 153,5 | 69,5 | 99,5 | WC.. / XO.. 03.. | E02 |
| 23,0 | 3D.230.R.03 | R | 25 | 32 | 155 | 71 | 101 | WC.. / XO.. 03.. | E02 |
| 23,5 | 3D.235.R.03 | R | 25 | 32 | 156,5 | 72,5 | 102,5 | WC.. / XO.. 03.. | E02 |
| 24,0 | 3D.240.R.05 | R | 25 | 32 | 158 | 74 | 104 | WC.. / XO.. 05.. | E03 |
| 24,5 | 3D.245.R.05 | R | 25 | 32 | 159,5 | 75,5 | 105,5 | WC.. / XO.. 05.. | E03 |
| 25,0 | 3D.250.R.05 | R | 25 | 32 | 161 | 77 | 107 | WC.. / XO.. 05.. | E03 |
| 25,5 | 3D.255.R.05 | R | 25 | 32 | 162,5 | 78,5 | 108,5 | WC.. / XO.. 05.. | E03 |
| 26,0 | 3D.260.R.05 | R | 25 | 32 | 164 | 80 | 110 | WC.. / XO.. 05.. | E03 |
| 26,5 | 3D.265.R.05 | R | 25 | 32 | 165,5 | 81,5 | 111,5 | WC.. / XO.. 05.. | E03 |
| 27,0 | 3D.270.R.05 | R | 25 | 32 | 167 | 83 | 113 | WC.. / XO.. 05.. | E03 |
| 28,0 | 3D.280.R.05 | R | 25 | 32 | 170 | 86 | 116 | WC.. / XO.. 05.. | E03 |
| 29,0 | 3D.290.R.05 | R | 25 | 32 | 173 | 89 | 119 | WC.. / XO.. 05.. | E03 |
| 30,0 | 3D.300.R.06 | R | 32 | 49 | 180 | 92 | 122 | WC.. / XO.. 06.. | E04 |

| | | | |
|---|---|---|---|
| E01 | 256680 | | 256924 |
| E02 | 56652 | 8095010100 | |
| E03 | 24645 | 8095010200 | |
| E04 | 24647 | 8095010500 | |

D43-D44 D51 D34







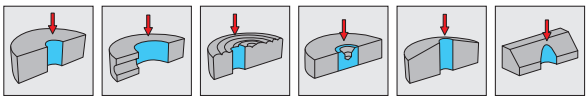

| D [mm] | Type, Bezeichnung | LNR | $d_A$ [mm] | $d_1$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 31,0 | 3D.310.R.06 | R | 32 | 49 | 183 | 95 | 125 | WC.. / XO.. 06.. | E01 |
| 32,0 | 3D.320.R.06 | R | 32 | 49 | 186 | 98 | 128 | WC.. / XO.. 06.. | E01 |
| 33,0 | 3D.330.R.06 | R | 32 | 49 | 189 | 101 | 131 | WC.. / XO.. 06.. | E01 |
| 34,0 | 3D.340.R.06 | R | 32 | 49 | 192 | 104 | 134 | WC.. / XO.. 06.. | E01 |
| 35,0 | 3D.350.R.06 | R | 32 | 49 | 195 | 107 | 137 | WC.. / XO.. 06.. | E01 |
| 36,0 | 3D.360.R.06 | R | 32 | 49 | 198 | 110 | 140 | WC.. / XO.. 06.. | E01 |
| 37,0 | 3D.370.R.06 | R | 32 | 49 | 201 | 113 | 143 | WC.. / XO.. 06.. | E01 |
| 38,0 | 3D.380.R.07 | R | 32 | 49 | 204 | 116 | 146 | WC.. / XO.. 07.. | E01 |
| 39,0 | 3D.390.R.07 | R | 32 | 49 | 207 | 119 | 149 | WC.. / XO.. 07.. | E01 |
| 40,0 | 3D.400.R.07 | R | 32 | 49 | 210 | 122 | 152 | WC.. / XO.. 07.. | E01 |
| 41,0 | 3D.410.R.07 | R | 32 | 49 | 213 | 125 | 155 | WC.. / XO.. 07.. | E01 |
| 42,0 | 3D.420.R.07 | R | 32 | 49 | 216 | 128 | 158 | WC.. / XO.. 07.. | E01 |
| 43,0 | 3D.430.R.07 | R | 32 | 49 | 219 | 131 | 161 | WC.. / XO.. 07.. | E01 |
| 44,0 | 3D.440.R.07 | R | 32 | 49 | 222 | 134 | 164 | WC.. / XO.. 07.. | E01 |
| 45,0 | 3D.450.R.07 | R | 40 | 59 | 240 | 137 | 172 | WC.. / XO.. 07.. | E01 |
| 46,0 | 3D.460.R.07 | R | 40 | 59 | 243 | 140 | 175 | WC.. / XO.. 07.. | E01 |
| 47,0 | 3D.470.R.07 | R | 40 | 59 | 246 | 143 | 178 | WC.. / XO.. 07.. | E01 |
| 48,0 | 3D.480.R.07 | R | 40 | 59 | 249 | 146 | 181 | WC.. / XO.. 07.. | E01 |
| 49,0 | 3D.490.R.07 | R | 40 | 59 | 252 | 149 | 184 | WC.. / XO.. 07.. | E01 |
| 50,0 | 3D.500.R.07 | R | 40 | 59 | 255 | 152 | 187 | WC.. / XO.. 07.. | E01 |
| 51,0 | 3D.510.R.07 | R | 40 | 59 | 258 | 155 | 190 | WC.. / XO.. 07.. | E01 |
| 52,0 | 3D.520.R.07 | R | 40 | 59 | 261 | 158 | 193 | WC.. / XO.. 07.. | E01 |
| 53,0 | 3D.530.R.07 | R | 40 | 59 | 264 | 161 | 196 | WC.. / XO.. 07.. | E01 |

| | | |
|---|---|---|
| E01 | 24647 | 8095010500 |

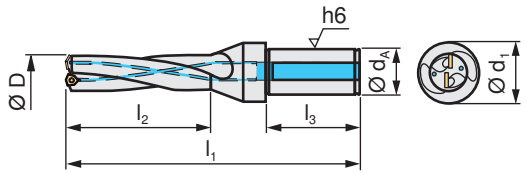

D43-D44 | D51 | D34

# MaxiDrill Classic – 4D

Ø 18 – 36 mm



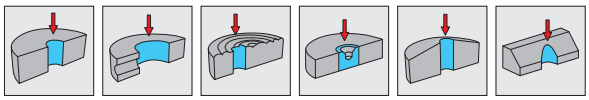




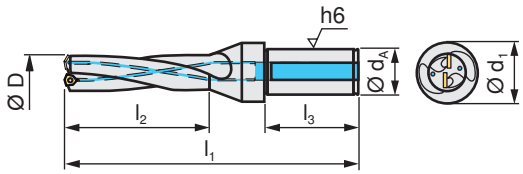

| D [mm] | Type, Bezeichnung | LNR | $d_A$ [mm] | $d_1$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 18,0 | 4D.180.R.03 | R | 25 | 32 | 158 | 74 | 104 | WC.. / XO.. 03.. | E01 |
| 18,5 | 4D.185.R.03 | R | 25 | 32 | 160 | 76 | 106 | WC.. / XO.. 03.. | E01 |
| 19,0 | 4D.190.R.03 | R | 25 | 32 | 162 | 78 | 108 | WC.. / XO.. 03.. | E01 |
| 19,5 | 4D.195.R.03 | R | 25 | 32 | 164 | 80 | 110 | WC.. / XO.. 03.. | E01 |
| 20,0 | 4D.200.R.03 | R | 25 | 32 | 166 | 82 | 112 | WC.. / XO.. 03.. | E01 |
| 20,5 | 4D.205.R.03 | R | 25 | 32 | 168 | 84 | 114 | WC.. / XO.. 03.. | E01 |
| 21,0 | 4D.210.R.03 | R | 25 | 32 | 170 | 86 | 116 | WC.. / XO.. 03.. | E01 |
| 21,5 | 4D.215.R.03 | R | 25 | 32 | 172 | 88 | 118 | WC.. / XO.. 03.. | E01 |
| 22,0 | 4D.220.R.03 | R | 25 | 32 | 174 | 90 | 120 | WC.. / XO.. 03.. | E01 |
| 22,5 | 4D.225.R.03 | R | 25 | 32 | 176 | 92 | 122 | WC.. / XO.. 03.. | E01 |
| 23,0 | 4D.230.R.03 | R | 25 | 32 | 178 | 94 | 124 | WC.. / XO.. 03.. | E01 |
| 23,5 | 4D.235.R.03 | R | 25 | 32 | 180 | 96 | 126 | WC.. / XO.. 03.. | E01 |
| 24,0 | 4D.240.R.05 | R | 25 | 32 | 182 | 98 | 128 | WC.. / XO.. 05.. | E02 |
| 24,5 | 4D.245.R.05 | R | 25 | 32 | 184 | 100 | 130 | WC.. / XO.. 05.. | E02 |
| 25,0 | 4D.250.R.05 | R | 25 | 32 | 186 | 102 | 132 | WC.. / XO.. 05.. | E02 |
| 25,5 | 4D.255.R.05 | R | 25 | 32 | 188 | 104 | 134 | WC.. / XO.. 05.. | E02 |
| 26,0 | 4D.260.R.05 | R | 25 | 32 | 190 | 106 | 136 | WC.. / XO.. 05.. | E02 |
| 26,5 | 4D.265.R.05 | R | 25 | 32 | 192 | 108 | 138 | WC.. / XO.. 05.. | E02 |
| 27,0 | 4D.270.R.05 | R | 25 | 32 | 194 | 110 | 140 | WC.. / XO.. 05.. | E02 |
| 28,0 | 4D.280.R.05 | R | 25 | 32 | 198 | 114 | 144 | WC.. / XO.. 05.. | E02 |
| 29,0 | 4D.290.R.05 | R | 25 | 32 | 202 | 118 | 148 | WC.. / XO.. 05.. | E02 |
| 30,0 | 4D.300.R.06 | R | 32 | 49 | 210 | 122 | 152 | WC.. / XO.. 06.. | E03 |
| 31,0 | 4D.310.R.06 | R | 32 | 49 | 214 | 126 | 156 | WC.. / XO.. 06.. | E03 |
| 32,0 | 4D.320.R.06 | R | 32 | 49 | 218 | 130 | 160 | WC.. / XO.. 06.. | E03 |
| 33,0 | 4D.330.R.06 | R | 32 | 49 | 222 | 134 | 164 | WC.. / XO.. 06.. | E03 |
| 34,0 | 4D.340.R.06 | R | 32 | 49 | 226 | 138 | 168 | WC.. / XO.. 06.. | E03 |
| 35,0 | 4D.350.R.06 | R | 32 | 49 | 230 | 142 | 172 | WC.. / XO.. 06.. | E03 |
| 36,0 | 4D.360.R.06 | R | 32 | 49 | 234 | 146 | 176 | WC.. / XO.. 06.. | E03 |

| | | |
|---|---|---|
| E01 | 56652 | 8095010100 |
| E02 | 24645 | 8095010200 |
| E03 | 24647 | 8095010500 |

D43-D44 D51 D34








| D [mm] | Type, Bezeichnung | LNR | $d_A$ [mm] | $d_1$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 37,0 | 4D.370.R.06 | R | 32 | 49 | 238 | 150 | 180 | WC.. / XO.. 06.. | E01 |
| 38,0 | 4D.380.R.07 | R | 32 | 49 | 242 | 154 | 184 | WC.. / XO.. 07.. | E01 |
| 39,0 | 4D.390.R.07 | R | 32 | 49 | 246 | 158 | 188 | WC.. / XO.. 07.. | E01 |
| 40,0 | 4D.400.R.07 | R | 32 | 49 | 250 | 162 | 192 | WC.. / XO.. 07.. | E01 |
| 41,0 | 4D.410.R.07 | R | 32 | 49 | 254 | 166 | 196 | WC.. / XO.. 07.. | E01 |
| 42,0 | 4D.420.R.07 | R | 32 | 49 | 258 | 170 | 200 | WC.. / XO.. 07.. | E01 |
| 43,0 | 4D.430.R.07 | R | 32 | 49 | 262 | 174 | 204 | WC.. / XO.. 07.. | E01 |
| 44,0 | 4D.440.R.07 | R | 32 | 49 | 266 | 178 | 208 | WC.. / XO.. 07.. | E01 |
| 45,0 | 4D.450.R.07 | R | 40 | 59 | 285 | 182 | 217 | WC.. / XO.. 07.. | E01 |
| 46,0 | 4D.460.R.07 | R | 40 | 59 | 289 | 186 | 221 | WC.. / XO.. 07.. | E01 |
| 47,0 | 4D.470.R.07 | R | 40 | 59 | 293 | 190 | 225 | WC.. / XO.. 07.. | E01 |
| 48,0 | 4D.480.R.07 | R | 40 | 59 | 297 | 194 | 229 | WC.. / XO.. 07.. | E01 |
| 49,0 | 4D.490.R.07 | R | 40 | 59 | 301 | 198 | 233 | WC.. / XO.. 07.. | E01 |
| 50,0 | 4D.500.R.07 | R | 40 | 59 | 305 | 202 | 237 | WC.. / XO.. 07.. | E01 |

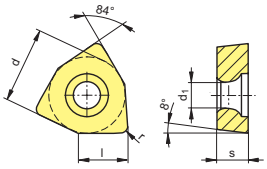
| | | |
|---|---|---|
| E01 | 24647 | 8095010500 |

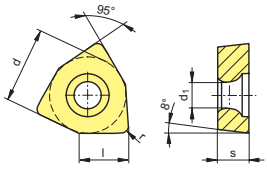

D43-D44 | D51 | D34

# Notizen

| | | | CTPP430 | CTWN415 | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|
| -FN |  | WCGT 030204FN | | ● | 6,00 | 3,97 | 2,50 | 0,40 | 2,50 |
| | | WCGT 050304FN | | ● | 8,00 | 5,29 | 3,00 | 0,40 | 2,80 |
| | | WCGT 060304FN | | ● | 10,00 | 6,62 | 3,00 | 0,40 | 4,40 |
| | | WCGT 07T304FN | | ● | 12,00 | 7,94 | 3,80 | 0,40 | 4,40 |
| -SN |  | XOMT 020204SN | ● | | 5,50 | 3,39 | 2,30 | 0,40 | 2,25 |
| | | XOMT 030204SN | ● | | 6,00 | 3,97 | 2,50 | 0,40 | 2,50 |
| | | XOMT 050304SN | ● | | 8,00 | 5,29 | 3,00 | 0,40 | 2,80 |
| | | XOMT 060304SN | ● | | 10,00 | 6,62 | 3,00 | 0,40 | 4,00 |
| | | XOMT 07T304SN | ● | | 12,00 | 3,97 | 3,80 | 0,40 | 4,40 |
| | | | CTPP430 | CTWN415 | d | l | s | r | $d_1$ |

P ● ; M ● ; K ● ; N ● ; S ● ○ ; H




D11 | D35-D36 | D27-D32

# Schnittdatenrichtwerte

Sorten/Werkstoff



| Werkstück-werkstoff | | Behandlungsart / Legierung | | VDI 3323 Gruppe | Härte HB |
|---|---|---|---|---|---|
| P | unlegierter Stahl | geglüht | ≤ 0,15 % C | 1 | 125 |
| | | geglüht | 0,15 % - 0,45 % C | 2 | 150 - 250 |
| | | vergütet | ≥ 0,45 % C | 3 | 300 |
| | niedriglegierter Stahl | geglüht | | 6 | 180 |
| | | vergütet | | 7 / 8 | 250 - 300 |
| | | vergütet | | 9 | 350 |
| | hochlegierter Stahl | geglüht | | 10 | 200 |
| | | vergütet | | 11 | 350 |
| | rostfreier Stahl | geglüht | ferritisch / martensitisch | 12 | 200 |
| | | vergütet | martensitisch | 13 | 325 |
| | | wärmebehandelt | ferritisch / martensitisch | 13 | 200 |
| M | rostfreier Stahl | abgeschreckt | austenitisch | 14 | 180 |
| | | abgeschreckt | ferritisch / austenitisch (Duplex) | 14 | 230 - 260 |
| | | ausgehärtet | austenitisch ausscheidungsgehärtet (PH) | 14 | 330 |
| K | Grauguss | | perlitisch / ferritisch | 15 | 180 |
| | | | perlitisch / martensitisch | 16 | 260 |
| | Grauguss mit Kugelgraphit | | ferritisch | 17 | 160 |
| | | | perlitisch | 18 | 250 |
| | Temperguss | | ferritisch | 19 | 130 |
| | | | perlitisch | 20 | 230 |
| N | Aluminium Knetlegierung | nicht aushärtbar | | 21 | 60 |
| | | aushärtbar | | 22 | 100 |
| | Aluminium Gusslegierung | nicht aushärtbar | < 12 % Si | 23 | 75 |
| | | aushärtbar | < 12 % Si | 24 | 90 |
| | | nicht aushärtbar | > 12 % Si | 25 | 130 |
| | Kupfer und Kupferlegierungen (Bronze, Messing) | | Automatenlegierung (1% Pb) | 26 | (110) |
| | | | Messing, Rotguss | 27 | 90 |
| | | | Bronze | 28 | 100 |
| | | | bleifreies Kupfer und Elektrolytkupfer | 28 | 100 |
| | nichtmetallische Werkstoffe | | Duroplast | 29 | – |
| | | | faserverstärkter Kunststoff | 29 | – |
| | | | Hartgummi | 30 | – |
| S | warmfeste Legierungen | geglüht | Fe-Basis | 31 | 200 |
| | | ausgehärtet | Fe-Basis | 32 | 280 |
| | | geglüht | Ni- oder Co-Basis | 33 | 250 |
| | | ausgehärtet | Ni- oder Co-Basis 30 - 58 HRC | 34 | (350) |
| | | gegossen | Ni- oder Co-Basis 1500 - 2200 N/mm² | 35 | (320) |
| | Titanlegierungen | | Reintitan | 36 | $R_m$ 440* |
| | | | Alpha- + Beta-Legierung | 37 | $R_m$ 1050* |
| H | gehärteter Stahl | gehärtet u. angelassen | | 38 | 55 HRC |
| | | gehärtet u. angelassen | | 39 | 60 HRC |
| | Hartguss | gegossen | | 40 | 400 |
| | gehärtetes Gusseisen | gehärtet u. angelassen | | 41 | 55 HRC |

* $R_m$ = maximale Festigkeit, gemessen in MPa

| CTCP420 $v_c$ [m/min] | CTPP430 $v_c$ [m/min] | CTWN415 $v_c$ [m/min] |
|---|---|---|
| 240 - 390 | 155- 310 | - |
| 200 - 325 | 120 - 240 | - |
| 190 - 310 | 120 - 240 | - |
| 190 - 310 | 120 - 240 | - |
| 175 - 285 | 110 - 215 | - |
| 110 - 180 | 70 - 145 | - |
| 145 - 235 | 95 - 190 | - |
| 130 - 210 | 85 - 170 | - |
| 175 - 285 | 110 - 215 | - |
| 120 - 195 | 70 - 145 | - |
| 160 - 260 | 85 - 170 | - |
| 145 - 235 | 85 - 170 | - |
| | 60 - 120 | - |
| | 65 - 130 | - |
| 190 - 310 | 95 - 190 | 100 - 150 |
| 175 - 285 | 85 - 170 | 100 - 500 |
| 175 - 285 | 95 - 190 | 100 - 140 |
| 160 - 260 | 95 - 190 | 100 - 140 |
| 145 - 235 | 70 - 145 | 100 - 160 |
| 130 - 210 | 65 - 130 | 100 - 160 |
| | 200 - 395 | 200 - 500 |
| | 210 - 420 | 200 - 500 |
| | 180 - 360 | 200 - 500 |
| | 160 - 325 | 200 - 500 |
| | 120 - 240 | 200 - 500 |
| | 140 - 275 | 180 - 500 |
| | 140 - 275 | 180 - 500 |
| | 140 - 275 | 180 - 500 |
| | 140 - 275 | 180 - 500 |
| | | - |
| | | - |
| | | - |
| | 40 - 85 | 30 - 50 |
| | 35 - 70 | 20 - 40 |
| | 30 - 60 | 20 - 40 |
| | 25 - 50 | 20 - 30 |
| | 25 - 50 | 15 - 25 |
| | 40 - 85 | 40 - 120 |
| | 35 - 70 | 40 - 100 |
| | | - |
| | | - |
| | | - |
| | | - |

Die Schnittdaten sind unverbindliche Angaben für den Anwender. Eine Anpassung an die aktuellen Gegebenheiten ist zu empfehlen!

# Schnittdatenrichtwerte

MaxiDrill 900 2xD/3xD



| | Werkstück-werkstoff | Behandlungsart / Legierung | | VDI 3323 Gruppe | Härte HB |
|---|---|---|---|---|---|
| P | unlegierter Stahl | geglüht | ≤ 0,15 % C | 1 | 125 |
| | | geglüht | 0,15 % - 0,45 % C | 2 | 150 - 250 |
| | | vergütet | ≥ 0,45 % C | 3 | 300 |
| | niedriglegierter Stahl | geglüht | | 6 | 180 |
| | | vergütet | | 7 / 8 | 250 - 300 |
| | | vergütet | | 9 | 350 |
| | hochlegierter Stahl | geglüht | | 10 | 200 |
| | | vergütet | | 11 | 350 |
| | rostfreier Stahl | geglüht | ferritisch / martensitisch | 12 | 200 |
| | | vergütet | martensitisch | 13 | 325 |
| | | wärmebehandelt | ferritisch / martensitisch | 13 | 200 |
| M | rostfreier Stahl | abgeschreckt | austenitisch | 14 | 180 |
| | | abgeschreckt | ferritisch / austenitisch (Duplex) | 14 | 230 - 260 |
| | | ausgehärtet | austenitisch ausscheidungsgehärtet (PH) | 14 | 330 |
| K | Grauguss | | perlitisch / ferritisch | 15 | 180 |
| | | | perlitisch / martensitisch | 16 | 260 |
| | Grauguss mit Kugelgraphit | | ferritisch | 17 | 160 |
| | | | perlitisch | 18 | 250 |
| | Temperguss | | ferritisch | 19 | 130 |
| | | | perlitisch | 20 | 230 |
| N | Aluminium Knetlegierung | nicht aushärtbar | | 21 | 60 |
| | | aushärtbar | | 22 | 100 |
| | Aluminium Gusslegierung | nicht aushärtbar | < 12 % Si | 23 | 75 |
| | | aushärtbar | < 12 % Si | 24 | 90 |
| | | nicht aushärtbar | > 12 % Si | 25 | 130 |
| | Kupfer und Kupferlegierungen (Bronze, Messing) | | Automatenlegierung (1% Pb) | 26 | (110) |
| | | | Messing, Rotguss | 27 | 90 |
| | | | Bronze | 28 | 100 |
| | | | bleifreies Kupfer und Elektrolytkupfer | 28 | 100 |
| | nichtmetallische Werkstoffe | | Duroplast | 29 | – |
| | | | faserverstärkter Kunststoff | 29 | – |
| | | | Hartgummi | 30 | – |
| S | warmfeste Legierungen | geglüht | Fe-Basis | 31 | 200 |
| | | ausgehärtet | Fe-Basis | 32 | 280 |
| | | geglüht | Ni- oder Co-Basis | 33 | 250 |
| | | ausgehärtet | Ni- oder Co-Basis 30 - 58 HRC | 34 | (350) |
| | | gegossen | Ni- oder Co-Basis 1500 - 2200 N/mm² | 35 | (320) |
| | Titanlegierungen | | Reintitan | 36 | $R_m$ 440* |
| | | | Alpha- + Beta-Legierung | 37 | $R_m$ 1050* |
| H | gehärteter Stahl | gehärtet u. angelassen | | 38 | 55 HRC |
| | | gehärtet u. angelassen | | 39 | 60 HRC |
| | Hartguss | gegossen | | 40 | 400 |
| | gehärtetes Gusseisen | gehärtet u. angelassen | | 41 | 55 HRC |

* $R_m$ = maximale Festigkeit, gemessen in MPa

| SONT 03<br>Ø12-13,5<br>f [mm/U] | SONT 04<br>Ø14-15,5<br>f [mm/U] | SONT05<br>Ø16-17,5<br>f [mm/U] | SONT 06<br>Ø19-20,5<br>f [mm/U] | SONT 07<br>Ø21-23,5<br>f [mm/U] | SONT 08<br>Ø24-27,5<br>f [mm/U] | SONT 09<br>Ø28-32<br>f [mm/U] | SONT 10<br>Ø32,5-36,5<br>f [mm/U] | SONT 12<br>Ø37-41<br>f [mm/U] | SONT 13<br>Ø41,5-46<br>f [mm/U] | SONT 15<br>Ø46,5-54<br>f [mm/U] | SONT 17<br>Ø54,5-63<br>f [mm/U] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0,04-0,13 | 0,04-0,13 | 0,04-0,14 | 0,05-0,15 | 0,07-0,15 | 0,08-0,17 | 0,08-0,18 | 0,09-0,19 | 0,09-0,19 | 0,09-0,20 | 0,10-0,22 | 0,10-0,22 |
| 0,04-0,15 | 0,04-0,15 | 0,04-0,15 | 0,05-0,16 | 0,07-0,17 | 0,08-0,19 | 0,08-0,20 | 0,09-0,21 | 0,09-0,22 | 0,09-0,24 | 0,10-0,26 | 0,10-0,26 |
| 0,04-0,16 | 0,04-0,16 | 0,05-0,17 | 0,05-0,18 | 0,08-0,20 | 0,09-0,22 | 0,09-0,23 | 0,10-0,24 | 0,10-0,25 | 0,10-0,27 | 0,10-0,30 | 0,10-0,30 |
| 0,04-0,17 | 0,04-0,17 | 0,05-0,18 | 0,05-0,20 | 0,08-0,22 | 0,09-0,23 | 0,09-0,24 | 0,10-0,25 | 0,10-0,27 | 0,10-0,30 | 0,10-0,32 | 0,10-0,32 |
| 0,04-0,16 | 0,04-0,16 | 0,04-0,17 | 0,05-0,18 | 0,08-0,20 | 0,09-0,21 | 0,09-0,22 | 0,10-0,23 | 0,10-0,25 | 0,10-0,28 | 0,10-0,30 | 0,10-0,30 |
| 0,04-0,16 | 0,04-0,16 | 0,04-0,17 | 0,05-0,18 | 0,08-0,20 | 0,09-0,21 | 0,09-0,22 | 0,10-0,23 | 0,10-0,25 | 0,10-0,27 | 0,10-0,29 | 0,10-0,29 |
| 0,04-0,15 | 0,04-0,15 | 0,05-0,16 | 0,05-0,18 | 0,08-0,20 | 0,09-0,21 | 0,09-0,22 | 0,10-0,23 | 0,10-0,25 | 0,10-0,27 | 0,10-0,29 | 0,10-0,29 |
| 0,04-0,15 | 0,04-0,15 | 0,05-0,16 | 0,05-0,18 | 0,08-0,20 | 0,09-0,21 | 0,09-0,22 | 0,10-0,23 | 0,10-0,25 | 0,10-0,27 | 0,10-0,29 | 0,10-0,29 |
| 0,04-0,13 | 0,04-0,13 | 0,05-0,14 | 0,05-0,15 | 0,08-0,15 | 0,08-0,17 | 0,08-0,18 | 0,09-0,19 | 0,10-0,21 | 0,10-0,23 | 0,10-0,23 | 0,10-0,23 |
| 0,04-0,13 | 0,04-0,13 | 0,05-0,14 | 0,05-0,15 | 0,08-0,15 | 0,08-0,17 | 0,08-0,18 | 0,09-0,19 | 0,10-0,21 | 0,10-0,23 | 0,10-0,23 | 0,10-0,23 |
| 0,04-0,12 | 0,04-0,12 | 0,04-0,13 | 0,05-0,14 | 0,05-0,16 | 0,05-0,18 | 0,07-0,18 | 0,08-0,21 | 0,10-0,23 | 0,10-0,23 | 0,10-0,23 | 0,10-0,23 |
| 0,04-0,11 | 0,04-0,11 | 0,04-0,12 | 0,05-0,13 | 0,05-0,15 | 0,06-0,16 | 0,07-0,16 | 0,08-0,20 | 0,10-0,22 | 0,10-0,22 | 0,10-0,22 | 0,10-0,22 |
| 0,04-0,10 | 0,04-0,10 | 0,04-0,11 | 0,05-0,13 | 0,05-0,15 | 0,06-0,15 | 0,07-0,16 | 0,08-0,20 | 0,08-0,20 | 0,08-0,20 | 0,08-0,20 | 0,08-0,20 |
| 0,04-0,10 | 0,04-0,10 | 0,04-0,11 | 0,05-0,12 | 0,05-0,14 | 0,05-0,15 | 0,06-0,15 | 0,07-0,19 | 0,08-0,20 | 0,08-0,20 | 0,08-0,20 | 0,08-0,20 |
| 0,07-0,20 | 0,07-0,20 | 0,07-0,22 | 0,08-0,24 | 0,10-0,25 | 0,1-0,28 | 0,1-0,28 | 0,1-0,30 | 0,1-0,32 | 0,1-0,32 | 0,1-0,34 | 0,1-0,34 |
| 0,07-0,19 | 0,07-0,19 | 0,07-0,20 | 0,08-0,22 | 0,10-0,24 | 0,1-0,26 | 0,1-0,26 | 0,1-0,28 | 0,1-0,30 | 0,1-0,30 | 0,1-0,32 | 0,1-0,32 |
| 0,07-0,20 | 0,07-0,20 | 0,07-0,20 | 0,08-0,22 | 0,10-0,25 | 0,1-0,28 | 0,1-0,28 | 0,1-0,28 | 0,1-0,30 | 0,1-0,30 | 0,1-0,32 | 0,1-0,32 |
| 0,07-0,18 | 0,07-0,18 | 0,07-0,18 | 0,08-0,20 | 0,10-0,23 | 0,1-0,25 | 0,1-0,25 | 0,1-0,25 | 0,1-0,27 | 0,1-0,27 | 0,1-0,29 | 0,1-0,29 |
| 0,07-0,19 | 0,07-0,19 | 0,07-0,20 | 0,08-0,21 | 0,10-0,25 | 0,1-0,28 | 0,1-0,28 | 0,1-0,30 | 0,1-0,32 | 0,1-0,32 | 0,1-0,34 | 0,1-0,34 |
| 0,07-0,19 | 0,07-0,19 | 0,07-0,20 | 0,08-0,21 | 0,10-0,25 | 0,1-0,28 | 0,1-0,28 | 0,1-0,30 | 0,1-0,32 | 0,1-0,32 | 0,1-0,34 | 0,1-0,34 |
| 0,06-0,12 | 0,06-0,12 | 0,07-0,14 | 0,08-0,15 | 0,10-0,15 | 0,10-0,15 | 0,10-0,17 | 0,10-0,18 | 0,10-0,18 | 0,10-0,18 | 0,10-0,18 | 0,10-0,18 |
| 0,06-0,13 | 0,06-0,13 | 0,07-0,14 | 0,08-0,15 | 0,10-0,15 | 0,10-0,15 | 0,10-0,17 | 0,10-0,19 | 0,10-0,20 | 0,10-0,20 | 0,10-0,20 | 0,10-0,20 |
| 0,06-0,12 | 0,06-0,12 | 0,07-0,14 | 0,08-0,15 | 0,10-0,18 | 0,10-0,18 | 0,10-0,19 | 0,10-0,19 | 0,10-0,20 | 0,10-0,20 | 0,10-0,20 | 0,10-0,20 |
| 0,06-0,12 | 0,06-0,12 | 0,07-0,14 | 0,08-0,15 | 0,10-0,18 | 0,10-0,18 | 0,10-0,19 | 0,10-0,23 | 0,10-0,25 | 0,10-0,25 | 0,10-0,25 | 0,10-0,25 |
| 0,06-0,12 | 0,06-0,12 | 0,07-0,14 | 0,08-0,15 | 0,13-0,20 | 0,13-0,20 | 0,13-0,22 | 0,13-0,25 | 0,13-0,25 | 0,13-0,25 | 0,13-0,25 | 0,13-0,25 |
| 0,06-0,13 | 0,06-0,13 | 0,07-0,14 | 0,08-0,15 | 0,10-0,16 | 0,10-0,16 | 0,10-0,17 | 0,10-0,18 | 0,10-0,19 | 0,10-0,19 | 0,10-0,19 | 0,10-0,19 |
| 0,06-0,15 | 0,06-0,15 | 0,07-0,16 | 0,08-0,18 | 0,10-0,18 | 0,10-0,18 | 0,10-0,20 | 0,10-0,23 | 0,10-0,25 | 0,10-0,25 | 0,10-0,25 | 0,10-0,25 |
| 0,06-0,15 | 0,06-0,15 | 0,07-0,16 | 0,08-0,18 | 0,10-0,18 | 0,10-0,18 | 0,10-0,20 | 0,10-0,23 | 0,10-0,25 | 0,10-0,25 | 0,10-0,25 | 0,10-0,25 |
| 0,06-0,14 | 0,06-0,14 | 0,07-0,15 | 0,08-0,16 | 0,10-0,16 | 0,10-0,16 | 0,10-0,17 | 0,10-0,19 | 0,10-0,20 | 0,10-0,20 | 0,10-0,20 | 0,10-0,20 |
| 0,04-0,09 | 0,04-0,09 | 0,04-0,10 | 0,05-0,10 | 0,05-0,12 | 0,05-0,12 | 0,05-0,12 | 0,05-0,12 | 0,05-0,12 | 0,05-0,12 | 0,05-0,12 | 0,05-0,12 |
| 0,06-0,14 | 0,06-0,14 | 0,07-0,14 | 0,08-0,15 | 0,10-0,16 | 0,10-0,16 | 0,10-0,16 | 0,10-0,16 | 0,10-0,18 | 0,10-0,18 | 0,10-0,18 | 0,10-0,18 |
| 0,05-0,10 | 0,05-0,10 | 0,05-0,10 | 0,06-0,12 | 0,08-0,14 | 0,08-0,14 | 0,08-0,14 | 0,08-0,14 | 0,10-0,15 | 0,10-0,15 | 0,10-0,15 | 0,10-0,15 |
| 0,03-0,07 | 0,03-0,07 | 0,04-0,08 | 0,04-0,08 | 0,05-0,08 | 0,05-0,10 | 0,05-0,10 | 0,05-0,12 | 0,05-0,12 | 0,05-0,12 | 0,06-0,15 | 0,06-0,15 |
| 0,03-0,07 | 0,03-0,07 | 0,04-0,08 | 0,04-0,08 | 0,05-0,08 | 0,05-0,10 | 0,05-0,10 | 0,05-0,12 | 0,05-0,12 | 0,05-0,12 | 0,06-0,15 | 0,06-0,15 |
| 0,03-0,07 | 0,03-0,07 | 0,04-0,08 | 0,04-0,08 | 0,05-0,08 | 0,05-0,10 | 0,05-0,10 | 0,05-0,12 | 0,05-0,12 | 0,05-0,12 | 0,06-0,15 | 0,06-0,15 |
| 0,03-0,07 | 0,03-0,07 | 0,04-0,08 | 0,04-0,08 | 0,05-0,08 | 0,05-0,10 | 0,05-0,10 | 0,05-0,12 | 0,05-0,12 | 0,05-0,12 | 0,06-0,15 | 0,06-0,15 |
| 0,03-0,07 | 0,03-0,07 | 0,04-0,08 | 0,04-0,08 | 0,05-0,08 | 0,05-0,10 | 0,05-0,10 | 0,05-0,12 | 0,05-0,12 | 0,05-0,12 | 0,06-0,15 | 0,06-0,15 |
| 0,04-0,10 | 0,04-0,10 | 0,04-0,10 | 0,05-0,10 | 0,05-0,12 | 0,06-0,12 | 0,07-0,15 | 0,07-0,15 | 0,08-0,16 | 0,08-0,16 | 0,08-0,18 | 0,08-0,18 |
| 0,04-0,10 | 0,04-0,10 | 0,04-0,10 | 0,05-0,10 | 0,05-0,12 | 0,06-0,12 | 0,07-0,15 | 0,07-0,15 | 0,08-0,16 | 0,08-0,16 | 0,08-0,18 | 0,08-0,18 |
| – | – | – | – | – | – | – | – | – | – | – | – |
| – | – | – | – | – | – | – | – | – | – | – | – |
| – | – | – | – | – | – | – | – | – | – | – | – |
| – | – | – | – | – | – | – | – | – | – | – | – |

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# Schnittdatenrichtwerte

MaxiDrill 900 4xD

| Werkstück-werkstoff | | Behandlungsart / Legierung | | VDI 3323 Gruppe | Härte HB |
|---|---|---|---|---|---|
| P | unlegierter Stahl | geglüht | ≤ 0,15 % C | 1 | 125 |
| | | geglüht | 0,15 % - 0,45 % C | 2 | 150 - 250 |
| | | vergütet | ≥ 0,45 % C | 3 | 300 |
| | niedriglegierter Stahl | geglüht | | 6 | 180 |
| | | vergütet | | 7 / 8 | 250 - 300 |
| | | vergütet | | 9 | 350 |
| | hochlegierter Stahl | geglüht | | 10 | 200 |
| | | vergütet | | 11 | 350 |
| | rostfreier Stahl | geglüht | ferritisch / martensitisch | 12 | 200 |
| | | vergütet | martensitisch | 13 | 325 |
| | | wärmebehandelt | ferritisch / martensitisch | 13 | 200 |
| M | rostfreier Stahl | abgeschreckt | austenitisch | 14 | 180 |
| | | abgeschreckt | ferritisch / austenitisch (Duplex) | 14 | 230 - 260 |
| | | ausgehärtet | austenitisch ausscheidungsgehärtet (PH) | 14 | 330 |
| K | Grauguss | | perlitisch / ferritisch | 15 | 180 |
| | | | perlitisch / martensitisch | 16 | 260 |
| | Grauguss mit Kugelgraphit | | ferritisch | 17 | 160 |
| | | | perlitisch | 18 | 250 |
| | Temperguss | | ferritisch | 19 | 130 |
| | | | perlitisch | 20 | 230 |
| N | Aluminium Knetlegierung | nicht aushärtbar | | 21 | 60 |
| | | aushärtbar | | 22 | 100 |
| | Aluminium Gusslegierung | nicht aushärtbar | < 12 % Si | 23 | 75 |
| | | aushärtbar | < 12 % Si | 24 | 90 |
| | | nicht aushärtbar | > 12 % Si | 25 | 130 |
| | Kupfer und Kupferlegierungen (Bronze, Messing) | | Automatenlegierung (1% Pb) | 26 | (110) |
| | | | Messing, Rotguss | 27 | 90 |
| | | | Bronze | 28 | 100 |
| | | | bleifreies Kupfer und Elektrolytkupfer | 28 | 100 |
| | nichtmetallische Werkstoffe | | Duroplast | 29 | – |
| | | | faserverstärkter Kunststoff | 29 | – |
| | | | Hartgummi | 30 | – |
| S | warmfeste Legierungen | geglüht | Fe-Basis | 31 | 200 |
| | | ausgehärtet | Fe-Basis | 32 | 280 |
| | | geglüht | Ni- oder Co-Basis | 33 | 250 |
| | | ausgehärtet | Ni- oder Co-Basis 30 - 58 HRC | 34 | (350) |
| | | gegossen | Ni- oder Co-Basis 1500 - 2200 N/mm² | 35 | (320) |
| | Titanlegierungen | | Reintitan | 36 | $R_m$ 440* |
| | | | Alpha- + Beta-Legierung | 37 | $R_m$ 1050* |
| H | gehärteter Stahl | gehärtet u. angelassen | | 38 | 55 HRC |
| | | gehärtet u. angelassen | | 39 | 60 HRC |
| | Hartguss | gegossen | | 40 | 400 |
| | gehärtetes Gusseisen | gehärtet u. angelassen | | 41 | 55 HRC |

* $R_m$ = maximale Festigkeit, gemessen in MPa

| SONT 03<br>Ø12-13,5<br>f [mm/U] | SONT 04<br>Ø14-15,5<br>f [mm/U] | SONT 05<br>Ø16-17,5<br>f [mm/U] | SONT 06<br>Ø19-20<br>f [mm/U] | SONT 07<br>Ø21-23<br>f [mm/U] | SONT 08<br>Ø24-27<br>f [mm/U] | SONT 09<br>Ø28-32<br>f [mm/U] | SONT 10<br>Ø33-36<br>f [mm/U] | SONT 12<br>Ø37-41<br>f [mm/U] | SONT 13<br>Ø41,5-46<br>f [mm/U] | SONT15<br>Ø46,5-54<br>f [mm/U] |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,04-0,11 | 0,04-0,11 | 0,04-0,12 | 0,05-0,12 | 0,05-0,13 | 0,06-0,15 | 0,06-0,17 | 0,06-0,17 | 0,06-0,17 | 0,07-0,17 | 0,07-0,19 |
| 0,04-0,13 | 0,04-0,13 | 0,04-0,14 | 0,05-0,14 | 0,05-0,15 | 0,06-0,17 | 0,06-0,19 | 0,06-0,19 | 0,06-0,20 | 0,07-0,22 | 0,07-0,24 |
| 0,04-0,14 | 0,04-0,14 | 0,04-0,15 | 0,05-0,16 | 0,06-0,18 | 0,07-0,20 | 0,07-0,22 | 0,07-0,22 | 0,07-0,23 | 0,08-0,25 | 0,08-0,27 |
| 0,04-0,17 | 0,04-0,17 | 0,04-0,18 | 0,05-0,18 | 0,06-0,20 | 0,07-0,20 | 0,07-0,23 | 0,07-0,23 | 0,07-0,24 | 0,08-0,26 | 0,08-0,28 |
| 0,04-0,14 | 0,04-0,14 | 0,04-0,15 | 0,05-0,15 | 0,06-0,17 | 0,07-0,20 | 0,07-0,23 | 0,07-0,23 | 0,07-0,23 | 0,08-0,25 | 0,08-0,27 |
| 0,04-0,14 | 0,04-0,14 | 0,04-0,15 | 0,05-0,15 | 0,06-0,18 | 0,07-0,21 | 0,07-0,23 | 0,07-0,23 | 0,07-0,23 | 0,08-0,25 | 0,08-0,27 |
| 0,04-0,14 | 0,04-0,14 | 0,04-0,15 | 0,05-0,15 | 0,06-0,18 | 0,07-0,20 | 0,07-0,23 | 0,07-0,23 | 0,07-0,23 | 0,08-0,25 | 0,08-0,27 |
| 0,04-0,14 | 0,04-0,14 | 0,04-0,15 | 0,05-0,15 | 0,06-0,18 | 0,07-0,20 | 0,07-0,23 | 0,07-0,23 | 0,07-0,23 | 0,08-0,25 | 0,08-0,27 |
| 0,04-0,11 | 0,04-0,11 | 0,04-0,12 | 0,05-0,12 | 0,06-0,12 | 0,06-0,15 | 0,06-0,17 | 0,08-0,20 | 0,08-0,22 | 0,08-0,22 | 0,08-0,22 |
| 0,04-0,11 | 0,04-0,11 | 0,04-0,12 | 0,05-0,12 | 0,06-0,12 | 0,06-0,15 | 0,06-0,17 | 0,08-0,20 | 0,08-0,22 | 0,08-0,22 | 0,08-0,22 |
| 0,04-0,12 | 0,04-0,12 | 0,04-0,12 | 0,05-0,13 | 0,05-0,15 | 0,05-0,16 | 0,07-0,16 | 0,08-0,20 | 0,08-0,22 | 0,08-0,22 | 0,08-0,22 |
| 0,04-0,10 | 0,04-0,10 | 0,04-0,10 | 0,05-0,11 | 0,05-0,13 | 0,06-0,14 | 0,07-0,15 | 0,08-0,18 | 0,08-0,20 | 0,08-0,20 | 0,08-0,20 |
| 0,04-0,10 | 0,04-0,10 | 0,04-0,10 | 0,05-0,11 | 0,05-0,12 | 0,06-0,12 | 0,07-0,14 | 0,08-0,16 | 0,08-0,17 | 0,08-0,17 | 0,08-0,17 |
| 0,04-0,10 | 0,04-0,10 | 0,04-0,10 | 0,05-0,10 | 0,05-0,11 | 0,05-0,12 | 0,06-0,13 | 0,07-0,14 | 0,07-0,16 | 0,07-0,16 | 0,07-0,16 |
| 0,07-0,18 | 0,07-0,18 | 0,07-0,20 | 0,08-0,22 | 0,10-0,24 | 0,10-0,25 | 0,10-0,25 | 0,10-0,28 | 0,10-0,30 | 0,10-0,30 | 0,10-0,32 |
| 0,07-0,17 | 0,07-0,17 | 0,07-0,18 | 0,08-0,20 | 0,10-0,22 | 0,10-0,25 | 0,10-0,25 | 0,10-0,27 | 0,10-0,29 | 0,10-0,29 | 0,10-0,30 |
| 0,07-0,18 | 0,07-0,18 | 0,07-0,18 | 0,08-0,20 | 0,10-0,24 | 0,10-0,26 | 0,10-0,26 | 0,10-0,26 | 0,10-0,28 | 0,10-0,28 | 0,10-0,30 |
| 0,07-0,17 | 0,07-0,17 | 0,07-0,18 | 0,08-0,18 | 0,10-0,22 | 0,10-0,22 | 0,10-0,22 | 0,10-0,23 | 0,10-0,25 | 0,10-0,25 | 0,10-0,27 |
| 0,07-0,17 | 0,07-0,17 | 0,07-0,18 | 0,08-0,18 | 0,10-0,22 | 0,10-0,25 | 0,10-0,25 | 0,10-0,28 | 0,10-0,30 | 0,10-0,30 | 0,10-0,32 |
| 0,07-0,17 | 0,07-0,17 | 0,07-0,18 | 0,08-0,18 | 0,10-0,22 | 0,01-0,25 | 0,10-0,25 | 0,10-0,28 | 0,10-0,30 | 0,01-0,30 | 0,10-0,32 |
| 0,06-0,12 | 0,06-0,12 | 0,07-0,14 | 0,08-0,15 | 0,10-0,15 | 0,10-0,15 | 0,10-0,17 | 0,10-0,17 | 0,10-0,17 | 0,10-0,17 | 0,10-0,17 |
| 0,06-0,13 | 0,06-0,13 | 0,07-0,14 | 0,08-0,15 | 0,10-0,15 | 0,10-0,15 | 0,10-0,17 | 0,10-0,17 | 0,10-0,18 | 0,10-0,18 | 0,10-0,18 |
| 0,06-0,12 | 0,06-0,12 | 0,07-0,14 | 0,08-0,15 | 0,10-0,18 | 0,10-0,18 | 0,10-0,19 | 0,10-0,19 | 0,10-0,20 | 0,10-0,20 | 0,10-0,20 |
| 0,06-0,12 | 0,06-0,12 | 0,07-0,14 | 0,08-0,15 | 0,10-0,18 | 0,10-0,18 | 0,10-0,19 | 0,10-0,19 | 0,10-0,21 | 0,10-0,21 | 0,10-0,21 |
| 0,06-0,12 | 0,06-0,12 | 0,07-0,14 | 0,08-0,15 | 0,13-0,20 | 0,13-0,20 | 0,13-0,22 | 0,13-0,22 | 0,13-0,22 | 0,13-0,22 | 0,13-0,22 |
| 0,06-0,13 | 0,06-0,13 | 0,07-0,14 | 0,08-0,15 | 0,10-0,16 | 0,10-0,16 | 0,10-0,17 | 0,10-0,17 | 0,10-0,18 | 0,10-0,18 | 0,10-0,18 |
| 0,06-0,15 | 0,06-0,15 | 0,07-0,16 | 0,08-0,18 | 0,10-0,18 | 0,10-0,18 | 0,10-0,20 | 0,10-0,20 | 0,10-0,22 | 0,10-0,22 | 0,10-0,22 |
| 0,06-0,15 | 0,06-0,15 | 0,07-0,16 | 0,08-0,18 | 0,10-0,18 | 0,10-0,18 | 0,10-0,20 | 0,10-0,20 | 0,10-0,22 | 0,10-0,22 | 0,10-0,22 |
| 0,06-0,14 | 0,06-0,14 | 0,07-0,15 | 0,08-0,16 | 0,10-0,16 | 0,10-0,16 | 0,10-0,17 | 0,10-0,17 | 0,10-0,18 | 0,10-0,18 | 0,10-0,18 |
| 0,04-0,09 | 0,04-0,09 | 0,04-0,10 | 0,05-0,08 | 0,05-0,10 | 0,05-0,10 | 0,05-0,12 | 0,05-0,12 | 0,05-0,12 | 0,05-0,12 | 0,05-0,12 |
| 0,06-0,14 | 0,06-0,14 | 0,07-0,14 | 0,08-0,14 | 0,10-0,15 | 0,10-0,16 | 0,10-0,16 | 0,10-0,16 | 0,10-0,18 | 0,10-0,18 | 0,10-0,18 |
| 0,05-0,10 | 0,05-0,10 | 0,05-0,10 | 0,06-0,10 | 0,08-0,12 | 0,08-0,14 | 0,08-0,14 | 0,08-0,14 | 0,08-0,15 | 0,08-0,15 | 0,08-0,15 |
| 0,03-0,07 | 0,03-0,07 | 0,04-0,07 | 0,04-0,07 | 0,04-0,07 | 0,05-0,08 | 0,05-0,08 | 0,05-0,10 | 0,05-0,10 | 0,05-0,10 | 0,05-0,12 |
| 0,03-0,07 | 0,03-0,07 | 0,04-0,07 | 0,04-0,07 | 0,04-0,07 | 0,05-0,08 | 0,05-0,08 | 0,05-0,10 | 0,05-0,10 | 0,05-0,10 | 0,05-0,12 |
| 0,03-0,07 | 0,03-0,07 | 0,04-0,07 | 0,04-0,07 | 0,04-0,07 | 0,05-0,08 | 0,05-0,08 | 0,05-0,10 | 0,05-0,10 | 0,05-0,10 | 0,05-0,12 |
| 0,03-0,07 | 0,03-0,07 | 0,04-0,07 | 0,04-0,07 | 0,04-0,07 | 0,05-0,08 | 0,05-0,08 | 0,05-0,10 | 0,05-0,10 | 0,05-0,10 | 0,05-0,12 |
| 0,03-0,07 | 0,03-0,07 | 0,04-0,07 | 0,04-0,07 | 0,04-0,07 | 0,05-0,08 | 0,05-0,08 | 0,05-0,10 | 0,05-0,10 | 0,05-0,10 | 0,05-0,12 |
| 0,04-0,10 | 0,04-0,10 | 0,04-0,10 | 0,05-0,10 | 0,05-0,12 | 0,05-0,12 | 0,06-0,15 | 0,07-0,15 | 0,07-0,15 | 0,07-0,15 | 0,07-0,16 |
| 0,04-0,10 | 0,04-0,10 | 0,04-0,10 | 0,05-0,10 | 0,05-0,12 | 0,05-0,12 | 0,06-0,15 | 0,07-0,15 | 0,07-0,15 | 0,07-0,15 | 0,07-0,16 |
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| – | – | – | – | – | – | – | – | – | – | – |
| – | – | – | – | – | – | – | – | – | – | – |
| – | – | – | – | – | – | – | – | – | – | – |

Die Schnittdaten sind unverbindliche Angaben für den Anwender. Eine Anpassung an die aktuellen Gegebenheiten ist zu empfehlen!

# Schnittdatenrichtwerte

MaxiDrill 900 5xD

| Werkstück-werkstoff | | Behandlungsart / Legierung | | VDI 3323 Gruppe | Härte HB |
|---|---|---|---|---|---|
| P | unlegierter Stahl | geglüht | ≤ 0,15 % C | 1 | 125 |
| | | geglüht | 0,15 % - 0,45 % C | 2 | 150 - 250 |
| | | vergütet | ≥ 0,45 % C | 3 | 300 |
| | niedriglegierter Stahl | geglüht | | 6 | 180 |
| | | vergütet | | 7 / 8 | 250 - 300 |
| | | vergütet | | 9 | 350 |
| | hochlegierter Stahl | geglüht | | 10 | 200 |
| | | vergütet | | 11 | 350 |
| | rostfreier Stahl | geglüht | ferritisch / martensitisch | 12 | 200 |
| | | vergütet | martensitisch | 13 | 325 |
| | | wärmebehandelt | ferritisch / martensitisch | 13 | 200 |
| M | rostfreier Stahl | abgeschreckt | austenitisch | 14 | 180 |
| | | abgeschreckt | ferritisch / austenitisch (Duplex) | 14 | 230 - 260 |
| | | ausgehärtet | austenitisch ausscheidungsgehärtet (PH) | 14 | 330 |
| K | Grauguss | | perlitisch / ferritisch | 15 | 180 |
| | | | perlitisch / martensitisch | 16 | 260 |
| | Grauguss mit Kugelgraphit | | ferritisch | 17 | 160 |
| | | | perlitisch | 18 | 250 |
| | Temperguss | | ferritisch | 19 | 130 |
| | | | perlitisch | 20 | 230 |
| N | Aluminium Knetlegierung | nicht aushärtbar | | 21 | 60 |
| | | aushärtbar | | 22 | 100 |
| | Aluminium Gusslegierung | nicht aushärtbar | < 12 % Si | 23 | 75 |
| | | aushärtbar | < 12 % Si | 24 | 90 |
| | | nicht aushärtbar | > 12 % Si | 25 | 130 |
| | Kupfer und Kupferlegierungen (Bronze, Messing) | | Automatenlegierung (1% Pb) | 26 | (110) |
| | | | Messing, Rotguss | 27 | 90 |
| | | | Bronze | 28 | 100 |
| | | | bleifreies Kupfer und Elektrolytkupfer | 28 | 100 |
| | nichtmetallische Werkstoffe | | Duroplast | 29 | – |
| | | | faserverstärkter Kunststoff | 29 | – |
| | | | Hartgummi | 30 | – |
| S | warmfeste Legierungen | geglüht | Fe-Basis | 31 | 200 |
| | | ausgehärtet | Fe-Basis | 32 | 280 |
| | | geglüht | Ni- oder Co-Basis | 33 | 250 |
| | | ausgehärtet | Ni- oder Co-Basis 30 - 58 HRC | 34 | (350) |
| | | gegossen | Ni- oder Co-Basis 1500 - 2200 N/mm² | 35 | (320) |
| | Titanlegierungen | | Reintitan | 36 | $R_m$ 440* |
| | | | Alpha- + Beta-Legierung | 37 | $R_m$ 1050* |
| H | gehärteter Stahl | gehärtet u. angelassen | | 38 | 55 HRC |
| | | gehärtet u. angelassen | | 39 | 60 HRC |
| | Hartguss | gegossen | | 40 | 400 |
| | gehärtetes Gusseisen | gehärtet u. angelassen | | 41 | 55 HRC |

* $R_m$ = maximale Festigkeit, gemessen in MPa

| SONT 03<br>Ø12-13,5<br>f [mm/U] | SONT 04<br>Ø14-15,5<br>f [mm/U] | SONT 05<br>Ø16-17,5<br>f [mm/U] | SONT 06<br>Ø19-20<br>f [mm/U] | SONT 07<br>Ø21-23<br>f [mm/U] | SONT 08<br>Ø24-27<br>f [mm/U] | SONT 09<br>Ø28-32<br>f [mm/U] | SONT 10<br>Ø33-36<br>f [mm/U] | SONT 12<br>Ø37-41<br>f [mm/U] |
|---|---|---|---|---|---|---|---|---|
| 0,04-0,09 | 0,04-0,09 | 0,04-0,09 | 0,04-0,09 | 0,04-0,10 | 0,06-0,12 | 0,06-0,13 | 0,08-0,17 | 0,08-0,18 |
| 0,04-0,10 | 0,04-0,10 | 0,04-0,11 | 0,05-0,11 | 0,05-0,12 | 0,06-0,14 | 0,06-0,15 | 0,08-0,19 | 0,08-0,20 |
| 0,04-0,12 | 0,04-0,12 | 0,04-0,13 | 0,05-0,13 | 0,05-0,15 | 0,07-0,17 | 0,08-0,18 | 0,10-0,22 | 0,10-0,25 |
| 0,04-0,15 | 0,04-0,15 | 0,04-0,16 | 0,05-0,16 | 0,05-0,17 | 0,07-0,18 | 0,08-0,19 | 0,10-0,23 | 0,10-0,25 |
| 0,04-0,13 | 0,04-0,13 | 0,04-0,14 | 0,05-0,14 | 0,05-0,15 | 0,07-0,17 | 0,08-0,18 | 0,10-0,22 | 0,10-0,23 |
| 0,04-0,13 | 0,04-0,13 | 0,04-0,14 | 0,05-0,14 | 0,05-0,15 | 0,07-0,17 | 0,08-0,18 | 0,10-0,22 | 0,10-0,23 |
| 0,04-0,13 | 0,04-0,13 | 0,04-0,14 | 0,05-0,14 | 0,05-0,15 | 0,07-0,17 | 0,08-0,18 | 0,10-0,22 | 0,10-0,23 |
| 0,04-0,13 | 0,04-0,13 | 0,04-0,14 | 0,05-0,14 | 0,05-0,15 | 0,07-0,17 | 0,08-0,18 | 0,10-0,22 | 0,10-0,23 |
| 0,04-0,09 | 0,04-0,09 | 0,04-0,09 | 0,04-0,09 | 0,04-0,10 | 0,06-0,12 | 0,07-0,14 | 0,09-0,18 | 0,09-0,20 |
| 0,04-0,09 | 0,04-0,09 | 0,04-0,09 | 0,04-0,09 | 0,04-0,10 | 0,06-0,12 | 0,07-0,14 | 0,09-0,18 | 0,09-0,20 |
| 0,04-0,11 | 0,04-0,11 | 0,04-0,11 | 0,05-0,12 | 0,05-0,13 | 0,05-0,14 | 0,06-0,15 | 0,08-0,18 | 0,08-0,20 |
| 0,04-0,09 | 0,04-0,09 | 0,04-0,09 | 0,05-0,09 | 0,05-0,11 | 0,05-0,12 | 0,06-0,13 | 0,08-0,17 | 0,08-0,18 |
| 0,04-0,08 | 0,04-0,08 | 0,04-0,08 | 0,05-0,08 | 0,05-0,09 | 0,05-0,10 | 0,06-0,11 | 0,07-0,14 | 0,08-0,15 |
| 0,04-0,08 | 0,04-0,08 | 0,04-0,08 | 0,05-0,08 | 0,05-0,09 | 0,05-0,10 | 0,06-0,11 | 0,07-0,14 | 0,08-0,15 |
| 0,07-0,18 | 0,07-0,18 | 0,07-0,20 | 0,08-0,22 | 0,10-0,23 | 0,10-0,25 | 0,10-0,25 | 0,10-0,25 | 0,10-0,25 |
| 0,07-0,17 | 0,07-0,17 | 0,07-0,18 | 0,08-0,18 | 0,10-0,20 | 0,10-0,22 | 0,10-0,22 | 0,10-0,22 | 0,10-0,22 |
| 0,07-0,18 | 0,07-0,18 | 0,07-0,18 | 0,08-0,18 | 0,10-0,23 | 0,10-0,25 | 0,10-0,25 | 0,10-0,25 | 0,10-0,25 |
| 0,07-0,17 | 0,07-0,17 | 0,07-0,18 | 0,08-0,16 | 0,10-0,20 | 0,10-0,22 | 0,10-0,22 | 0,10-0,22 | 0,10-0,22 |
| 0,07-0,17 | 0,07-0,17 | 0,07-0,18 | 0,08-0,16 | 0,10-0,20 | 0,10-0,22 | 0,10-0,22 | 0,10-0,22 | 0,10-0,22 |
| 0,07-0,17 | 0,07-0,17 | 0,07-0,18 | 0,08-0,16 | 0,10-0,20 | 0,10-0,22 | 0,10-0,22 | 0,10-0,22 | 0,10-0,22 |
| 0,06-0,12 | 0,06-0,12 | 0,07-0,14 | 0,08-0,14 | 0,10-0,15 | 0,10-0,15 | 0,10-0,17 | 0,10-0,17 | 0,10-0,17 |
| 0,06-0,13 | 0,06-0,13 | 0,07-0,14 | 0,08-0,14 | 0,10-0,15 | 0,10-0,15 | 0,10-0,17 | 0,10-0,17 | 0,10-0,17 |
| 0,06-0,12 | 0,06-0,12 | 0,07-0,14 | 0,08-0,14 | 0,10-0,18 | 0,10-0,18 | 0,10-0,19 | 0,10-0,19 | 0,10-0,19 |
| 0,06-0,12 | 0,06-0,12 | 0,07-0,14 | 0,08-0,14 | 0,10-0,18 | 0,10-0,18 | 0,10-0,19 | 0,10-0,19 | 0,10-0,19 |
| 0,06-0,12 | 0,06-0,12 | 0,07-0,14 | 0,10-0,15 | 0,13-0,20 | 0,13-0,20 | 0,13-0,22 | 0,13-0,22 | 0,13-0,22 |
| 0,06-0,13 | 0,06-0,13 | 0,07-0,14 | 0,08-0,15 | 0,10-0,16 | 0,10-0,16 | 0,10-0,17 | 0,10-0,17 | 0,10-0,17 |
| 0,06-0,15 | 0,06-0,15 | 0,07-0,16 | 0,08-0,16 | 0,10-0,18 | 0,10-0,18 | 0,10-0,20 | 0,10-0,20 | 0,10-0,20 |
| 0,06-0,15 | 0,06-0,15 | 0,07-0,16 | 0,08-0,16 | 0,10-0,18 | 0,10-0,18 | 0,10-0,20 | 0,10-0,20 | 0,10-0,20 |
| 0,06-0,14 | 0,06-0,14 | 0,07-0,15 | 0,08-0,14 | 0,10-0,16 | 0,10-0,16 | 0,10-0,17 | 0,10-0,17 | 0,10-0,17 |
| 0,04-0,09 | 0,04-0,09 | 0,04-0,10 | 0,04-0,08 | 0,05-0,10 | 0,05-0,10 | 0,05-0,10 | 0,05-0,10 | 0,05-0,10 |
| 0,06-0,14 | 0,06-0,14 | 0,07-0,14 | 0,08-0,14 | 0,10-0,15 | 0,10-0,15 | 0,10-0,15 | 0,10-0,15 | 0,10-0,15 |
| 0,05-0,10 | 0,05-0,10 | 0,05-0,10 | 0,06-0,10 | 0,08-0,12 | 0,08-0,12 | 0,08-0,12 | 0,08-0,12 | 0,08-0,12 |
| 0,03-0,06 | 0,03-0,06 | 0,04-0,06 | 0,04-0,06 | 0,04-0,06 | 0,04-0,07 | 0,05-0,08 | 0,05-0,08 | 0,05-0,09 |
| 0,03-0,06 | 0,03-0,06 | 0,04-0,06 | 0,04-0,06 | 0,04-0,06 | 0,04-0,07 | 0,05-0,08 | 0,05-0,08 | 0,05-0,09 |
| 0,03-0,06 | 0,03-0,06 | 0,04-0,06 | 0,04-0,06 | 0,04-0,06 | 0,04-0,07 | 0,05-0,08 | 0,05-0,08 | 0,05-0,09 |
| 0,03-0,06 | 0,03-0,06 | 0,04-0,06 | 0,04-0,06 | 0,04-0,06 | 0,04-0,07 | 0,05-0,08 | 0,05-0,08 | 0,05-0,09 |
| 0,03-0,06 | 0,03-0,06 | 0,04-0,06 | 0,04-0,06 | 0,04-0,06 | 0,04-0,07 | 0,05-0,08 | 0,05-0,08 | 0,05-0,09 |
| 0,04-0,08 | 0,04-0,08 | 0,04-0,08 | 0,04-0,08 | 0,05-0,11 | 0,05-0,11 | 0,06-0,12 | 0,07-0,12 | 0,07-0,12 |
| 0,04-0,08 | 0,04-0,08 | 0,04-0,08 | 0,04-0,08 | 0,05-0,11 | 0,05-0,11 | 0,06-0,12 | 0,07-0,12 | 0,07-0,12 |
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Die Schnittdaten sind unverbindliche Angaben für den Anwender. Eine Anpassung an die aktuellen Gegebenheiten ist zu empfehlen!

# Schnittdatenrichtwerte

MaxiDrill Classic



| | Werkstück-werkstoff | Behandlungsart / Legierung | | VDI 3323 Gruppe | Härte HB |
|---|---|---|---|---|---|
| P | unlegierter Stahl | geglüht | ≤ 0,15 % C | 1 | 125 |
| | | geglüht | 0,15 % - 0,45 % C | 2 | 150 - 250 |
| | | vergütet | ≥ 0,45 % C | 3 | 300 |
| | niedriglegierter Stahl | geglüht | | 6 | 180 |
| | | vergütet | | 7 / 8 | 250 - 300 |
| | | vergütet | | 9 | 350 |
| | hochlegierter Stahl | geglüht | | 10 | 200 |
| | | vergütet | | 11 | 350 |
| | rostfreier Stahl | geglüht | ferritisch / martensitisch | 12 | 200 |
| | | vergütet | martensitisch | 13 | 325 |
| | | wärmebehandelt | ferritisch / martensitisch | 13 | 200 |
| M | rostfreier Stahl | abgeschreckt | austenitisch | 14 | 180 |
| | | abgeschreckt | ferritisch / austenitisch (Duplex) | 14 | 230 - 260 |
| | | ausgehärtet | austenitisch ausscheidungsgehärtet (PH) | 14 | 330 |
| K | Grauguss | | perlitisch / ferritisch | 15 | 180 |
| | | | perlitisch / martensitisch | 16 | 260 |
| | Grauguss mit Kugelgraphit | | ferritisch | 17 | 160 |
| | | | perlitisch | 18 | 250 |
| | Temperguss | | ferritisch | 19 | 130 |
| | | | perlitisch | 20 | 230 |
| N | Aluminium Knetlegierung | nicht aushärtbar | | 21 | 60 |
| | | aushärtbar | | 22 | 100 |
| | Aluminium Gusslegierung | nicht aushärtbar | < 12 % Si | 23 | 75 |
| | | aushärtbar | < 12 % Si | 24 | 90 |
| | | nicht aushärtbar | > 12 % Si | 25 | 130 |
| | Kupfer und Kupferlegierungen (Bronze, Messing) | | Automatenlegierung (1% Pb) | 26 | (110) |
| | | | Messing, Rotguss | 27 | 90 |
| | | | Bronze | 28 | 100 |
| | | | bleifreies Kupfer und Elektrolytkupfer | 28 | 100 |
| | nichtmetallische Werkstoffe | | Duroplast | 29 | – |
| | | | faserverstärkter Kunststoff | 29 | – |
| | | | Hartgummi | 30 | – |
| S | warmfeste Legierungen | geglüht | Fe-Basis | 31 | 200 |
| | | ausgehärtet | Fe-Basis | 32 | 280 |
| | | geglüht | Ni- oder Co-Basis | 33 | 250 |
| | | ausgehärtet | Ni- oder Co-Basis 30 - 58 HRC | 34 | (350) |
| | | gegossen | Ni- oder Co-Basis 1500 - 2200 N/mm² | 35 | (320) |
| | Titanlegierungen | | Reintitan | 36 | $R_m$ 440* |
| | | | Alpha- + Beta-Legierung | 37 | $R_m$ 1050* |
| H | gehärteter Stahl | gehärtet u. angelassen | | 38 | 55 HRC |
| | | gehärtet u. angelassen | | 39 | 60 HRC |
| | Hartguss | gegossen | | 40 | 400 |
| | gehärtetes Gusseisen | gehärtet u. angelassen | | 41 | 55 HRC |

* $R_m$ = maximale Festigkeit, gemessen in MPa

| Bohrerdurchmesser [mm] | | | | |
|---|---|---|---|---|
| Ø 14 - 17,5 | Ø 18 - 23,5 | Ø 24 - 29 | Ø 30 - 42 | Ø 38 - 53 |
| f [mm/U] | f [mm/U] | f [mm/U] | f [mm/U] | f [mm/U] |
| – | – | – | – | – |
| 0,03 - 0,10 | 0,05 - 0,12 | 0,08 - 0,12 | 0,08 - 0,15 | 0,1 - 0,25 |
| 0,03 - 0,10 | 0,05 - 0,12 | 0,08 - 0,12 | 0,08 - 0,15 | 0,1 - 0,25 |
| 0,03 - 0,10 | 0,05 - 0,14 | 0,08 - 0,14 | 0,10 - 0,17 | 0,1 - 0,20 |
| 0,03 - 0,10 | 0,05 - 0,14 | 0,08 - 0,14 | 0,10 - 0,17 | 0,1 - 0,20 |
| 0,03 - 0,10 | 0,05 - 0,14 | 0,08 - 0,14 | 0,10 - 0,17 | 0,1 - 0,20 |
| 00,3 - 0,10 | 0,05 - 0,14 | 0,08 - 0,14 | 0,10 - 0,17 | 0,1 - 0,20 |
| 00,3 - 0,10 | 0,05 - 0,14 | 0,08 - 0,14 | 0,10 - 0,17 | 0,1 - 0,20 |
| 0,03 - 0,10 | 0,04 - 0,14 | 0,08 - 0,16 | 0,10 - 0,18 | 0,12 - 0,20 |
| 0,03 - 0,10 | 0,04 - 0,14 | 0,08 - 0,16 | 0,10 - 0,18 | 0,12 - 0,20 |
| 0,03 - 0,10 | 0,04 - 0,14 | 0,08 - 0,16 | 0,10 - 0,18 | 0,12 - 0,20 |
| 0,03 - 0,10 | 0,04 - 0,12 | 0,08 - 0,14 | 0,10 - 0,16 | 0,1 - 0,18 |
| 0,03 - 0,10 | 0,04 - 0,12 | 0,08 - 0,14 | 0,10 - 0,16 | 0,1 - 0,18 |
| 0,03 - 0,10 | 0,04 - 0,12 | 0,08 - 0,14 | 0,10 - 0,16 | 0,1 - 0,18 |
| 0,04 - 0,12 | 0,06 - 0,16 | 0,12 - 0,18 | 0,14 - 0,22 | 0,15 - 0,25 |
| 0,04 - 0,12 | 0,06 - 0,16 | 0,12 - 0,18 | 0,14 - 0,22 | 0,15 - 0,25 |
| 0,04 - 0,10 | 0,08 - 0,14 | 0,12 - 0,18 | 0,14 - 0,20 | 0,15 - 0,22 |
| 0,04 - 0,10 | 0,08 - 0,14 | 0,12 - 0,18 | 0,14 - 0,20 | 0,15 - 0,22 |
| 0,04 - 0,12 | 0,08 - 0,16 | 0,10 - 0,18 | 0,12 - 0,20 | 0,15 - 0,25 |
| 0,04 - 0,12 | 0,08 - 0,16 | 0,10 - 0,18 | 0,12 - 0,20 | 0,15 - 0,25 |
| – | 0,06 - 0,16 | 0,10 - 0,18 | 0,12 - 0,22 | 0,14 - 0,25 |
| – | 0,06 - 0,16 | 0,10 - 0,18 | 0,12 - 0,22 | 0,14 - 0,25 |
| – | 0,06 - 0,16 | 0,10 - 0,18 | 0,12 - 0,22 | 0,14 - 0,25 |
| – | 0,06 - 0,16 | 0,10 - 0,18 | 0,12 - 0,22 | 0,14 - 0,25 |
| – | 0,06 - 0,16 | 0,10 - 0,18 | 0,12 - 0,22 | 0,14 - 0,25 |
| – | 0,06 - 0,16 | 0,10 - 0,18 | 0,12 - 0,22 | 0,14 - 0,25 |
| – | 0,06 - 0,16 | 0,10 - 0,18 | 0,12 - 0,22 | 0,14 - 0,25 |
| – | 0,06 - 0,16 | 0,10 - 0,18 | 0,12 - 0,22 | 0,14 - 0,25 |
| – | 0,06 - 0,16 | 0,10 - 0,18 | 0,12 - 0,22 | 0,14 - 0,25 |
| – | 0,05 - 0,10 | 0,08 - 0,12 | 0,10 - 0,15 | 0,10 - 0,20 |
| – | 0,05 - 0,10 | 0,08 - 0,12 | 0,10 - 0,15 | 0,10 - 0,20 |
| – | 0,05 - 0,10 | 0,08 - 0,12 | 0,10 - 0,15 | 0,10 - 0,20 |
| – | 0,04 - 0,08 | 0,06 - 0,10 | 0,08 - 0,12 | 0,09 - 0,14 |
| – | 0,04 - 0,08 | 0,06 - 0,10 | 0,08 - 0,12 | 0,09 - 0,14 |
| – | 0,04 - 0,08 | 0,06 - 0,10 | 0,08 - 0,12 | 0,09 - 0,14 |
| – | 0,04 - 0,08 | 0,06 - 0,10 | 0,08 - 0,12 | 0,09 - 0,14 |
| – | 0,04 - 0,08 | 0,06 - 0,10 | 0,08 - 0,12 | 0,09 - 0,14 |
| – | 0,05 - 0,12 | 0,08 - 0,12 | 0,10 - 0,15 | 0,1 - 0,20 |
| – | 0,05 - 0,12 | 0,08 - 0,12 | 0,10 - 0,15 | 0,1 - 0,20 |
| – | – | – | – | – |
| – | – | – | – | – |
| – | – | – | – | – |
| – | – | – | – | – |

Die Schnittdaten sind unverbindliche Angaben für den Anwender. Eine Anpassung an die aktuellen Gegebenheiten ist zu empfehlen!

# Anwendungshinweise - rotierende Werkzeuge

Wendeplattenbohrer mit gedralltem Spanraum



Durchbohren einer Querbohrung

Beim Bohrereintritt in die Querbohrung den Vorschub reduzieren. Bei durchgehenden Querbohrungen, nach Möglichkeit von beiden Seiten bohren. Vorschubreduktion von 30 bis zu 60% (abhängig vom Verhältnis Bohrung zur Querbohrung).



Paketbohren

Beim Paketbohren ist darauf zu achten, dass entweder kein- oder ein so groß wie mögliches Spaltmaß vorhanden ist. Gute Werkstückspannung erforderlich.



Anbohren einer unebenen Fläche

Je nach Qualität der Oberfläche, ggf. beim Anbohren, Vorschub reduzieren.



Ballig Anbohren

Beim Bohrereintritt in konvexe Werkstückoberflächen schneidet die Zentrumsplatte zuerst. Im Normalfall ergeben sich keine Schwierigkeiten beim Anbohren.



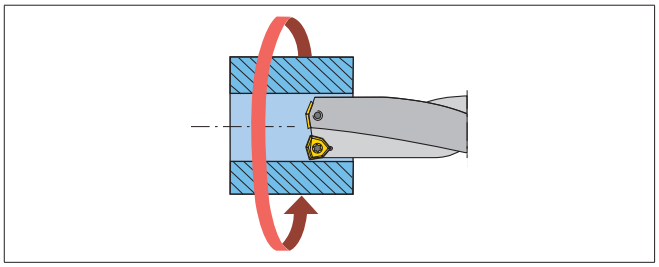
Schräg Anbohren

Beim Bohrerein- bzw. Bohrerustritt an schrägen Werkstückoberflächen den Vorschub von 30 bis zu 60% reduzieren.

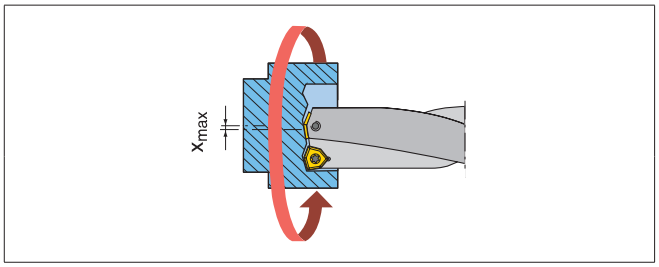


Anbohren einer Zentrierung

Beim Anbohren einer Zentrierung oder Sicke den Vorschub um bis zu 50 % reduzieren.



Bohren ins Volle.




Bohren ins Volle aus der Mitte.

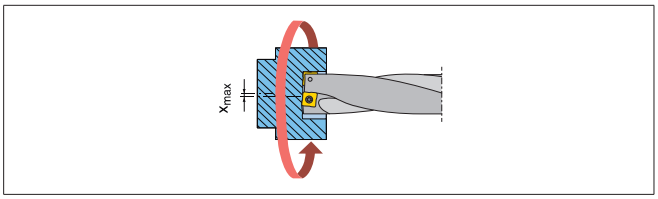
$X_{max}$ = Siehe Seite D47 - D48

**Sicherheitshinweise**
Bei feststehendem Bohrer und rotierendem Werkstück fällt bei Durchgangsbohrungen eine scharfkantige Ronde ab. Sicherheitsvorkehrungen beachten. Gegen ausgeworfene Späne ist eine Schutzabdeckung vorzusehen.

# Bohren aus der Mitte

MaxiDrill 900

## Um die effektive Vierschneidigkeit der Wendeplatte zu erhalten sind folgende X-Versatzmaße einzuhalten:




Bei max. Verstellung $X_{max}$ wird die Bohrung:
$D_{max} = D + 2X_{max}$

z.B. für D = 20 mm, $X_{max}$ = 0,20 mm
$D_{max} = D + 0,4 = 20,4$ mm

| Type, Bezeichnung | Ø [mm] | max. Verstellbereich $x_{max}$ [mm] | $D_{max}$ [mm] |
|---|---|---|---|
| SONT 031804ER | 12,0 | 0,5 | 13,0 |
| | 12,5 | 0,4 | 13,3 |
| | 13,0 | 0,35 | 13,7 |
| | 13,5 | 0,3 | 14,1 |
| SONT 042105ER | 14,0 | 0,35 | 14,7 |
| | 14,5 | 0,25 | 15,0 |
| | 15,0 | 0,20 | 15,4 |
| | 15,5 | 0,15 | 15,8 |
| SONT 052306ER | 16,0 | 0,40 | 16,8 |
| | 16,5 | 0,35 | 17,2 |
| | 17,0 | 0,30 | 17,6 |
| | 17,5 | 0,25 | 18,0 |
| SONT 062506ER | 18,0 | 0,50 | 19,0 |
| | 18,5 | 0,40 | 19,3 |
| | 19,0 | 0,35 | 19,7 |
| | 19,5 | 0,25 | 20,0 |
| | 20,0 | 0,20 | 20,4 |
| | 20,5 | 0,15 | 20,8 |
| SONT 072907ER | 21,0 | 0,35 | 21,7 |
| | 21,5 | 0,30 | 22,1 |
| | 22,0 | 0,25 | 22,5 |
| | 22,5 | 0,15 | 22,8 |
| | 23,0 | 0,15 | 23,3 |
| | 23,5 | 0,10 | 23,7 |
| SONT 083308ER | 24,0 | 0,65 | 25,3 |
| | 24,5 | 0,55 | 25,6 |
| | 25,0 | 0,55 | 26,1 |
| | 25,5 | 0,40 | 26,3 |
| | 26,0 | 0,35 | 26,7 |
| | 26,5 | 0,30 | 27,1 |
| | 27,0 | 0,25 | 27,5 |
| | 27,5 | 0,15 | 27,8 |
| SONT 093808ER | 28,0 | 0,90 | 29,8 |
| | 28,5 | 0,80 | 30,1 |
| | 29,0 | 0,75 | 30,5 |
| | 29,5 | 0,70 | 30,9 |
| | 30,0 | 0,60 | 31,2 |
| | 30,5 | 0,55 | 31,6 |
| | 31,0 | 0,45 | 31,9 |

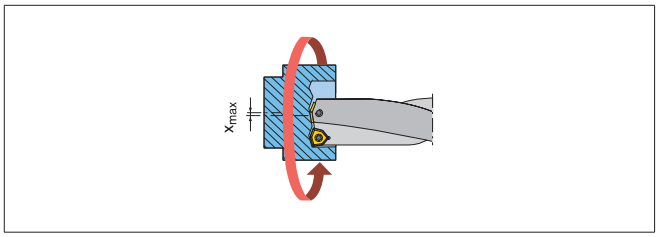
| Type, Bezeichnung | Ø [mm] | max. Verstellbereich $x_{max}$ [mm] | $D_{max}$ [mm] |
|---|---|---|---|
| SONT 093808ER | 31,5 | 0,40 | 32,3 |
| | 32,0 | 0,30 | 32,6 |
| SONT 104408ER | 32,5 | 0,80 | 34,1 |
| | 33,0 | 0,80 | 34,6 |
| | 33,5 | 0,65 | 34,8 |
| | 34,0 | 0,60 | 35,2 |
| | 34,5 | 0,50 | 35,5 |
| | 35,0 | 0,45 | 35,9 |
| | 35,5 | 0,35 | 36,2 |
| | 36,0 | 0,35 | 36,7 |
| | 36,5 | 0,20 | 36,9 |
| SONT 124810ER | 37,0 | 1,00 | 39,0 |
| | 38,0 | 0,85 | 39,7 |
| | 39,0 | 0,70 | 40,4 |
| | 40,0 | 0,50 | 41,0 |
| | 41,0 | 0,35 | 41,7 |
| SONT 135012ER | 42,0 | 0,95 | 43,9 |
| | 43,0 | 0,80 | 44,6 |
| | 44,0 | 0,60 | 45,2 |
| | 45,0 | 0,45 | 45,9 |
| | 46,0 | 0,30 | 46,6 |
| SONT 155312ER | 47,0 | 1,80 | 50,6 |
| | 48,0 | 1,65 | 51,3 |
| | 49,0 | 1,50 | 52,0 |
| | 50,0 | 1,35 | 52,7 |
| | 51,0 | 1,15 | 53,3 |
| | 52,0 | 0,95 | 53,9 |
| | 53,0 | 0,80 | 54,6 |
| | 54,0 | 0,60 | 55,2 |
| SONT 175612ER | 55,0 | 2,10 | 59,2 |
| | 56,0 | 1,90 | 59,8 |
| | 57,0 | 1,75 | 60,5 |
| | 58,0 | 1,55 | 61,1 |
| | 59,0 | 1,35 | 61,7 |
| | 60,0 | 1,15 | 62,3 |
| | 61,0 | 1,00 | 63,0 |
| | 62,0 | 0,85 | 63,7 |
| | 63,0 | 0,65 | 64,3 |

Das maximal radiale X-Versatzmaß beeinflusst den Schnittkraftausgleich des Bohrers, deshalb wird die Verwendung des niedrigeren Vorschubbereiches empfohlen!

Beim Bohren aus der Mitte ist der radiale Kräfteausgleich nicht mehr zu 100% gegeben (Instabilität).

| Erzeugte Bohrungstoleranzen | 2xD | 3xD | 4xD | 5xD | |
|---|---|---|---|---|---|
| Bohrungsdurchmesser [mm] | 12-63 | 12-63 | 12-54 | 12-41 | |
| Bohrungstoleranz [mm] | 0/+0,3 | 0/+0,3 | 0/+0,35 | 0/+0,4 | |

## Um die effektive Vierschneidigkeit der Wendeplatte zu erhalten sind folgende X-Versatzmaße einzuhalten:




Zulässige Vorschübe bei $X_{max}$:
f x 0,05 - 0,08 mm/U.

Bei max. Verstellung $X_{max}$ wird die Bohrung:
$D_{max} = D + 2X_{max}$

z.B. für D = 38 mm, $X_{max}$ = 1,6 mm
$D_{max} = D + 3,2 = 41,2$ mm

| Wendeplattengröße | Ø [mm] | max. Verstellbereich $x_{max}$ [mm] | $D_{max}$ [mm] |
|---|---|---|---|
| 02 | 14 | 2.0 | 18.0 |
| 02 | 15 | 1.8 | 18.6 |
| 02 | 16 | 1.5 | 19.0 |
| 02 | 17 | 1.2 | 19.4 |
| 03 | 18 | 2.0 | 22.0 |
| 03 | 19 | 1.8 | 22.6 |
| 03 | 20 | 1.6 | 23.2 |
| 03 | 21 | 1.3 | 23.6 |
| 03 | 22 | 1.0 | 24.0 |
| 03 | 23 | 0.8 | 24.6 |
| 05 | 24 | 2.3 | 28.6 |
| 05 | 25 | 2.2 | 29.4 |
| 05 | 26 | 2.0 | 30.0 |
| 05 | 27 | 1.8 | 30.6 |
| 05 | 28 | 1.6 | 31.2 |
| 05 | 29 | 1.5 | 32.0 |
| 06 | 30 | 3.2 | 36.4 |
| 06 | 31 | 3.2 | 37.4 |
| 06 | 32 | 3.2 | 38.4 |
| 06 | 33 | 3.0 | 39.0 |
| 06 | 34 | 2.7 | 39.4 |
| 06 | 35 | 2.5 | 40.0 |
| 06 | 36 | 2.2 | 40.4 |

| Wendeplattengröße | Ø [mm] | max. Verstellbereich $x_{max}$ [mm] | $D_{max}$ [mm] |
|---|---|---|---|
| 06 | 37 | 1.9 | 40.8 |
| 06 | 38 | 1.6 | 41.2 |
| 06 | 39 | 1.4 | 41.8 |
| 06 | 40 | 1.2 | 42.4 |
| 06 | 41 | 1.0 | 43.0 |
| 06 | 42 | 0.6 | 43.2 |
| 07 | 38 | 3.5 | 45.0 |
| 07 | 39 | 3.3 | 45.6 |
| 07 | 40 | 3.0 | 46.0 |
| 07 | 41 | 2.8 | 46.6 |
| 07 | 42 | 2.5 | 47.0 |
| 07 | 43 | 2.3 | 47.6 |
| 07 | 44 | 2.0 | 48.0 |
| 07 | 45 | 1.9 | 48.8 |
| 07 | 46 | 1.8 | 49.6 |
| 07 | 47 | 1.5 | 50.0 |
| 07 | 48 | 1.4 | 50.8 |
| 07 | 49 | 1.2 | 51.4 |
| 07 | 50 | 1.0 | 52.0 |
| 07 | 51 | 0.7 | 52.4 |
| 07 | 52 | 0.6 | 53.2 |
| 07 | 53 | 0.5 | 54.0 |

Das maximal radiale X-Versatzmaß beeinflusst den Schnittkraftausgleich des Bohrers, deshalb wird die Verwendung des niedrigeren Vorschubbereiches empfohlen!

⚠ Beim Bohren aus der Mitte ist der radiale Kräfteausgleich nicht mehr zu 100% gegeben (Instabilität).

# Kühlmitteldruck

## Empfohlener Kühlmitteldruck / -durchfluss

Um einen effizienten Spänetransport aus der Bohrung zu gewährleisten, muss der Kühlmitteldruck mindestens 5 bar betragen.
Optimal ist ein Kühlmitteldruck >15 bar.



| | | |
|---|---|---|
| **Drehzahl** | $n = \frac{vc \cdot 1000}{\pi \cdot D}$ | [$min^{-1}$] |
| **Schnittgeschwindigkeit** | $v_c = \frac{\pi \cdot D \cdot n}{1000}$ | [m/min] |
| **Vorschub** | $f$ | [mm/U] |
| **Vorschubgeschwindigkeit** | $v_f = f \cdot n$ | [m/min] |
| **Zerspanungsquerschnitt** | $A_T = \frac{\pi \cdot D^2}{4}$ | [$mm^2$] |
| **Zeitspanvolumen** | $Q = \frac{vf \cdot AT}{1000}$ | [$cm^3$/min] |
| **Spezifische Schnittkraft** | $k_c =$ siehe Tabelle | [$N/mm^2$] |
| **Leistungsbedarf** | $P_c = \frac{Q}{60 \cdot 1000 \cdot \eta} \cdot k_c$ | [kW] |
| **Drehmoment** | $M_c = \frac{f \cdot kc}{1000} \cdot \frac{D^2}{8}$ | [Nm] |
| **Vorschubkraft (ca.)** | $F_f \approx 0{,}7 \frac{D}{2} \cdot f \cdot k_c$ | [N] |
| **Bohrzeit** | $T_c = \frac{L + h}{vf}$ | [min] |
| **Sicherheitsabstand** | $h$ | [mm] |
| **Bohrtiefe** | $L$ | [mm] |

| **Werkstoff** | **spezifische Schnittkraft $k_c$ ($N/mm^2$)** |
|---|---|
| St 37.11; St 42.11 | 1740 |
| St 50.11 | 1950 |
| St 60.11 | 2070 |
| St 70.11 | 2220 |
| C 35, C 45, Ck 45 | 2060/2175 |
| C 60, Ck 60 | 2090 |
| 16 Mn Cr 5 | 2060 |
| 18 Cr Ni 6 | 2220 |
| 34 Cr Mo 4 | 2190 |
| 50 Cr V 4 | 2175 |
| 100 Cr 6 vergütet | 2335 |
| Mn, Cr Ni, legierter Stahl | 2335 |
| Cr Mo, legierter Stahl | 2570 |
| Nichtrostender Stahl | 2530 |
| Warmarbeitsstahl | 2570 |
| Nitrierstahl | 2570 |
| GS 45 | 1570 |
| GS 52 | 1765 |
| GG 22, GG 25 | 1140 |
| GGG 42 | 1370 |
| Al-Guss | 640 |

**Achtung!** Die $k_c$-Werte sind vor-schubabhängig. Die Tabelle enthält daher deren obere Grenzwerte. Möglicherweise ist dadurch die errechnete Leistung etwas höher (~ 10 - 20%) als die tatsächlich benötigte Leistung.

# Ersatzteile

| | Material | Type, Bezeichnung | Schlüsselgröße | Drehmoment [Nm] | Drehmoment [in.lbs] |
|---|---|---|---|---|---|
|  | 11450867 | DMSD 3,2Nm/SORT 15IP | IP15 | 3,2 | 28,3 |
| | 11450898 | DMSD 1,0Nm/SORT 07IP | IP07 | 1,0 | 8,9 |
| | 11690144 | DMSD 1,2NM/SORT 08IP | 08IP | 1,2 | 10,6 |
| | 11690146 | DMSD 2,2NM/SORT 09IP | 09IP | 2,2 | 19,5 |
| | 11816987 | DMSD 5,0Nm/SORT 20IP | 20IP | 5,0 | 44,3 |
| | 11817562 | DMSD 0,7Nm/SORT 06IP | 06IP | 0,7 | 6,2 |
| | 12016459 | DMSD 0,4Nm/SORT 06IP | 06IP | 0,4 | 3,5 |

| | Material | Type, Bezeichnung | Schlüsselgröße |
|---|---|---|---|
|  | 256924 | 7729112/TORX T06 F | T06 |
| | | | |
| | | | |
| | | | |
|  | 8095003900 | SD-T08IP-60mm | T08IP |
| | 8095010100 | SD-T07-60mm | T07 |
| | 8095010200 | SD-T08-60mm | T08 |
| | 8095010500 | SD-T15-80mm | T15 |
| | 8095011600 | SD-T06IP-60mm | T06IP |
| | 8095011700 | SD-T07IP-60mm | T07IP |
| | 8095011800 | SD-T09IP-60mm | T09IP |
| | 8095012000 | SD-T15IP-80mm | T15IP |
| | 8095012100 | SD-T20IP-100mm | T20IP |

| | Material | Type, Bezeichnung | Länge [mm] | Gewindegröße | Schlüsselgröße |
|---|---|---|---|---|---|
|  | 11227305 | M3,0x7,0-09IP/10003007 | 7,0 | M3,0 | T09IP |
| | 11610311 | M3,5X8,6-15IP/10008749 | 8,6 | M3,5 | T15IP |
| | 11684214 | M2,2x5,0-07IP/10009244 | 5,0 | M2,2 | T07IP |
| | 11684216 | M2,5x6,0-08IP/10009243 | 6,0 | M2,5 | T08IP |
| | 11801441 | M4,5X10,5-20IP/10013040 | 10,5 | M4,5 | T20IP |
| | 11807480 | M2,0x4,3-06IP/10013332 | 4,3 | M2,0 | T06IP |
| | 11807484 | M1,8x3,6-06IP/10013338 | 3,6 | M1,8 | T06IP |
| | 24645 | 7815101/M2,5X6,0/T08 | 6 | M2,5 | T08 |
| | 24647 | 7815102/M3,5X11,0/T15 | 11 | M3,5 | T15 |
| | 256680 | 7729113/M2,0X4,8/T06 | 4,8 | M2 | T06 |
| | 56652 | 7722113/M2,2X5/T07 | 5 | M2,2 | T07 |

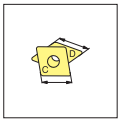
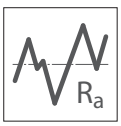
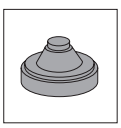


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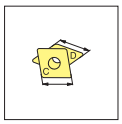
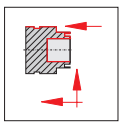
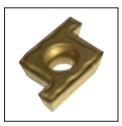
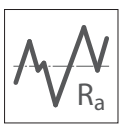
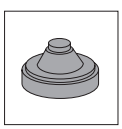

## Einführung

| | | |
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## EcoCut

| | | |
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## ProfileMaster

| | | |
|---|---|---|
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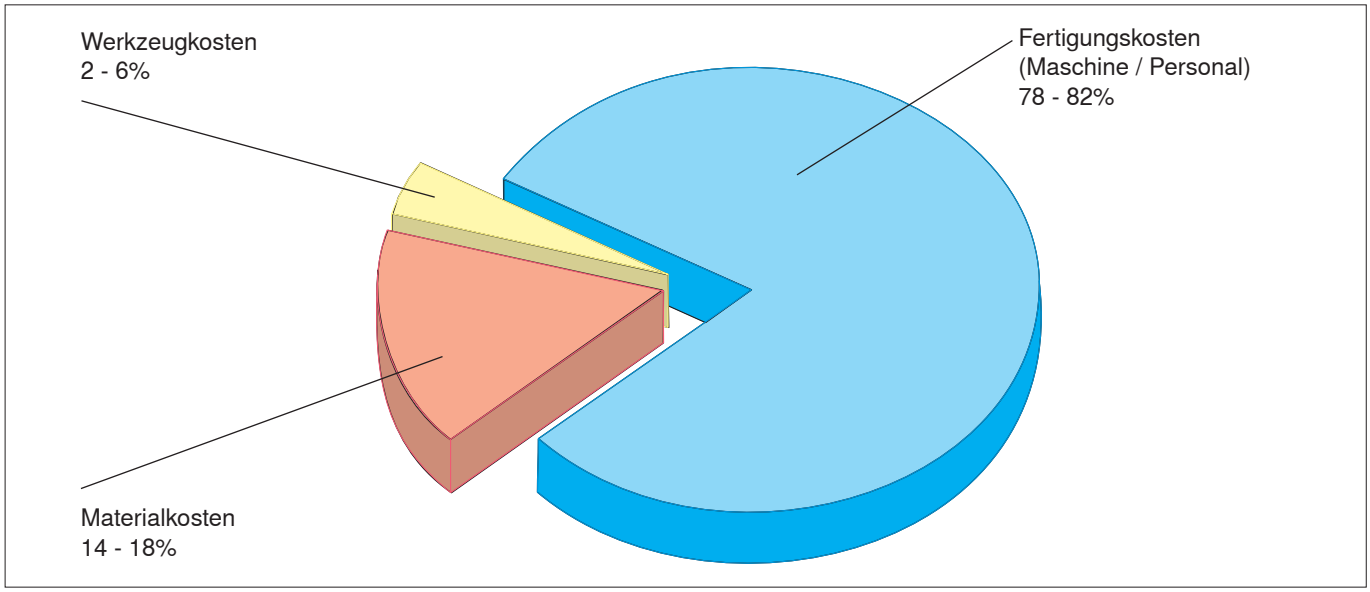
## Index

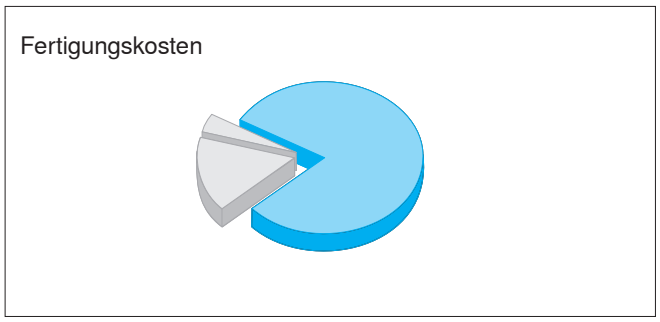
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|---|---|---|
|  | Index | G6 |

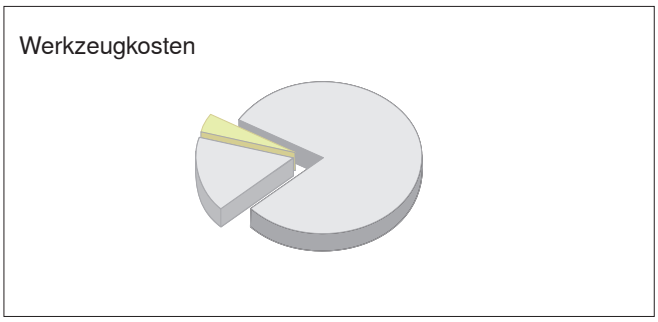
# Produktivität

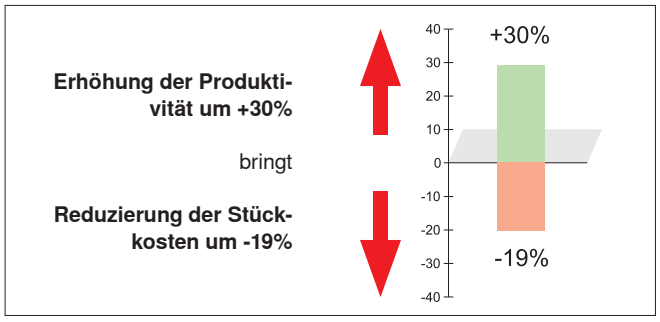
Zusammensetzung der Werkstückkosten

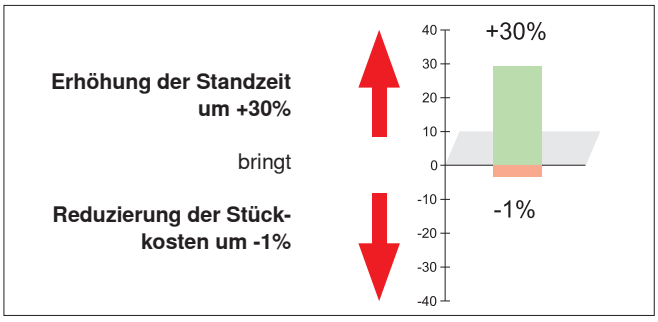
## Drehen Sie mit CERATIZIT an der Kostenschraube




## Erhöhung der Produktivität (produzierte Teile pro Zeiteinheit)

Durch verbesserte Nutzung der vorhandenen Maschinenkapazität sind beträchtliche Einsparungen bei den Stückkosten möglich. CERATIZIT EcoCut leistet hier einen entscheidenden Beitrag durch:

- weniger Werkzeugwechsel
- Erhöhung von $v_c$
- Erhöhung von f
- Erhöhung von $a_p$

## Erhöhung der Standzeit

Da die Werkzeugkosten im Durchschnitt nur 2 - 6% der Stückkosten betragen, liegt die zu erwartende Stückkostenreduzierung durch Standzeiterhöhung zumeist unter 1%.

## Vier Bearbeitungsverfahren mit nur einem Werkzeug

- Bohren ins Volle mit ebenem Bohrungsgrund
- Drehen von Innenkonturen
- Drehen von Plankonturen
- Drehen von Außenkonturen



### konventionell



### EcoCut



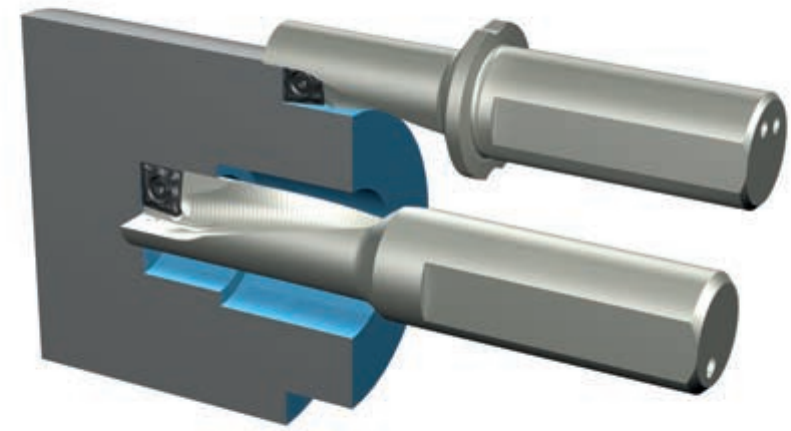
### Vorteile EcoCut

- Problemlöser bei fehlenden Werkzeugplätzen
- Weniger Programmieraufwand
- Erzeugt ebenen Bohrungsgrund
- Reduzierte Lagerhaltung an Werkzeugen und Wendeplatten. Einsparung an Werkzeuganschaffungskosten
- Kürzere Rüstzeiten. Reduzierte Voreinstellzeit



## 4 Verfahren – 1 Werkzeug

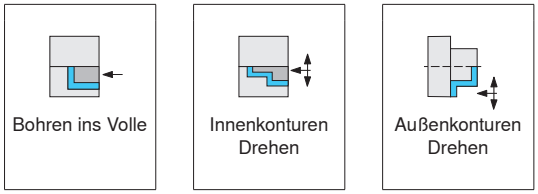
- Drehen von Plan-, Innen- und Außenkonturen sowie Bohren ins Volle mit nur einem einzigen Werkzeug
- Durch die reduzierte Anzahl an benötigten Werkzeugen sind weitere Werkzeugplätze an der Maschine verfügbar
- Im Vergleich zu konventionellen Bohrstangen erreichen Sie mit dem EcoCut größere Schnitttiefen ($a_p$)



## Werkstoffgruppen

| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ○ |
| H | |

## Einsatzmöglichkeiten




## Detailinformationen

| Durchmesser / Längenverhältins | Ø-Bereich | Schneidplatten |
|---|---|---|
| 1,5 x D<br>2,25 x D<br>3 x D<br>4 x D | Ø 8 - 32 mm<br>Ø 4 - 32 mm<br>Ø 8 - 32 mm<br>Ø 4 - 8 mm | XCET 04..<br>..<br>XCET 17.. |

# Bezeichnungssystem CERATIZIT

EcoCut Classic und EcoCut Mini



## XCET 17 05 08 F N - 27P

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

1 Plattenform

2 Freiwinkel

3 Toleranzen

4 Merkmal

5 Schneidenlänge

6 Plattenstärke

7 Eckenradius

8 Schneidkante

9 Schneidrichtung

10 Spanleitstufe

## ECC 32 R - 3.0D 17 H

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| | | | | | |

1 System

2 Nenndurchmesser [mm]

3 Schneidrichtung

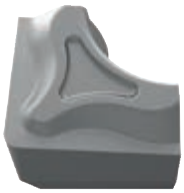
4 maximale Bohrtiefe
z.B.: 3,0 x Durchmesser

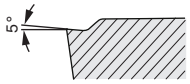
5 Wendeplattengröße

6 Werkzeughalterausführung in Densimet

## -EN

- positive Geometrie
- universell einsetzbar
- kleine bis mittlere Vorschübe






f [mm]

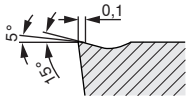
0,05 - 0,275

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP425** | **CTCP435** | **CTTP430** |
| **CTCP435** | **CTPP430** | **CTPP430** |
| **CTCP425** | **CTCP435** | |
| | | |
| CTCP435 | CTPP430 | CTPP430 |
| | | |

## -M50

- positive Geometrie
- Masterfinish Schneide
- mittlere bis hohe Vorschübe





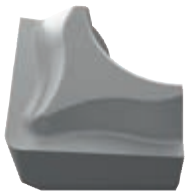

f [mm]

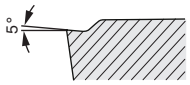
0,2 - 0,425

| Bearbeitungsbedingungen | | |
|---|---|---|
| **CTCP425** | **CTCP425** | |
| CTCP425 | | |
| **CTCP425** | CTCP425 | |
| | | |
| | | |
| | | |

## -27P

- positive Geometrie
- umfangseitig geschliffen
- scharfe Schneidkante
- geringe Aufklebeneigung
- erste Wahl für Nichteisenmetalle





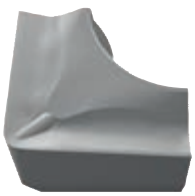

f [mm]

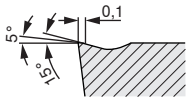
0,1 - 0,4

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| **H216T** | **H216T** | **H216T** |
| | | |
| | | |

## -27Q

- hoch positive Geometrie
- Masterfinish Schneide
- umfangseitig geschliffen
- scharfe Schneidkante
- geringe Aufklebeneigung






f [mm]

0,2 - 0,5

| Bearbeitungsbedingungen | | |
|---|---|---|
| | | |
| | | |
| | | |
| **H210T** | **H210T** | |
| | | |
| | | |

# Sortenübersicht

| Sortenbezeichnung | Normbezeichnung ISO | Normbezeichnung ANSI | Schneidstoffart | Anwendungsbereich 01 05 10 15 20 25 30 35 40 45 50 | P Stahl | M Rostfrei | K Eisenguss | N NE-Metalle | S Hochwarmfest | H Harte Werkstoffe |
|---|---|---|---|---|---|---|---|---|---|---|
| **CTCP425** COLORSTAR™ | HC-P25 | C6 | C | | ● | | | | | |
| | HC-K30 | C1 | C | | | | ● | | | |
| | HC-M20 | - | C | | | ○ | | | | |
| **CTPP430** SILVERSTAR™ | HC-P30 | C6 | P | | ● | | | | | |
| | HC-M25 | - | P | | | ● | | | | |
| | HC-S25 | - | P | | | | | | ● | |
| | HC-K30 | C1 | P | | | | ○ | | | |
| | HC-N25 | C2 | P | | | | | ○ | | |
| **CTPP435** SILVERSTAR™ | HC-P35 | C5 | P | | ● | | | | | |
| | HC-M30 | - | P | | | ● | | | | |
| | HC-S30 | - | P | | | | | | ● | |
| **CTCP435** COLORSTAR™ | HC-P35 | C6 | C | | ● | | | | | |
| | HC-K40 | C1 | C | | | | ● | | | |
| | HC-M30 | - | C | | | ○ | | | | |
| **H210T** | HW-N10 | C3 | W | | | | | ● | | |
| | HW-S10 | - | W | | | | | | ● | |
| | HW-K10 | C3 | W | | | | ○ | | | |
| **H216T** | HW-N15 | C3 | W | | | | | ● | | |
| | HW-K15 | C3 | W | | | | ● | | | |
| **CTWN425** | HW-N25 | C2 | W | | | | | ● | | |

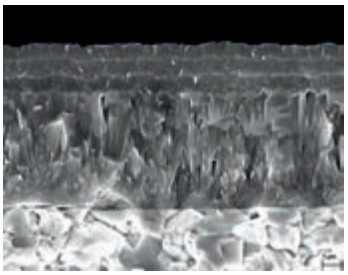
● Hauptanwendung

○ Erweiterte Anwendung

CTWN425 / CTPP435 für EcoCut Mini

## CTCP425
COLORSTAR™

HC-P25 | HC-K30 | HC-M20

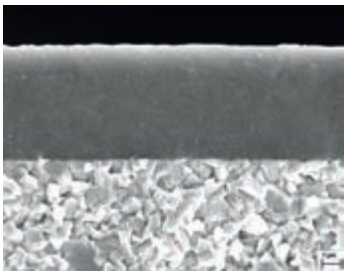


**Spezifikation:**
Zusammensetzung: Co 7,0%; Mischkarbide 8,1%; WC Rest | Korngröße: 1-2 µm | Härte: $HV_{30}$ 1450 | Schichtsystem: CVD TiCN-$Al_2O_3$ Multilayer

**Einsatzempfehlung:**
Die verschleißfeste Wahl für Stahl und Gusswerkstoffe bei stabilen Verhältnissen und hohen Schnittgeschwindigkeiten.

## CTPP430
SILVERSTAR™

HC-P30 | HC-M25 | HC-S25 | HC-K30 | HC-N25

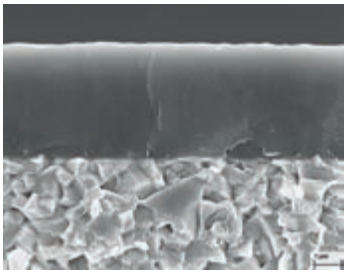


**Spezifikation:**
Zusammensetzung: Co 9,0%; Andere 0,75%; WC Rest | Korngröße: 0,85 µm | Härte: $HV_{30}$ 1590 | Schichtsystem: PVD TiAlTaN

**Einsatzempfehlung:**
Die universell einsetzbare Hochleistungssorte für Stahlwerkstoffe, austenitischen Stahl und hochwarmfeste Legierungen.

## CTPP435
SILVERSTAR™

HC-P35 | HC-M30 | HC-S30

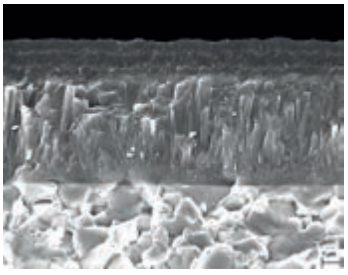


**Spezifikation:**
Zusammensetzung: Co 10,3%; Andere 1,2%; WC Rest | Korngröße: 0,7 µm | Härte: $HV_{30}$ 1600 | Schichtsystem: PVD TiAlTaN

**Einsatzempfehlung:**
Die universell einsetzbare Hochleistungssorte für Stahlwerkstoffe, austenitischen Stahl und hochwarmfeste Legierungen.

## CTCP435
COLORSTAR™

HC-P35 | HC-K40 | HC-M30



**Spezifikation:**
Zusammensetzung: Co 9,6%; Mischkarbide 7,8%; Andere 0,4%; WC Rest | Korngröße: 1-2 µm | Härte: $HV_{30}$ 1400 | Schichtsystem: CVD TiCN-$Al_2O_3$ Multilayer

**Einsatzempfehlung:**
Die zuverlässige Wahl für Stahl- und Gusswerkstoffe bei instabilen Verhältnissen.

CTWN425 / CTPP435 für EcoCut Mini

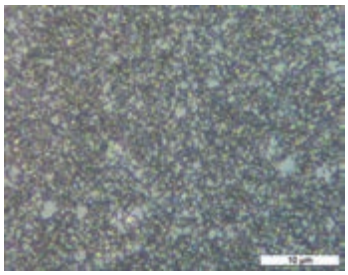
# Sortenbeschreibung



## H210T

HW-N10 | HW-S10 | HW-K10

● ● ○



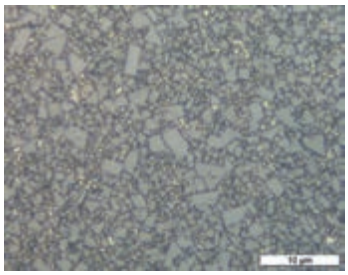
**Spezifikation:**
Zusammensetzung: Co 6,0%; WC Rest | Korngröße: 0,8 µm | Härte: $HV_{30}$ 1850

**Einsatzempfehlung:**
Die verschleißfeste, unbeschichtete Hartmetallsorte für die Bearbeitung von Aluminium und anderen Nichteisenmetallen.

## H216T

HW-N15 | HW-K15

● ●



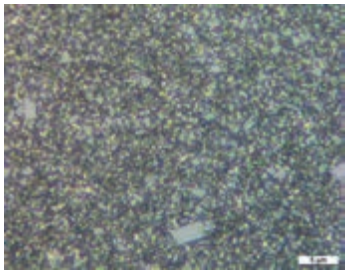
**Spezifikation:**
Zusammensetzung: Co 6,0%; WC Rest | Korngröße: 1 µm | Härte: $HV_{30}$ 1630

**Einsatzempfehlung:**
Die unbeschichtete Hartmetallsorte für die Bearbeitung von Aluminium und anderen Nichteisenmetallen.

## CTWN425

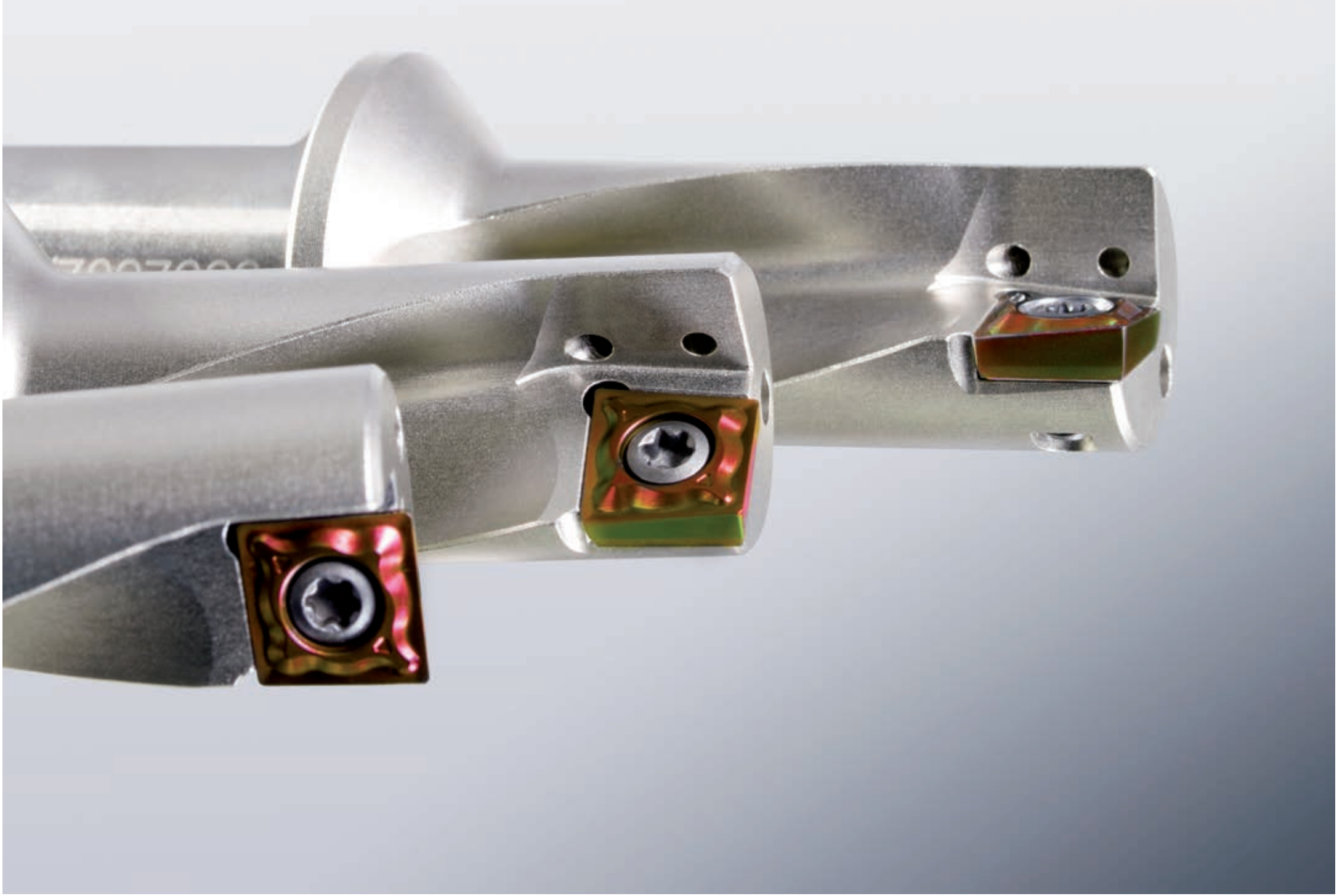
HW-N25

●



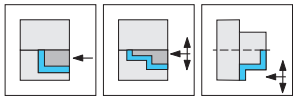
**Spezifikation:**
Zusammensetzung: Co 10,3%; Andere 1,2%; WC Rest | Korngröße: 0,7 µm (Feinstkornsorte) | Härte: $HV_{30}$ 1600

**Einsatzempfehlung:**
Die unbeschichtete Hartmetallsorte für die Bearbeitung von Aluminium und anderen Nichteisenmetallen.

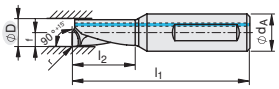


# EcoCut Mini

ECM..



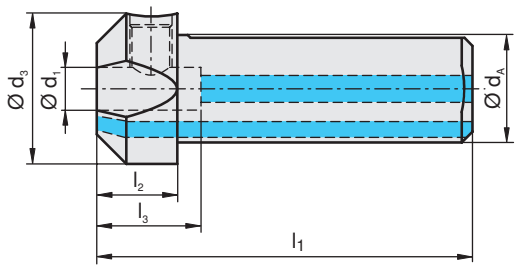
| | | | CTPP435 | CTWN425 | RL | $D_{min}$ [mm] | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | r [mm] | f [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -27 |  | ECM 04L-2.25D-27 | | ● | L | 4 | 6 | 35 | 9 | 0,2 | 2 |
| | | ECM 04L-4.00D-27 | | ● | L | 4 | 6 | 41 | 16 | 0,2 | 2 |
| | | ECM 04R-2.25D-27 | | ● | R | 4 | 6 | 35 | 9 | 0,2 | 2 |
| | | ECM 04R-4.00D-27 | | ● | R | 4 | 6 | 41 | 16 | 0,2 | 2 |
| | | ECM 05L-2.25D-27 | | ● | L | 5 | 6 | 37 | 11,25 | 0,2 | 2,5 |
| | | ECM 05L-4.00D-27 | | ● | L | 5 | 6 | 45 | 20 | 0,2 | 2,5 |
| | | ECM 05R-2.25D-27 | | ● | R | 5 | 6 | 37 | 11,25 | 0,2 | 2,5 |
| | | ECM 05R-4.00D-27 | | ● | R | 5 | 6 | 45 | 20 | 0,2 | 2,5 |
| | | ECM 06L-2.25D-27 | | ● | L | 6 | 8 | 38 | 13,5 | 0,2 | 3 |
| | | ECM 06L-4.00D-27 | | ● | L | 6 | 8 | 49 | 24 | 0,2 | 3 |
| | | ECM 06R-2.25D-27 | | ● | R | 6 | 8 | 38 | 13,5 | 0,2 | 3 |
| | | ECM 06R-4.00D-27 | | ● | R | 6 | 8 | 49 | 24 | 0,2 | 3 |
| | | ECM 07L-2.25D-27 | | ● | L | 7 | 8 | 42 | 15,75 | 0,2 | 3,5 |
| | | ECM 07L-4.00D-27 | | ● | L | 7 | 8 | 53 | 28 | 0,2 | 3,5 |
| | | ECM 07R-2.25D-27 | | ● | R | 7 | 8 | 42 | 15,75 | 0,2 | 3,5 |
| | | ECM 07R-4.00D-27 | | ● | R | 7 | 8 | 53 | 28 | 0,2 | 3,5 |
| | | ECM 08L-2.25D-27 | | ● | L | 8 | 8 | 45 | 18 | 0,2 | 4 |
| | | ECM 08L-4.00D-27 | | ● | L | 8 | 8 | 57 | 32 | 0,2 | 4 |
| | | ECM 08R-2.25D-27 | | ● | R | 8 | 8 | 45 | 18 | 0,2 | 4 |
| | | ECM 08R-4.00D-27 | | ● | R | 8 | 8 | 57 | 32 | 0,2 | 4 |
| EN |  | ECM 04L-2.25D | ● | | L | 4 | 6 | 35 | 9 | 0,2 | 2 |
| | | ECM 04L-4.00D | ● | | L | 4 | 6 | 41 | 16 | 0,2 | 2 |
| | | ECM 04R-2.25D | ● | | R | 4 | 6 | 35 | 9 | 0,2 | 2 |
| | | ECM 04R-4.00D | ● | | R | 4 | 6 | 41 | 16 | 0,2 | 2 |
| | | ECM 05L-2.25D | ● | | L | 5 | 6 | 37 | 11,25 | 0,2 | 2,5 |
| | | ECM 05L-4.00D | ● | | L | 5 | 6 | 45 | 20 | 0,2 | 2,5 |
| | | ECM 05R-2.25D | ● | | R | 5 | 6 | 37 | 11,25 | 0,2 | 2,5 |
| | | ECM 05R-4.00D | ● | | R | 5 | 6 | 45 | 20 | 0,2 | 2,5 |
| | | ECM 06L-2.25D | ● | | L | 6 | 8 | 38 | 13,5 | 0,2 | 3 |
| | | ECM 06L-4.00D | ● | | L | 6 | 8 | 49 | 24 | 0,2 | 3 |
| | | ECM 06R-2.25D | ● | | R | 6 | 8 | 38 | 13,5 | 0,2 | 3 |
| | | ECM 06R-4.00D | ● | | R | 6 | 8 | 49 | 24 | 0,2 | 3 |
| | | ECM 07L-2.25D | ● | | L | 7 | 8 | 42 | 15,75 | 0,2 | 3,5 |
| | | ECM 07L-4.00D | ● | | L | 7 | 8 | 53 | 28 | 0,2 | 3,5 |
| | | ECM 07R-2.25D | ● | | R | 7 | 8 | 42 | 15,75 | 0,2 | 3,5 |
| | | ECM 07R-4.00D | ● | | R | 7 | 8 | 53 | 28 | 0,2 | 3,5 |
| | | ECM 08L-2.25D | ● | | L | 8 | 8 | 45 | 18 | 0,2 | 4 |
| | | ECM 08L-4.00D | ● | | L | 8 | 8 | 57 | 32 | 0,2 | 4 |
| | | ECM 08R-2.25D | ● | | R | 8 | 8 | 45 | 18 | 0,2 | 4 |
| | | ECM 08R-4.00D | ● | | R | 8 | 8 | 57 | 32 | 0,2 | 4 |
| | | | CTPP435 | CTWN425 | RL | $D_{min}$ | $d_A$ | $l_1$ | $l_2$ | r | f |




E21-E22

E23-E25






| $d_1$ [mm] | Type, Bezeichnung | L N R | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] |  |  |
|---|---|---|---|---|---|---|---|---|---|
| 6 | EC-ADX20-06 | N | 20 | 25 | 65 | 14 | 18 | ECM.. | E01 |
| 8 | EC-ADX20-08 | N | 20 | 25 | 65 | 14 | 18 | ECM.. | E01 |

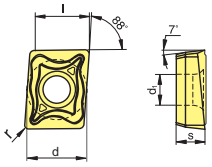
|  |  |
|---|---|
| E01 | 310720 |



# EcoCut

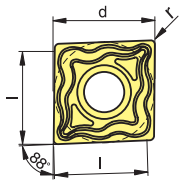
XC.. 04..

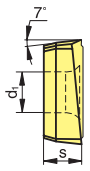
| | | | CTCP425 | CTPP430 | CTCP435 | H210T | H216T | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | | | | | | | |
| M | | | ○ | ● | ○ | | | | | | | |
| K | | | ● | ○ | ● | ○ | ● | | | | | |
| N | | | | ○ | | ● | ● | | | | | |
| S | | | | ● | | ● | | | | | | |
| H | | | | | | | | | | | | |
| -27P |  | XCET 040102FL-27P | | | | | ● | 4,50 | 4,00 | 1,80 | 0,20 | 2,10 |
| | | XCET 040102FR-27P | | | | | ● | 4,50 | 4,00 | 1,80 | 0,20 | 2,10 |
| | | XCET 040104FL-27P | | | | | ● | 4,50 | 4,00 | 1,80 | 0,40 | 2,10 |
| | | XCET 040104FR-27P | | | | | ● | 4,50 | 4,00 | 1,80 | 0,40 | 2,10 |
| -27Q |  | XCET 040102FL-27Q | | | | ● | | 4,50 | 4,00 | 1,80 | 0,20 | 2,10 |
| | | XCET 040102FR-27Q | | | | ● | | 4,50 | 4,00 | 1,80 | 0,20 | 2,10 |
| | | XCET 040104FL-27Q | | | | ● | | 4,50 | 4,00 | 1,80 | 0,40 | 2,10 |
| | | XCET 040104FR-27Q | | | | ● | | 4,50 | 4,00 | 1,80 | 0,40 | 2,10 |
| ER-EL |  | XCNT 040102EL | ● | ● | ● | | | 4,50 | 4,00 | 1,80 | 0,20 | 2,10 |
| | | XCNT 040102ER | ● | ● | ● | | | 4,50 | 4,00 | 1,80 | 0,20 | 2,10 |
| | | XCNT 040104EL | ● | ● | ● | | | 4,50 | 4,00 | 1,80 | 0,40 | 2,10 |
| | | XCNT 040104ER | ● | ● | ● | | | 4,50 | 4,00 | 1,80 | 0,40 | 2,10 |
| -M50Q |  | XCNT 040104EL-M50Q | ● | | | | | 4,50 | 4,00 | 1,80 | 0,40 | 2,10 |
| | | XCNT 040104ER-M50Q | ● | | | | | 4,50 | 4,00 | 1,80 | 0,40 | 2,10 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | CTCP425 | CTPP430 | CTCP435 | H210T | H216T | d | l | s | r | $d_1$ |




E21-E22
E18-E20

| | | | CTCP425 | CTPP430 | CTCP435 | H210T | H216T | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | P | | ● | ● | ● | | | | | | | |
| | M | | ○ | ● | ○ | | | | | | | |
| | K | | ● | ○ | ● | ○ | ● | | | | | |
| | N | | | ○ | | ● | ● | | | | | |
| | S | | | ● | | ● | | | | | | |
| | H | | | | | | | | | | | |
| -27P |  | XCET 050202FN-27P | | | | | ● | 5,80 | 5,00 | 2,10 | 0,20 | 2,25 |
| | | XCET 050204FN-27P | | | | | ● | 5,80 | 5,00 | 2,10 | 0,40 | 2,25 |
| | | XCET 060202FN-27P | | | | | ● | 6,50 | 6,00 | 2,38 | 0,20 | 2,50 |
| | | XCET 060204FN-27P | | | | | ● | 6,50 | 6,00 | 2,38 | 0,40 | 2,50 |
| | | XCET 070304FN-27P | | | | | ● | 7,60 | 7,00 | 3,18 | 0,40 | 2,80 |
| | | XCET 080304FN-27P | | | | | ● | 8,50 | 8,00 | 3,18 | 0,40 | 3,40 |
| | | XCET 09T304FN-27P | | | | | ● | 9,60 | 9,00 | 3,97 | 0,40 | 3,40 |
| | | XCET 10T304FN-27P | | | | | ● | 10,60 | 10,00 | 3,97 | 0,40 | 4,40 |
| | | XCET 10T308FN-27P | | | | | ● | 10,60 | 10,00 | 3,97 | 0,80 | 4,40 |
| | | XCET 130404FN-27P | | | | | ● | 13,50 | 12,50 | 4,76 | 0,40 | 5,30 |
| | | XCET 130408FN-27P | | | | | ● | 13,50 | 12,50 | 4,76 | 0,80 | 5,30 |
| | | XCET 170508FN-27P | | | | | ● | 17,50 | 16,00 | 5,56 | 0,80 | 5,30 |
| -27Q |  | XCET 050202FN-27Q | | | | ● | | 5,80 | 5,00 | 2,10 | 0,20 | 2,25 |
| | | XCET 050204FN-27Q | | | | ● | | 5,80 | 5,00 | 2,10 | 0,40 | 2,25 |
| | | XCET 060202FN-27Q | | | | ● | | 6,50 | 6,00 | 2,38 | 0,20 | 2,50 |
| | | XCET 060204FN-27Q | | | | ● | | 6,50 | 6,00 | 2,38 | 0,40 | 2,50 |
| | | XCET 070304FN-27Q | | | | ● | | 7,60 | 7,00 | 3,18 | 0,40 | 2,80 |
| | | XCET 080304FN-27Q | | | | ● | | 8,50 | 8,00 | 3,18 | 0,40 | 3,40 |
| | | XCET 09T304FN-27Q | | | | ● | | 9,60 | 9,00 | 3,97 | 0,40 | 3,40 |
| | | XCET 10T304FN-27Q | | | | ● | | 10,60 | 10,00 | 3,97 | 0,40 | 4,40 |
| | | XCET 10T308FN-27Q | | | | ● | | 10,60 | 10,00 | 3,97 | 0,80 | 4,40 |
| | | XCET 130404FN-27Q | | | | ● | | 13,50 | 12,50 | 4,76 | 0,40 | 5,30 |
| | | XCET 130408FN-27Q | | | | ● | | 13,50 | 12,50 | 4,76 | 0,80 | 5,30 |
| | | XCET 170508FN-27Q | | | | ● | | 17,50 | 16,00 | 5,56 | 0,80 | 5,30 |
| EN |  | XCNT 050202EN | ● | ● | ● | | | 5,80 | 5,00 | 2,10 | 0,20 | 2,25 |
| | | XCNT 050204EN | ● | ● | ● | | | 5,80 | 5,00 | 2,10 | 0,40 | 2,25 |
| | | XCNT 060202EN | ● | ● | ● | | | 6,50 | 6,00 | 2,38 | 0,20 | 2,50 |
| | | XCNT 060204EN | ● | ● | ● | | | 6,50 | 6,00 | 2,38 | 0,40 | 2,50 |
| | | XCNT 070304EN | ● | ● | ● | | | 7,60 | 7,00 | 3,18 | 0,40 | 2,80 |
| | | XCNT 080304EN | ● | ● | ● | | | 8,50 | 8,00 | 3,18 | 0,40 | 3,40 |
| | | XCNT 09T304EN | ● | ● | ● | | | 9,60 | 9,00 | 3,97 | 0,40 | 3,40 |
| | | XCNT 10T304EN | ● | ● | ● | | | 10,60 | 10,00 | 3,97 | 0,40 | 4,40 |
| | | XCNT 10T308EN | ● | ● | ● | | | 10,60 | 10,00 | 3,97 | 0,80 | 4,40 |
| | | XCNT 130404EN | ● | ● | ● | | | 13,50 | 12,50 | 4,76 | 0,40 | 5,30 |
| | | XCNT 130408EN | ● | ● | ● | | | 13,50 | 12,50 | 4,76 | 0,80 | 5,30 |
| | | XCNT 170508EN | ● | ● | ● | | | 17,50 | 16,00 | 5,56 | 0,80 | 5,30 |
| | | | CTCP425 | CTPP430 | CTCP435 | H210T | H216T | d | l | s | r | $d_1$ |



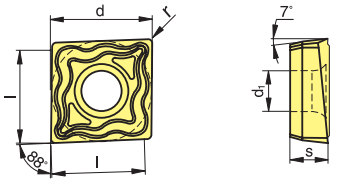

E21-E22

E18-E20

# EcoCut

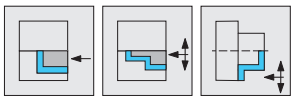
XC..

| | | CTCP425 | CTPP430 | CTCP435 | H210T | H216T | d [mm] | l [mm] | s [mm] | r [mm] | $d_1$ [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| -M50Q |  | XCNT 050204EN-M50Q | ● | | | | | 5,80 | 5,00 | 2,10 | 0,40 | 2,25 |
| | | XCNT 060204EN-M50Q | ● | | | | | 6,50 | 6,00 | 2,38 | 0,40 | 2,50 |
| | | XCNT 070304EN-M50Q | ● | | | | | 7,60 | 7,00 | 3,18 | 0,40 | 2,80 |
| | | XCNT 080304EN-M50Q | ● | | | | | 8,50 | 8,00 | 3,18 | 0,40 | 3,40 |
| | | XCNT 09T304EN-M50Q | ● | | | | | 9,60 | 9,00 | 3,97 | 0,40 | 3,40 |
| | | XCNT 10T304EN-M50Q | ● | | | | | 10,60 | 10,00 | 3,97 | 0,40 | 4,40 |
| | | XCNT 10T308EN-M50Q | ● | | | | | 10,60 | 10,00 | 3,97 | 0,80 | 4,40 |
| | | XCNT 130404EN-M50Q | ● | | | | | 13,50 | 12,50 | 4,76 | 0,40 | 5,30 |
| | | XCNT 130408EN-M50Q | ● | | | | | 13,50 | 12,50 | 4,76 | 0,80 | 5,30 |
| | | XCNT 170508EN-M50Q | ● | | | | | 17,50 | 16,00 | 5,56 | 0,80 | 5,30 |
| | | | CTCP425 | CTPP430 | CTCP435 | H210T | H216T | d | l | s | r | $d_1$ |

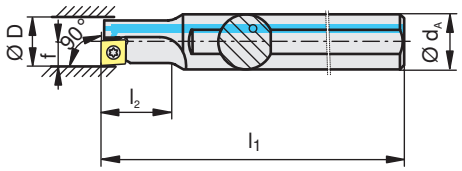



E21-E22

E18-E20







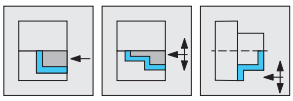

| $D_{min}$ [mm] | Type, Bezeichnung | LNR | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 8 | ECC 08L-1.5D 04 | L | 12 | 80 | 12 | 4 | 0,4 | XC.. 0401.. | E01 |
| 8 | ECC 08R-1.5D 04 | R | 12 | 80 | 12 | 4 | 0,4 | XC.. 0401.. | E01 |
| 10 | ECC 10L-1.5D 05 | L | 12 | 90 | 15 | 5 | 0,7 | XC.. 0502.. | E02 |
| 10 | ECC 10R-1.5D 05 | R | 12 | 90 | 15 | 5 | 0,7 | XC.. 0502.. | E02 |
| 12 | ECC 12L-1.5D 06 | L | 16 | 100 | 18 | 6 | 1,0 | XC.. 0602.. | E03 |
| 12 | ECC 12R-1.5D 06 | R | 16 | 100 | 18 | 6 | 1,0 | XC.. 0602.. | E03 |
| 14 | ECC 14L-1.5D 07 | L | 16 | 110 | 21 | 7 | 1,2 | XC.. 0703.. | E04 |
| 14 | ECC 14R-1.5D 07 | R | 16 | 110 | 21 | 7 | 1,2 | XC.. 0703.. | E04 |
| 16 | ECC 16L-1.5D 08 | L | 20 | 125 | 24 | 8 | 2,2 | XC.. 0803.. | E05 |
| 16 | ECC 16R-1.5D 08 | R | 20 | 125 | 24 | 8 | 2,2 | XC.. 0803.. | E05 |
| 18 | ECC 18L-1.5D 09 | L | 25 | 135 | 27 | 9 | 2,2 | XC.. 09T3.. | E05 |
| 18 | ECC 18R-1.5D 09 | R | 25 | 135 | 27 | 9 | 2,2 | XC.. 09T3.. | E05 |
| 20 | ECC 20L-1.5D 10 | L | 25 | 150 | 30 | 10 | 3,2 | XC.. 10T3.. | E06 |
| 20 | ECC 20R-1.5D 10 | R | 25 | 150 | 30 | 10 | 3,2 | XC.. 10T3.. | E06 |
| 25 | ECC 25L-1.5D 13 | L | 32 | 180 | 37,5 | 12,5 | 5,0 | XC.. 1304.. | E07 |
| 25 | ECC 25R-1.5D 13 | R | 32 | 180 | 37,5 | 12,5 | 5,0 | XC.. 1304.. | E07 |
| 32 | ECC 32L-1.5D 17 | L | 40 | 200 | 48 | 16 | 5,0 | XC.. 1705.. | E07 |
| 32 | ECC 32R-1.5D 17 | R | 40 | 200 | 48 | 16 | 5,0 | XC.. 1705.. | E07 |

| | | | |
|---|---|---|---|
| E01 | 11807484 | | 11843205 |
| E02 | 11807480 | | 11843205 |
| E03 | 11684214 | | 11488748 |
| E04 | 11684216 | | 11206195 |
| E05 | 11227305 | | 11843208 |
| E06 | 11610311 | 8095012000 | |
| E07 | 11801441 | 8095012100 | |

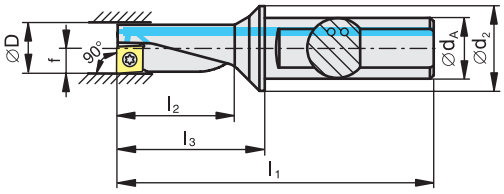
E26+E29
E38
E15-E17

# EcoCut Classic

2.25D



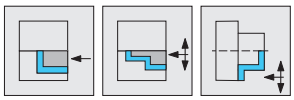




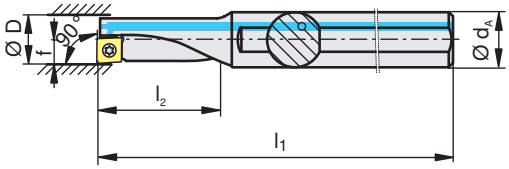

| $D_{min}$ [mm] | Type, Bezeichnung | LNR | $d_A$ [mm] | $d_2$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | f [mm] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | ECC 08L-2.25D 04 | L | 10 | 15 | 60 | 18 | 22,0 | 4 | 0,4 | XC.. 0401.. | E01 |
| 8 | ECC 08R-2.25D 04 | R | 10 | 15 | 60 | 18 | 22,0 | 4 | 0,4 | XC.. 0401.. | E01 |
| 10 | ECC 10L-2.25D 05 | L | 12 | 18 | 69,5 | 22,5 | 27,5 | 5 | 0,7 | XC.. 0502.. | E02 |
| 10 | ECC 10R-2.25D 05 | R | 12 | 18 | 69,5 | 22,5 | 27,5 | 5 | 0,7 | XC.. 0502.. | E02 |
| 12 | ECC 12L-2.25D 06 | L | 16 | 22 | 78 | 27 | 33,0 | 6 | 1,0 | XC.. 0602.. | E03 |
| 12 | ECC 12R-2.25D 06 | R | 16 | 22 | 78 | 27 | 33,0 | 6 | 1,0 | XC.. 0602.. | E03 |
| 14 | ECC 14L-2.25D 07 | L | 16 | 23 | 83,5 | 31,5 | 38,5 | 7 | 1,2 | XC.. 0703.. | E04 |
| 14 | ECC 14R-2.25D 07 | R | 16 | 23 | 83,5 | 31,5 | 38,5 | 7 | 1,2 | XC.. 0703.. | E04 |
| 16 | ECC 16L-2.25D 08 | L | 20 | 28 | 94 | 36 | 44,0 | 8 | 2,2 | XC.. 0803.. | E05 |
| 16 | ECC 16R-2.25D 08 | R | 20 | 28 | 94 | 36 | 44,0 | 8 | 2,2 | XC.. 0803.. | E05 |
| 18 | ECC 18L-2.25D 09 | L | 25 | 36 | 109,5 | 40,5 | 53,5 | 9 | 2,2 | XC.. 09T3.. | E05 |
| 18 | ECC 18R-2.25D 09 | R | 25 | 36 | 109,5 | 40,5 | 53,5 | 9 | 2,2 | XC.. 09T3.. | E05 |
| 20 | ECC 20L-2.25D 10 | L | 25 | 35 | 111 | 45 | 55,0 | 10 | 3,2 | XC.. 10T3.. | E06 |
| 20 | ECC 20R-2.25D 10 | R | 25 | 35 | 111 | 45 | 55,0 | 10 | 3,2 | XC.. 10T3.. | E06 |
| 25 | ECC 25L-2.25D 13 | L | 32 | 44 | 129 | 56,5 | 69,0 | 12,5 | 5,0 | XC.. 1304.. | E07 |
| 25 | ECC 25R-2.25D 13 | R | 32 | 44 | 129 | 56,5 | 69,0 | 12,5 | 5,0 | XC.. 1304.. | E07 |
| 32 | ECC 32L-2.25D 17 | L | 40 | 54 | 158 | 72 | 88,0 | 16 | 5,0 | XC.. 1705.. | E07 |
| 32 | ECC 32R-2.25D 17 | R | 40 | 54 | 158 | 72 | 88,0 | 16 | 5,0 | XC.. 1705.. | E07 |

| | | | |
|---|---|---|---|
| E01 | 11807484 | | 11843205 |
| E02 | 11807480 | | 11843205 |
| E03 | 11684214 | | 11488748 |
| E04 | 11684216 | | 11206195 |
| E05 | 11227305 | | 11843208 |
| E06 | 11610311 | 8095012000 | |
| E07 | 11801441 | 8095012100 | |

E27+E29 E38 E15-E17








| $D_{min}$ [mm] | Type, Bezeichnung | LNR | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 8 | ECC 08L-3.0D 04 H | L | 12 | 80 | 24 | 4 | 0,4 | XC.. 0401.. | E01 |
| 8 | ECC 08R-3.0D 04 H | R | 12 | 80 | 24 | 4 | 0,4 | XC.. 0401.. | E01 |
| 10 | ECC 10L-3.0D 05 H | L | 12 | 85 | 30 | 5 | 0,7 | XC.. 0502.. | E02 |
| 10 | ECC 10R-3.0D 05 H | R | 12 | 85 | 30 | 5 | 0,7 | XC.. 0502.. | E02 |
| 12 | ECC 12L-3.0D 06 H | L | 16 | 95 | 36 | 6 | 1,0 | XC.. 0602.. | E03 |
| 12 | ECC 12R-3.0D 06 H | R | 16 | 95 | 36 | 6 | 1,0 | XC.. 0602.. | E03 |
| 14 | ECC 14L-3.0D 07 H | L | 16 | 100 | 42 | 7 | 1,2 | XC.. 0703.. | E04 |
| 14 | ECC 14R-3.0D 07 H | R | 16 | 100 | 42 | 7 | 1,2 | XC.. 0703.. | E04 |
| 16 | ECC 16L-3.0D 08 H | L | 20 | 110 | 48 | 8 | 2,2 | XC.. 0803.. | E05 |
| 16 | ECC 16R-3.0D 08 H | R | 20 | 110 | 48 | 8 | 2,2 | XC.. 0803.. | E05 |
| 18 | ECC 18L-3.0D 09 H | L | 25 | 125 | 54 | 9 | 2,2 | XC.. 09T3.. | E05 |
| 18 | ECC 18R-3.0D 09 H | R | 25 | 125 | 54 | 9 | 2,2 | XC.. 09T3.. | E05 |
| 20 | ECC 20L-3.0D 10 H | L | 25 | 130 | 60 | 10 | 3,2 | XC.. 10T3.. | E06 |
| 20 | ECC 20R-3.0D 10 H | R | 25 | 130 | 60 | 10 | 3,2 | XC.. 10T3.. | E06 |
| 25 | ECC 25L-3.0D 13 H | L | 32 | 150 | 75 | 12,5 | 5,0 | XC.. 1304.. | E07 |
| 25 | ECC 25R-3.0D 13 H | R | 32 | 150 | 75 | 12,5 | 5,0 | XC.. 1304.. | E07 |
| 32 | ECC 32L-3.0D 17 H | L | 40 | 185 | 96 | 16 | 5,0 | XC.. 1705.. | E07 |
| 32 | ECC 32R-3.0D 17 H | R | 40 | 185 | 96 | 16 | 5,0 | XC.. 1705.. | E07 |

| | | | |
|---|---|---|---|
| E01 | 11807484 | | 11843205 |
| E02 | 11807480 | | 11843205 |
| E03 | 11684214 | | 11488748 |
| E04 | 11684216 | | 11206195 |
| E05 | 11227305 | | 11843208 |
| E06 | 11610311 | 8095012000 | |
| E07 | 11801441 | 8095012100 | |

E28+E29
E38
E15-E17

# Schnittdatenrichtwerte

Sorten/Werkstoff



| Werkstück-werkstoff | | Behandlungsart / Legierung | | VDI 3323 Gruppe | Härte HB |
|---|---|---|---|---|---|
| P | unlegierter Stahl | geglüht | ≤ 0,15 % C | 1 | 125 |
| | | geglüht | 0,15 % - 0,45 % C | 2 | 150 - 250 |
| | | vergütet | ≥ 0,45 % C | 3 | 300 |
| | niedriglegierter Stahl | geglüht | | 6 | 180 |
| | | vergütet | | 7 / 8 | 250 - 300 |
| | | vergütet | | 9 | 350 |
| | hochlegierter Stahl | geglüht | | 10 | 200 |
| | | vergütet | | 11 | 350 |
| | rostfreier Stahl | geglüht | ferritisch / martensitisch | 12 | 200 |
| | | vergütet | martensitisch | 13 | 325 |
| | | wärmebehandelt | ferritisch / martensitisch | 13 | 200 |
| M | rostfreier Stahl | abgeschreckt | austenitisch | 14 | 180 |
| | | abgeschreckt | ferritisch / austenitisch (Duplex) | 14 | 230 - 260 |
| | | ausgehärtet | austenitisch ausscheidungsgehärtet (PH) | 14 | 330 |
| K | Grauguss | | perlitisch / ferritisch | 15 | 180 |
| | | | perlitisch / martensitisch | 16 | 260 |
| | Grauguss mit Kugelgraphit | | ferritisch | 17 | 160 |
| | | | perlitisch | 18 | 250 |
| | Temperguss | | ferritisch | 19 | 130 |
| | | | perlitisch | 20 | 230 |
| N | Aluminium Knetlegierung | nicht aushärtbar | | 21 | 60 |
| | | aushärtbar | | 22 | 100 |
| | Aluminium Gusslegierung | nicht aushärtbar | < 12 % Si | 23 | 75 |
| | | aushärtbar | < 12 % Si | 24 | 90 |
| | | nicht aushärtbar | > 12 % Si | 25 | 130 |
| | Kupfer und Kupferlegierungen (Bronze, Messing) | | Automatenlegierung (1% Pb) | 26 | (110) |
| | | | Messing, Rotguss | 27 | 90 |
| | | | Bronze | 28 | 100 |
| | | | bleifreies Kupfer und Elektrolytkupfer | 28 | 100 |
| | nichtmetallische Werkstoffe | | Duroplast | 29 | – |
| | | | faserverstärkter Kunststoff | 29 | – |
| | | | Hartgummi | 30 | – |
| S | warmfeste Legierungen | geglüht | Fe-Basis | 31 | 200 |
| | | ausgehärtet | Fe-Basis | 32 | 280 |
| | | geglüht | Ni- oder Co-Basis | 33 | 250 |
| | | ausgehärtet | Ni- oder Co-Basis 30 - 58 HRC | 34 | (350) |
| | | gegossen | Ni- oder Co-Basis 1500 - 2200 N/mm² | 35 | (320) |
| | Titanlegierungen | | Reintitan | 36 | $R_m$ 440* |
| | | | Alpha- + Beta-Legierung | 37 | $R_m$ 1050* |
| H | gehärteter Stahl | gehärtet u. angelassen | | 38 | 55 HRC |
| | | gehärtet u. angelassen | | 39 | 60 HRC |
| | Hartguss | gegossen | | 40 | 400 |
| | gehärtetes Gusseisen | gehärtet u. angelassen | | 41 | 55 HRC |

* $R_m$ = maximale Festigkeit, gemessen in MPa

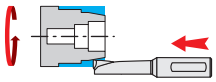
| CTCP425 | CTPP430 | CTPP435* | CTCP435 | H210T | H216T | CTWN425* |
|---|---|---|---|---|---|---|
| $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] | $v_c$ [m/min] |
| 150 - 300 | 120 - 250 | 60 - 230 | 140 - 280 | | | |
| 120 - 220 | 80 - 180 | 60 - 160 | 100 - 200 | | | |
| 100 - 200 | 60 - 160 | 50 - 130 | 80 - 180 | | | |
| 120 - 220 | 80 - 180 | 60 - 160 | 100 - 200 | | | |
| 100 - 180 | 60 - 150 | 50 - 130 | 80 - 160 | | | |
| 80 - 150 | 60 - 130 | 50 - 100 | 70 - 140 | | | |
| 110 - 190 | 80 - 170 | 60 - 140 | 100 - 180 | | | |
| 70 - 150 | 50 - 130 | 40 - 100 | 60 - 140 | | | |
| 110 - 220 | 50 - 200 | 40 - 200 | 100 - 200 | | | |
| 100 - 180 | 50 - 150 | 40 - 150 | 80 - 150 | | | |
| 120 - 220 | 50 - 160 | 40 - 200 | 100 - 200 | | | |
| 100 - 200 | 50 - 180 | 40 - 180 | 100 - 180 | | | |
| | 50 - 130 | 40 - 100 | | | | |
| | 50 - 120 | 40 - 80 | | | | |
| 130 - 280 | 120 - 200 | 100 - 180 | 120 - 250 | 140 - 200 | 120 - 160 | 80 - 140 |
| 130 - 280 | 100 - 180 | 80 - 160 | 120 - 250 | 100 - 160 | 90 - 140 | 60 - 120 |
| 120 - 280 | 120 - 200 | 100 - 180 | 110 - 250 | 160 - 200 | 130 - 170 | 90 - 150 |
| 120 - 280 | 100 - 180 | 80 - 160 | 110 - 250 | 110 - 150 | 90 - 130 | 60 - 110 |
| 110 - 280 | 90 - 160 | 100 - 200 | 100 - 250 | 160 - 220 | 140 - 200 | 100 - 180 |
| 110 - 280 | 70 - 150 | 90 - 160 | 100 - 250 | 140 - 180 | 120 - 160 | 80 - 140 |
| | 80 - 2000 | 80 - 2000 | 80 - 2000 | 120 - 3000 | 100 - 2500 | 80 - 2000 |
| | 80 - 1500 | 80 - 1500 | 80 - 1500 | 120 - 2500 | 100 - 2000 | 80 - 1500 |
| | 80 - 1500 | 80 - 1500 | 80 - 1500 | 120 - 2000 | 100 - 1500 | 80 - 1500 |
| | 80 - 1300 | 80 - 1300 | 80 - 1300 | 120 - 1800 | 100 - 1500 | 80 - 1300 |
| | 80 - 600 | 80 - 600 | 80 - 600 | 120 - 1000 | 100 - 800 | 80 - 600 |
| | 80 - 400 | 80 - 400 | 80 - 400 | 120 - 800 | 100 - 600 | 80 - 400 |
| | 80 - 400 | 80 - 400 | 80 - 400 | 120 - 800 | 100 - 600 | 80 - 400 |
| | 80 - 300 | 80 - 300 | 80 - 300 | 120 - 600 | 100 - 400 | 80 - 300 |
| | 80 - 200 | 80 - 200 | 80 - 200 | 120 - 400 | 100 - 300 | 80 - 200 |
| | 60 - 160 | 60 - 160 | 60 - 160 | 90 - 220 | 80 - 180 | 60 - 160 |
| | 50 - 140 | 50 - 140 | 50 - 140 | 80 - 200 | 60 - 150 | 50 - 140 |
| | 80 - 200 | 80 - 200 | 80 - 200 | 120 - 300 | 100 - 250 | 80 - 200 |
| | 20 - 90 | 20 - 50 | 20 - 50 | 35 - 50 | 30 - 45 | 25 - 40 |
| | 20 - 90 | 20 - 40 | 20 - 40 | 25 - 40 | 20 - 35 | 20 - 30 |
| | 20 - 90 | 15 - 20 | 15 - 20 | 25 - 40 | 20 - 35 | 20 - 30 |
| | 20 - 90 | 10 - 20 | 10 - 20 | 20 - 30 | 18 - 30 | 15 - 25 |
| | 20 - 90 | 10 - 20 | 10 - 20 | 15 - 25 | 15 - 25 | 15 - 25 |
| | 40 - 100 | 50 - 120 | 50 - 120 | 80 - 140 | 60 - 120 | 30 - 100 |
| | 30 - 90 | 30 - 50 | 30 - 50 | 40 - 100 | 30 - 80 | 25 - 60 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

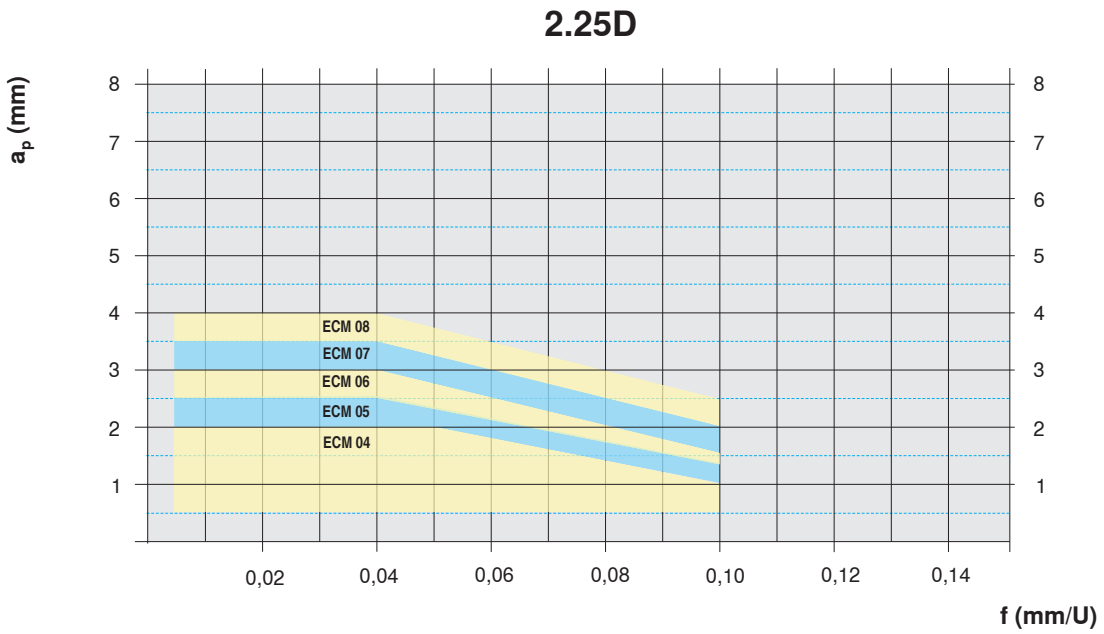
Die Schnittdaten sind unverbindliche Angaben für den Anwender. Eine Anpassung an die aktuellen Gegebenheiten ist zu empfehlen!
* EcoCut Mini

# Schnitttiefe / Vorschub

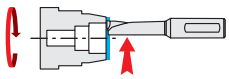
EcoCut Mini

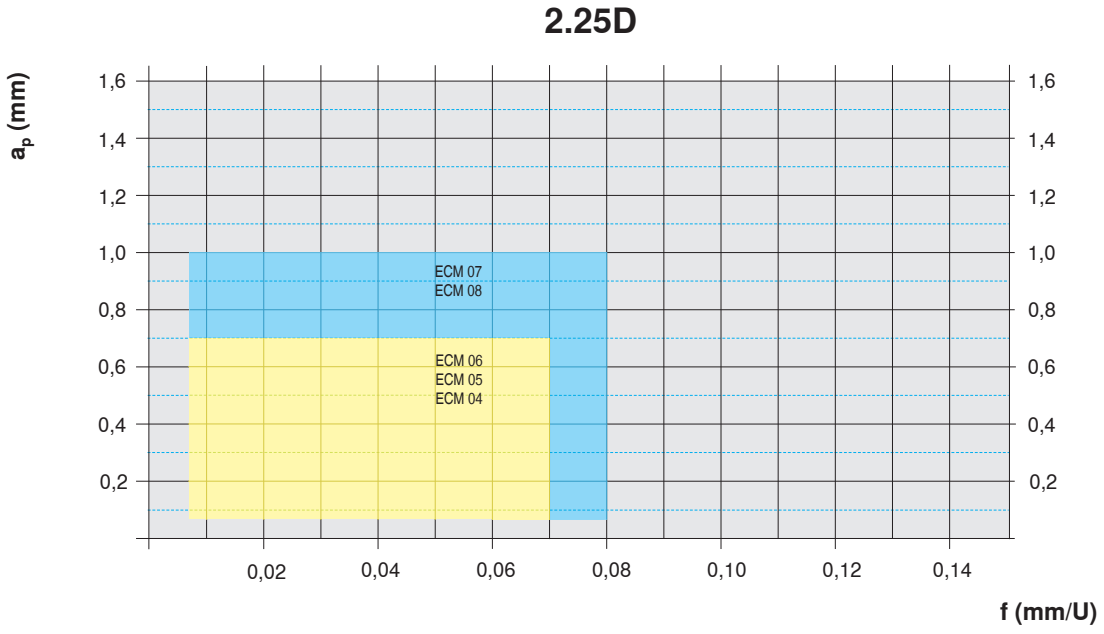
## Längsdrehen



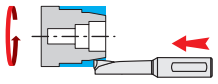



## Plandrehen

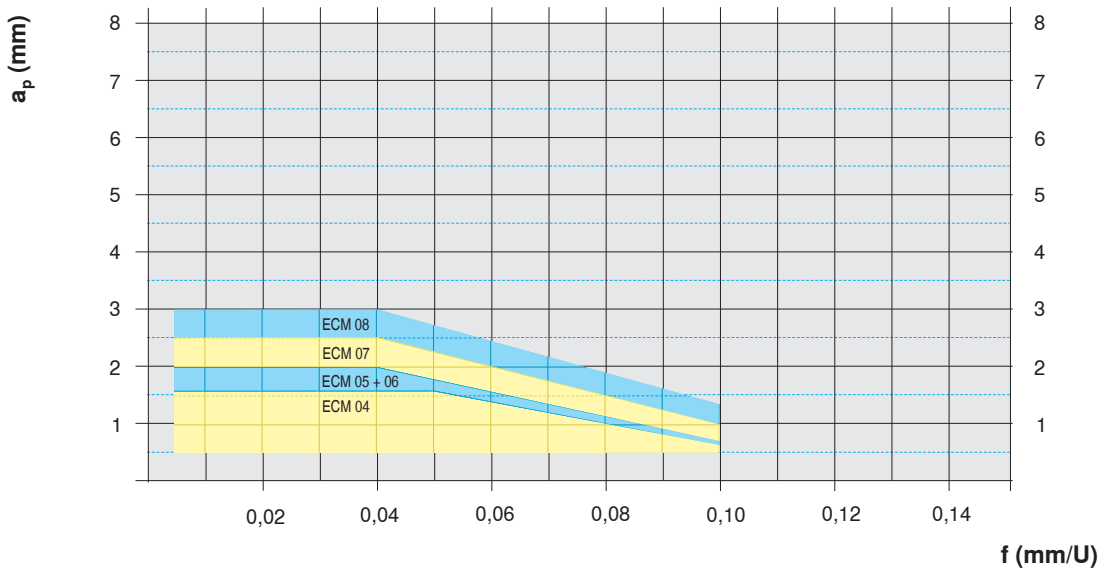




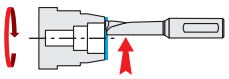
## Längsdrehen



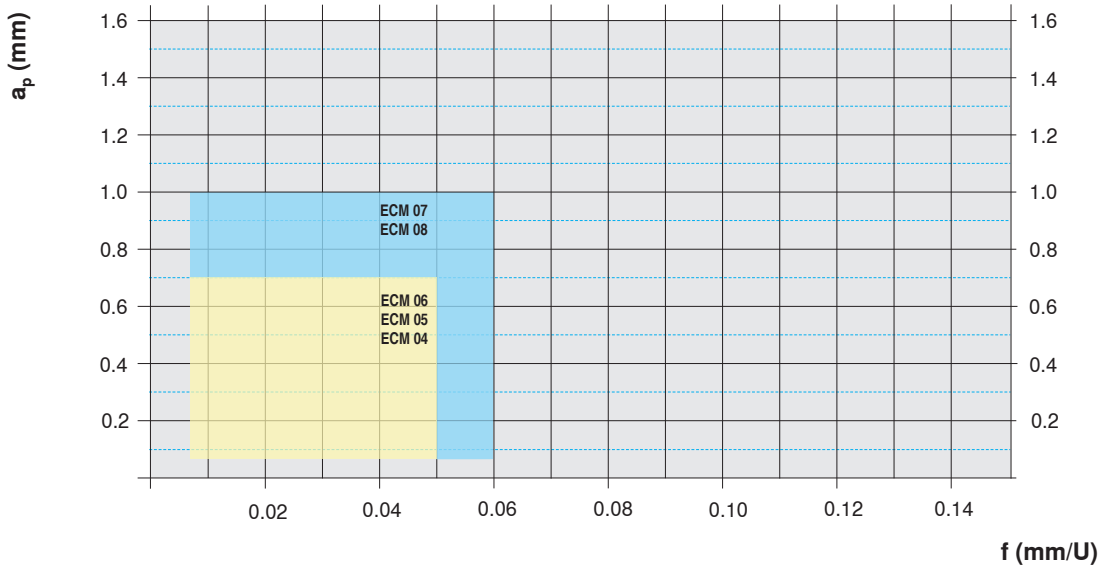
### 4.0D




## Plandrehen



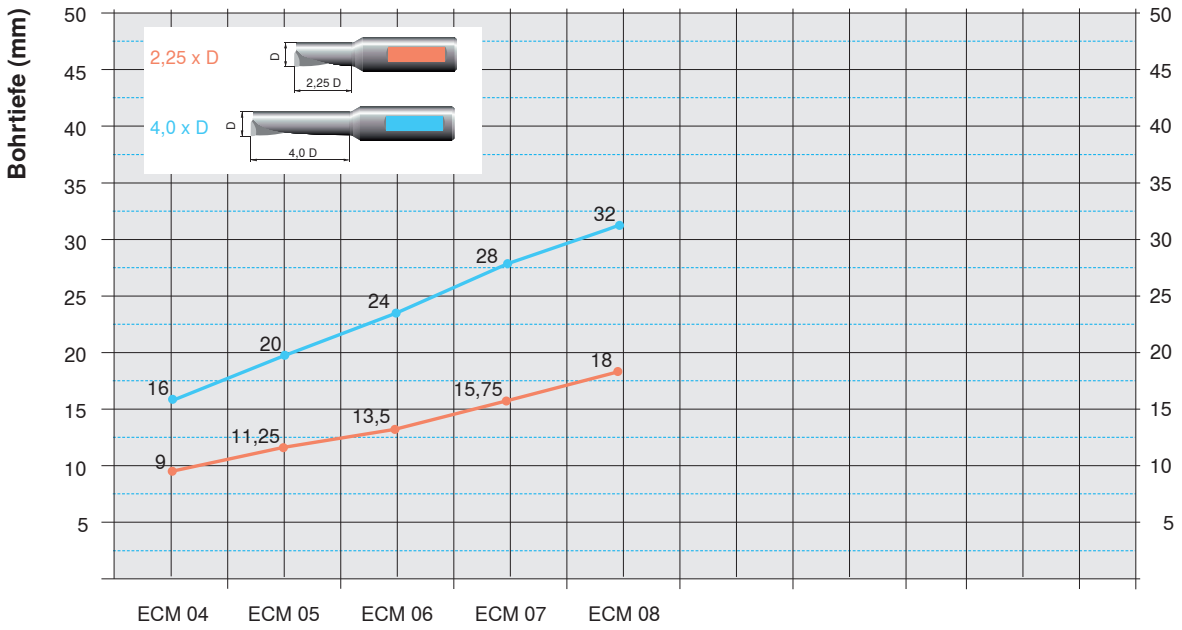
### 4.0D



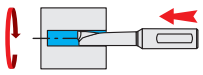
# Bohrtiefe / Vorschub

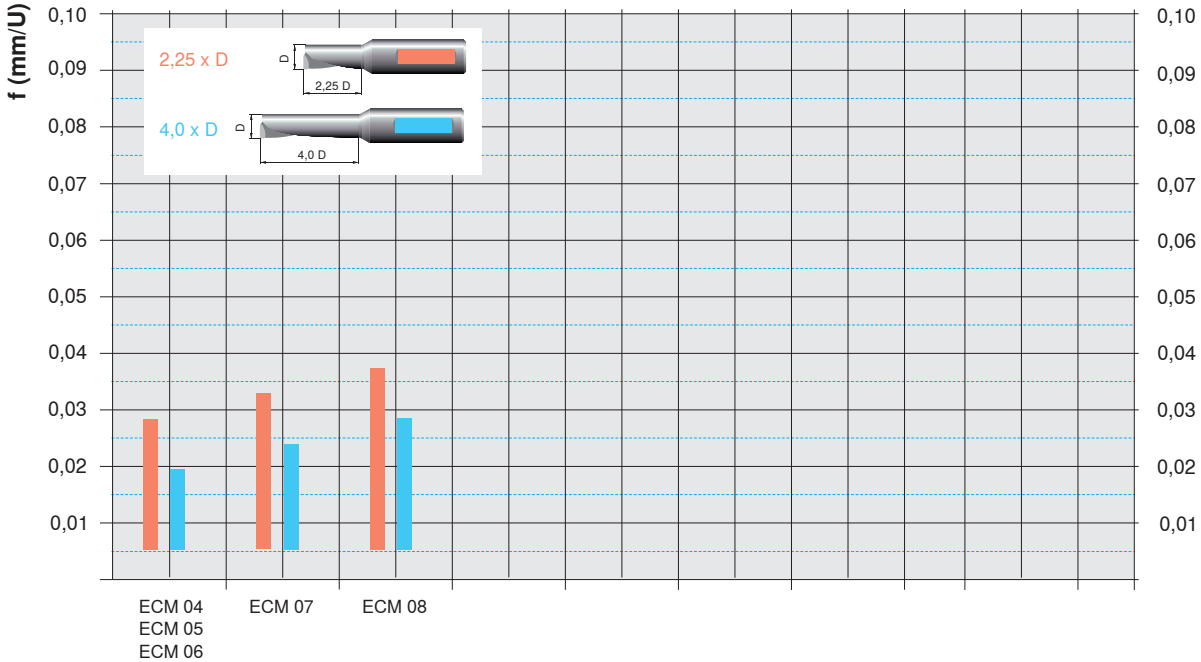
EcoCut Mini

## Bohrtiefe




## Bohrvorschub

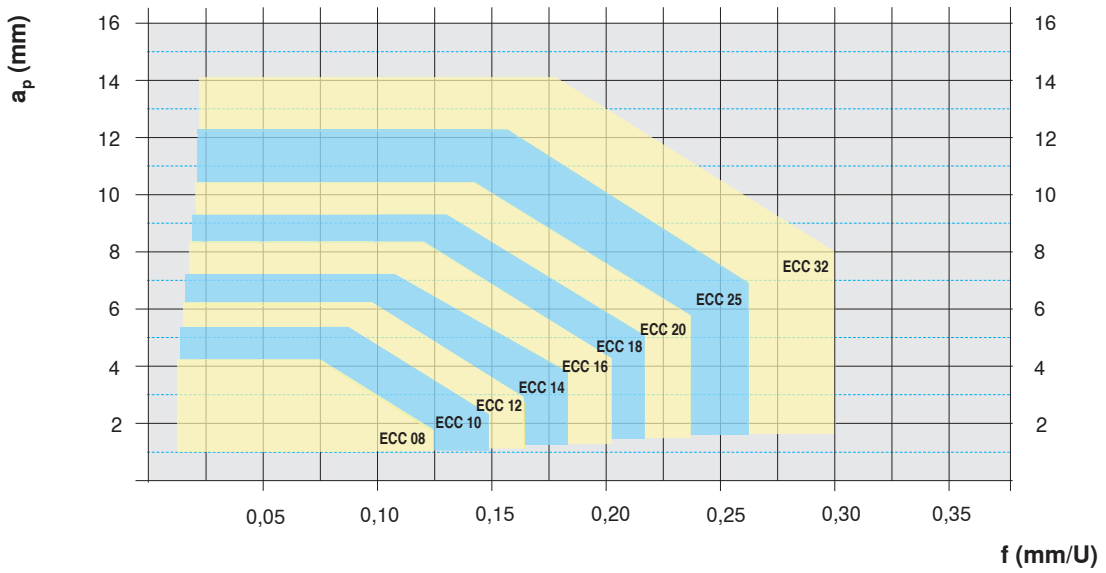




## Längsdrehen



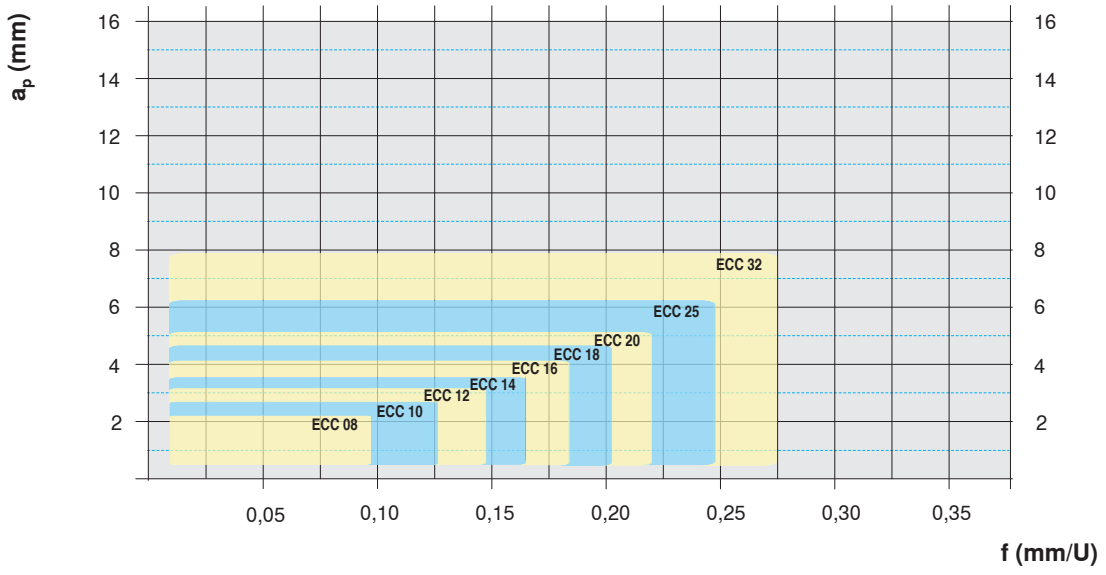
### 1.5D




## Plandrehen



### 1.5D



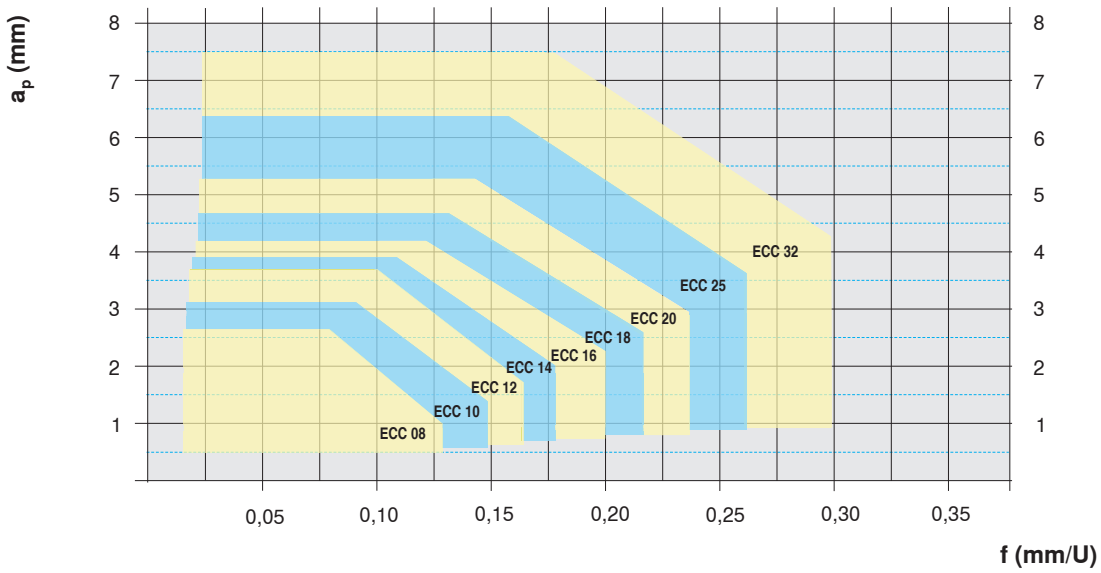
# Schnitttiefe / Vorschub

EcoCut Classic

## Längsdrehen



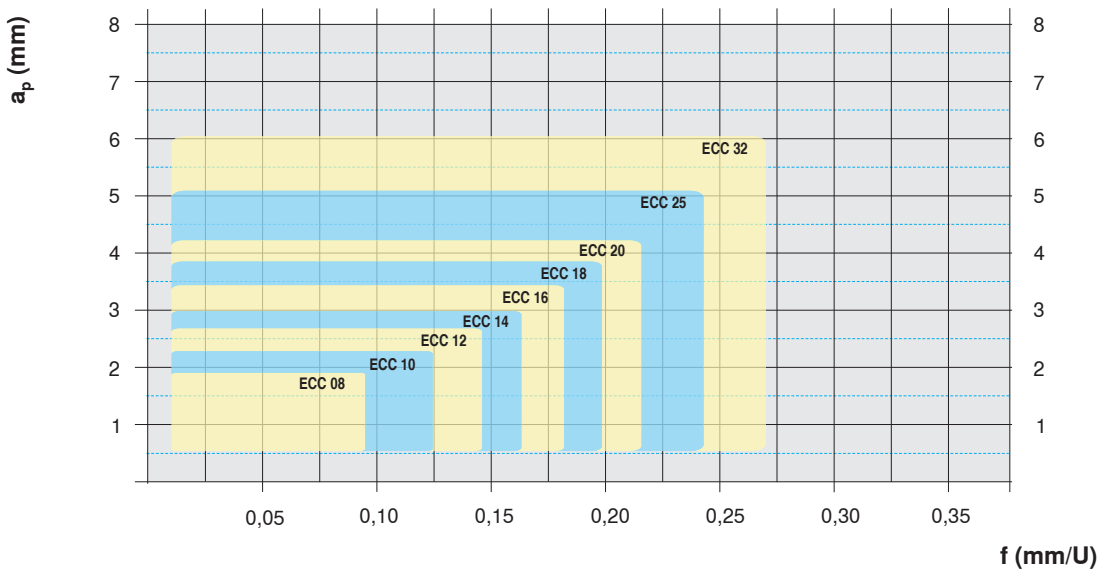
### 2.25D




## Plandrehen



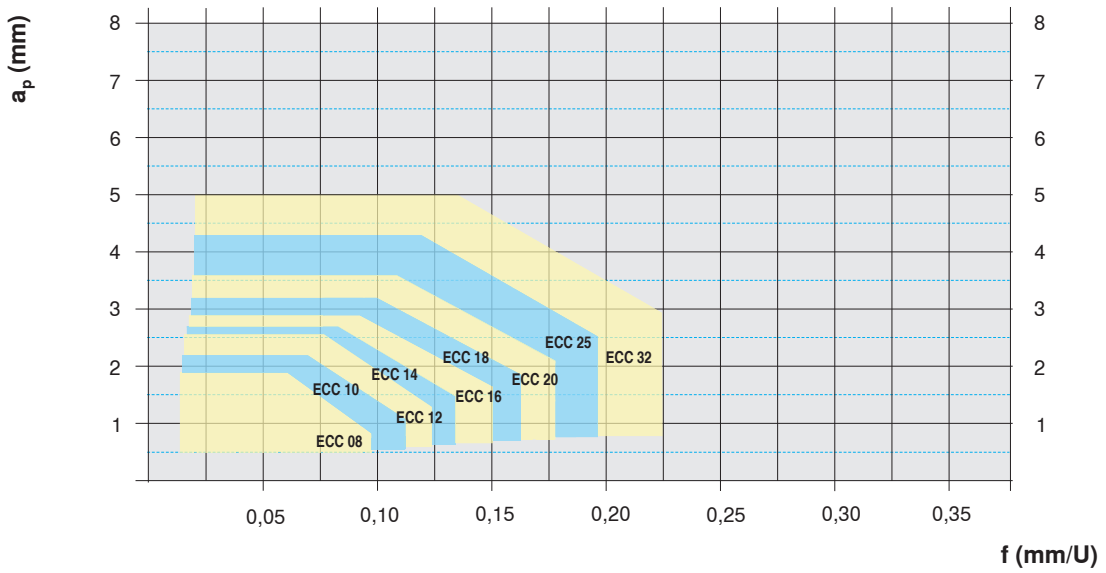
### 2.25D



## Längsdrehen



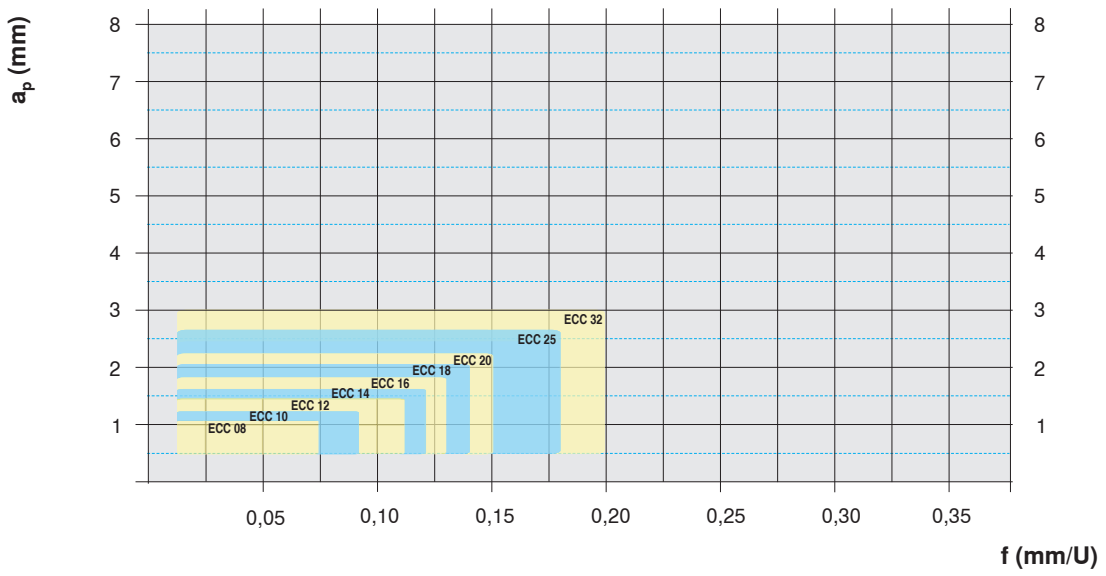
### 3.0D




## Plandrehen



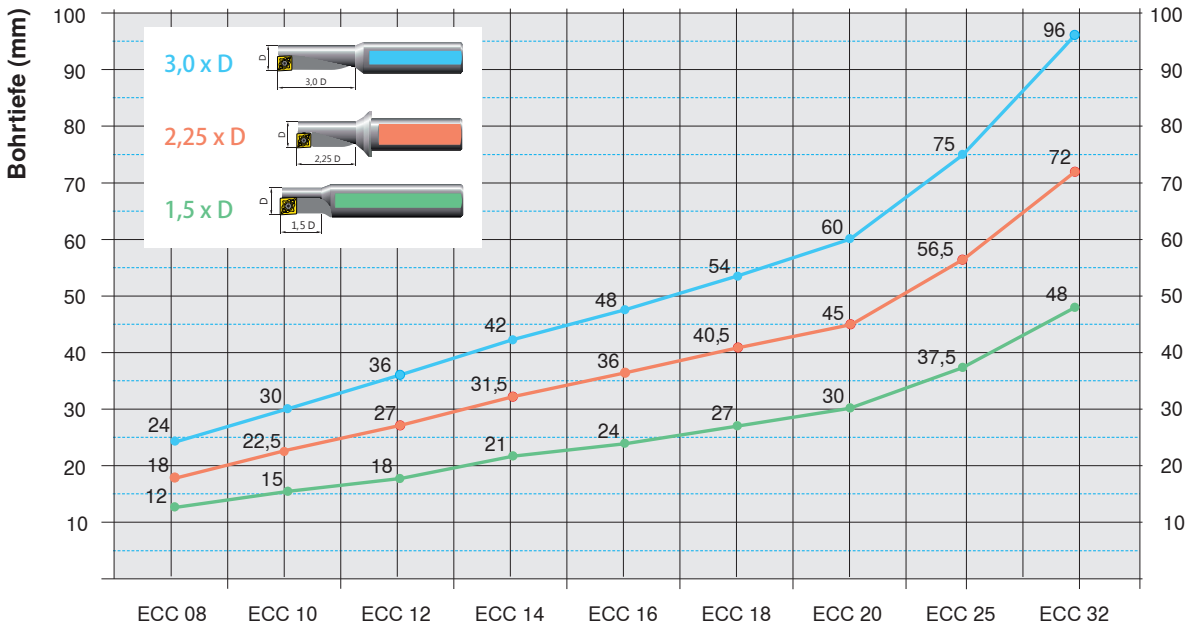
### 3.0D



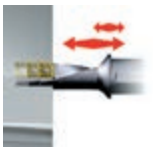
# Bohrtiefe / Vorschub

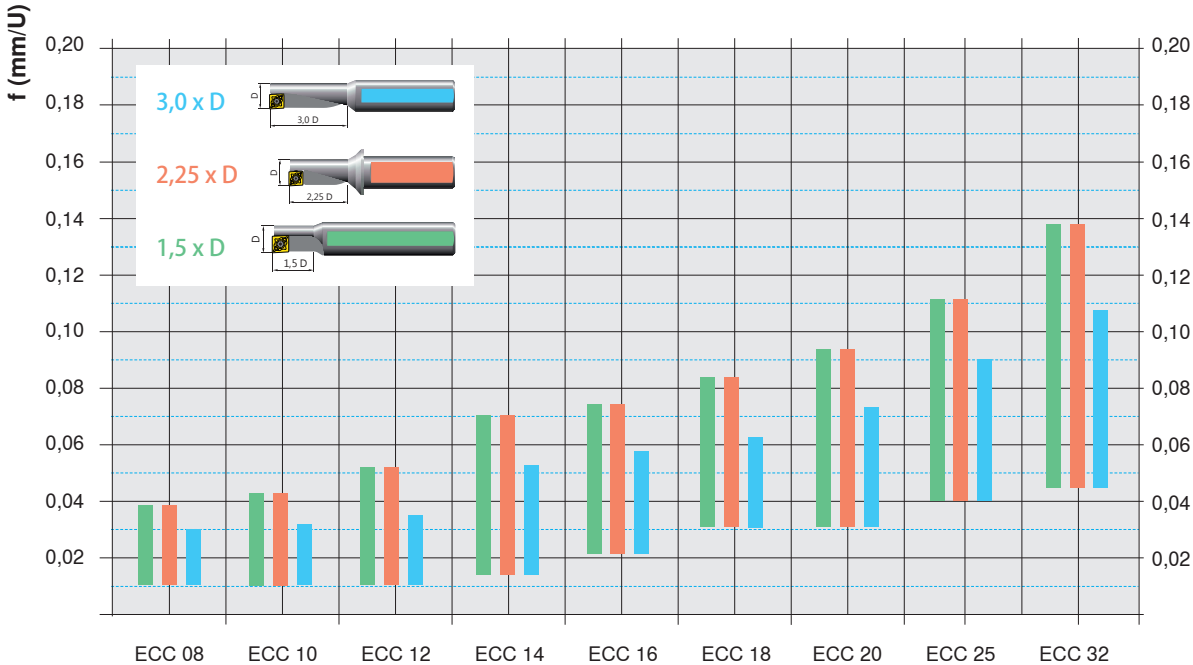
EcoCut Classic

## Bohrtiefe



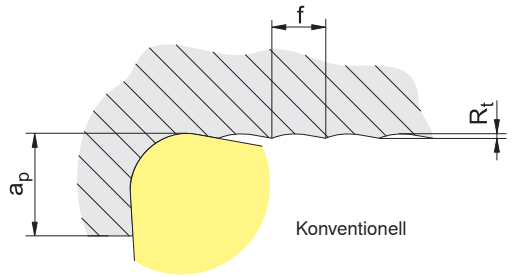

## Bohrvorschub

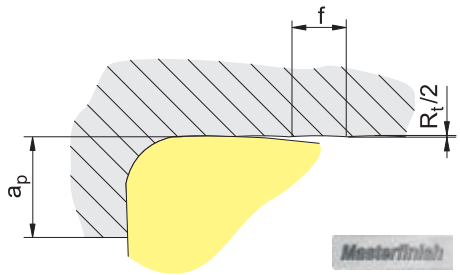




## Bessere Oberfläche

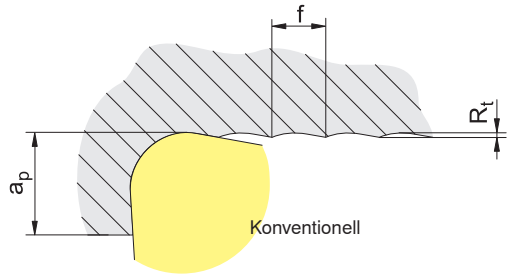
Bei gleichem Vorschub erreicht die Wendeplatte mit Masterfinsh-Schneide einen um das Vielfache besseren $R_a$-Wert gegenüber einer herkömmlichen Wendeplatte.

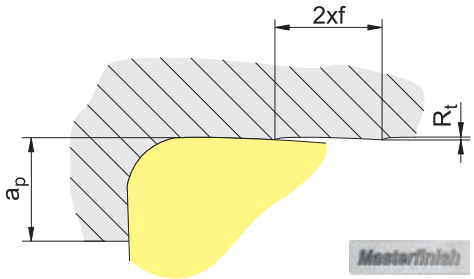


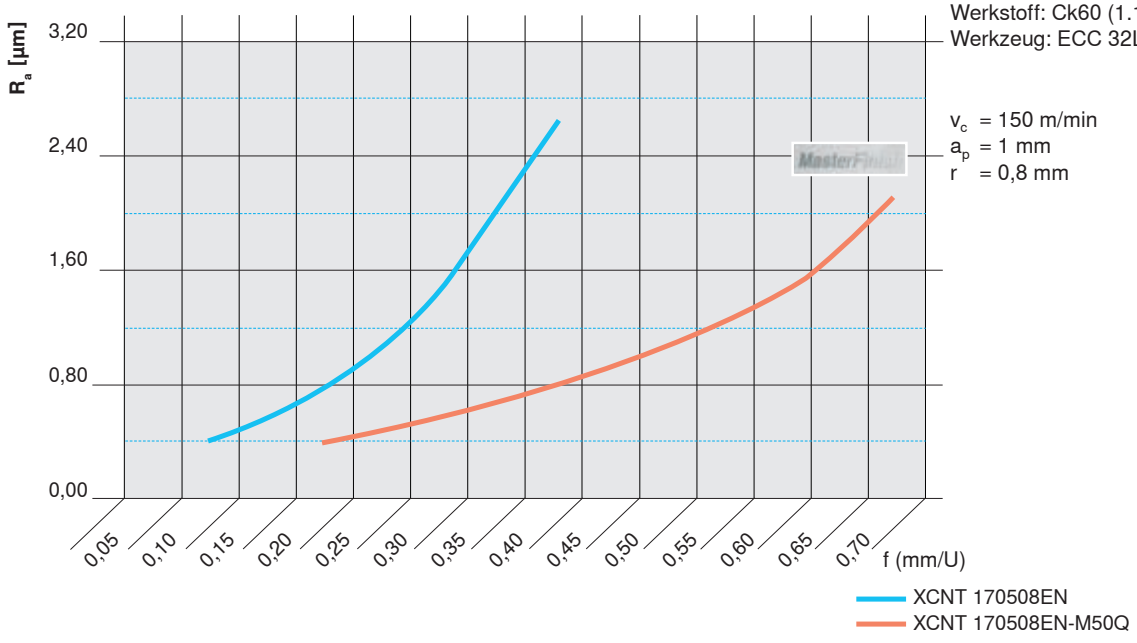




## Geringere Bearbeitungszeit

Soll der gleiche $R_a$ Wert erreicht werden wie bei einer Standardwendeplatte, so kann mit der Wendeplatte mit Masterfinish-Schneide der doppelte Vorschub gefahren werden (= geringere Stückzeiten!)



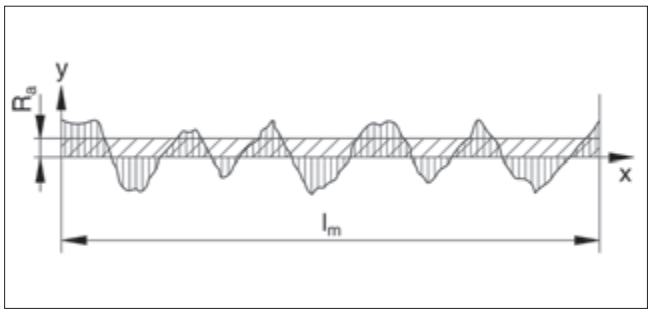



# Oberflächengüte

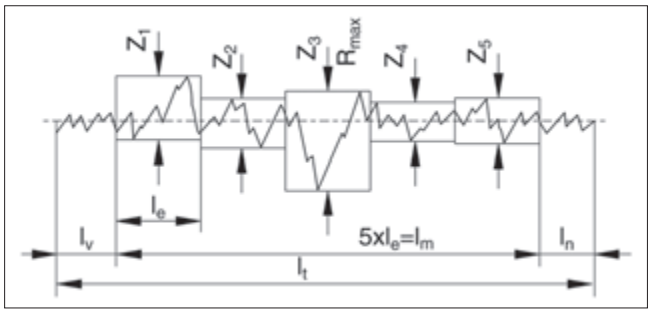
Rautiefen






## Mittenrauwert $R_a$ DIN 4768)

ist der arithmetische Mittelwert aller Beträge des Rauheitsprofils R innerhalb der Gesamtmessstrecke $l_m$.

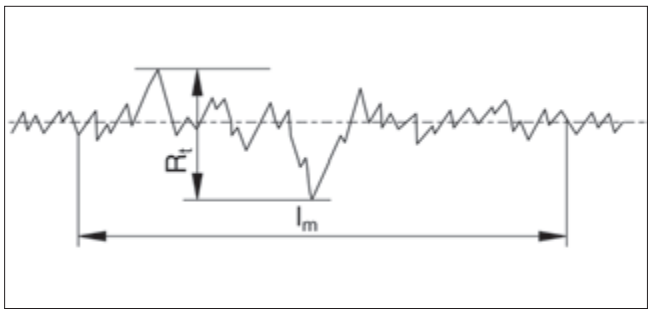



## Gemittelte Rautiefe $R_z$ (DIN 4768)

ist der Mittelwert aus den Einzelrautiefen fünf aufeinanderfolgender Einzelmessstrecken $l_e$.

## Einzelrautiefe $Z_1$ ... $Z_5$

ist der senkrechte Abstand zwischen höchstem und tiefstem Punkt des Rauheitsprofils R innerhalb einer Einzelmessstrecke $l_e$.




## Maximale Rautiefe $R_t$ (DIN 4768/1)

ist der Abstand zwischen der Linie der Erhebung und der Linie der Vertiefung innerhalb der Messstrecke (Bezugsstrecke) eines nach DIN 4768 Bl.1 gefilterten Profils.

| Oberflächenzeichen nach ISO 1302 | neu | 0,025 | 0,05 | 0,1 | 0,2 | 0,4 | 0,8 | 1,6 | 3,2 | 6,3 | 12,5 | 25 | 50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oberflächenzeichen nach ISO 3141 | bisher | ▽▽▽▽ | | | | | ▽▽▽ | | ▽▽ | | ▽ | | |
| Rauheitskennzahlen | | N 1 | N 2 | N 3 | N 4 | N 5 | N 6 | N 7 | N 8 | N 9 | N 10 | N 11 | N 12 |
| Arithmetischer Mittenrauwert | $R_a$ [µm] | 0,025 | 0,05 | 0,1 | 0,2 | 0,4 | 0,8 | 1,6 | 3,2 | 6,3 | 12,5 | 25 | 50 |
| Rautiefe | $R_z$ [µm] | 0,25 | 0,63 | 1 | 1,6 | 2,5 | 4-6,3 | 10 | 16-25 | 40 | 63 | 100 | 160 |
| Längsdrehen Plandrehen | | | | | | | | | | | | | |
| Längsdrehen Plandrehen | | | | | | | | | | | | | |
| Rund-Längsschleifen Rund-Planschleifen | | | | | | | | | | | | | |

≙ Rauheit (erreichbar durch besondere Methoden)

≙ Rauheit (erreichbar mit normaler Werkstattpraxis)

≙ Rauheit (erreichbar durch grobe Schruppbearbeitung)

| Problemstellung | | | | | | | | Abhilfe, Maßnahmen | |
|---|---|---|---|---|---|---|---|---|---|
| Verschleißtyp | | | | Werkstückprobleme | | Spanbruch | | | |
| Ausbrüche | Aufbauschneiden | Freiflächenverschleiß | Plastische Verformung | Vibrationen | Oberflächengüte | Span zu lang (Wirrspan) | Span zu kurz (Bruchspan) | | |
| | ⇧ | ⇩ | ⇩ | ⇩ ⇧ | ⇩ ⇧ | ⇩ | | Schnittgeschwindigkeit | Schnittwerte |
| ⇩ | | ≈ | ⇩ | ⇩ ⇧ | ⇩ | ⇧ | ⇩ | Vorschub | |
| ⇧ | | ⇧ | ⇧ | ⇩ | ⇧ | | | Eckenradius (größer ⇓⇑ kleiner) | Wendeschneidplatten - Auswahl |
| ⇩ | | ⇧ | ⇧ | | | | | Schneidstoff (Verschleißfestigkeit ⇓⇑ Zähigkeit) | |
| ≈ | | | | ≈ | ≈ | | | Spannung Werkzeug | Allgemeine Kriterien |
| ≈ | | | | ≈ | ≈ | | | Spannung Werkstück | |
| ≈ | | | | ≈ | ≈ | | | Auskragung | |
| ≈ | | ≈ | | ≈ | ≈ | | | Spitzenhöhe | |
| | ▢ | ▢ | ▢ | | ▢ | | | Kühlschmierstoff | |

| | | | | | |
|---|---|---|---|---|---|
| ⇧ | erhöhen, vergrößern, großer Einfluss | ⇩ | vermeiden, verkleinern, großer Einfluss | ≈ | kontrollieren, optimieren |
| ⇧ | erhöhen, vergrößern, kleiner Einfluss | ⇩ | vermeiden, verkleinern, kleiner Einfluss | ▢ | verwenden |

# Anwendungshinweise



## Einbau der Wendeschneidplatte

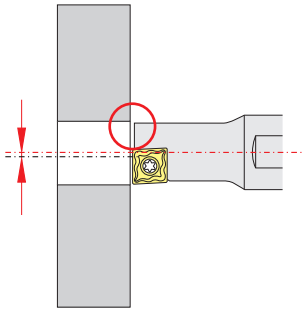
Für Werkzeuge Ø 8 mm werden rechte und linke Wendeschneidplatten benötigt. Von Ø 10-32 mm kommen neutrale Wendeschneidplatten zum Einsatz.



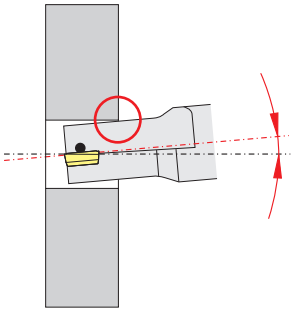
## Durchgangsbohrung

Bei Durchgangsbohrungen fällt eine **scharfkantige Scheibe** ab. Sicherheitsvorkehrungen sind erforderlich.

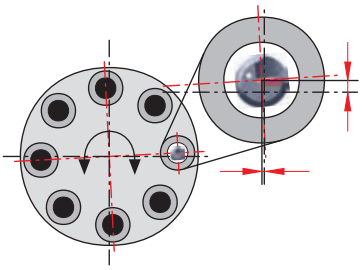
## Achsversatz der Maschine



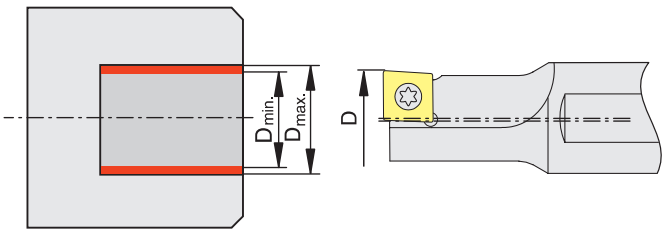
**Versatz in X-Richtung**



**Winkelfehler**



**Revolverpositionierfehler**




## Bohren aus der Mitte

Durch die spezielle konstruktive Auslegung von Werkzeug und Wendeplatte, ist es mit EcoCut-Werkzeugen möglich, außer Mitte zu bohren. Es können somit entsprechende Abweichungen zum Werkzeugnenndurchmesser erzielt werden, die Sie bitte untenstehender Tabelle entnehmen.

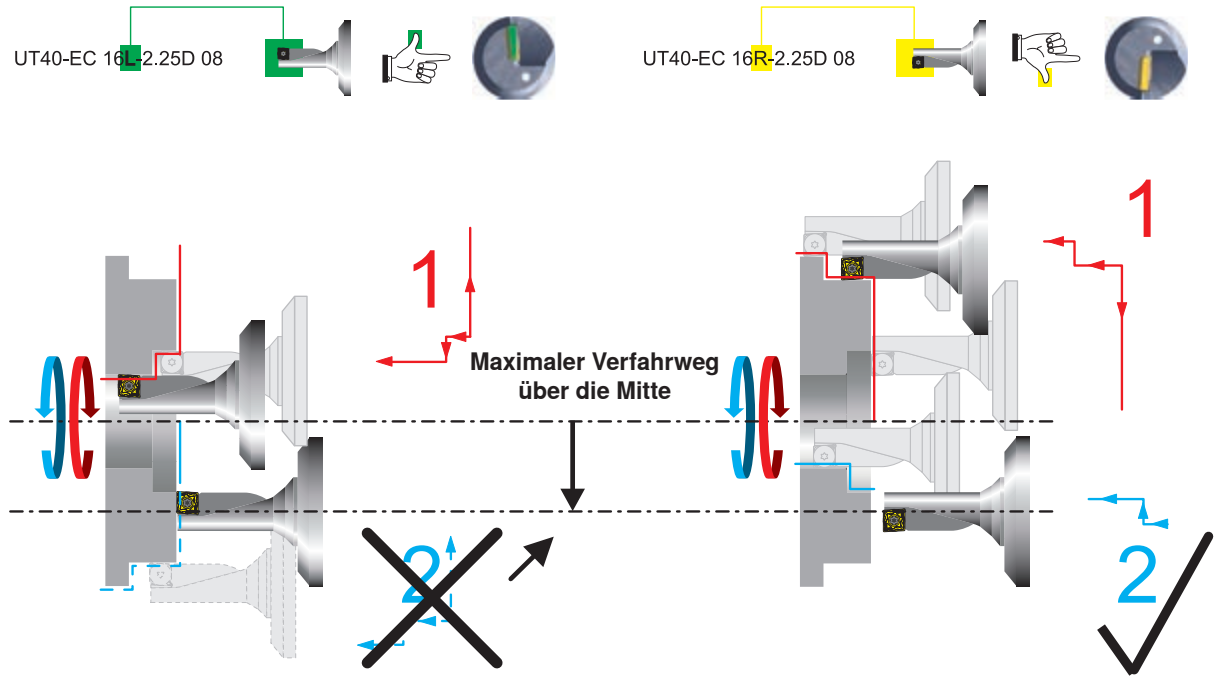
| Werkzeugtype Vollhartmetall | Werkzeugnenn - Ø | Werkstückbohr - Ø | |
|---|---|---|---|
| | D [mm] | $D_{min}$ [mm] | $D_{max}$ [mm] |
| **ECM 04 L/R - ...D** | 4 | 3,90 | 4,20 |
| **ECM 05 L/R - ...D** | 5 | 4,90 | 5,20 |
| **ECM 06 L/R - ...D** | 6 | 5,90 | 6,20 |
| **ECM 07 L/R - ...D** | 7 | 6,90 | 7,20 |
| **ECM 08 L/R - ...D** | 8 | 7,90 | 8,20 |

| Werkzeugtype | Werkzeugnenn - Ø | Werkstückbohr - Ø | |
|---|---|---|---|
| | D [mm] | $D_{min}$ [mm] | $D_{max}$ [mm] |
| **ECC 08 L/R - ... 04** | 8 | 7,85 | 8,30 |
| **ECC 10 L/R - ... 05** | 10 | 9,85 | 10,50 |
| **ECC 12 L/R - ... 06** | 12 | 11,85 | 12,50 |
| **ECC 14 L/R - ... 07** | 14 | 13,85 | 14,50 |
| **ECC 16 L/R - ... 08** | 16 | 15,85 | 16,50 |
| **ECC 18 L/R - ... 09** | 18 | 17,85 | 18,50 |
| **ECC 20 L/R - ... 10** | 20 | 19,80 | 20,50 |
| **ECC 25 L/R - ... 13** | 25 | 24,80 | 25,80 |
| **ECC 32 L/R - ... 17** | 32 | 31,80 | 33,00 |

# Anwendungshinweise

Bearbeitung über Mitte

## Bearbeitung über Mitte



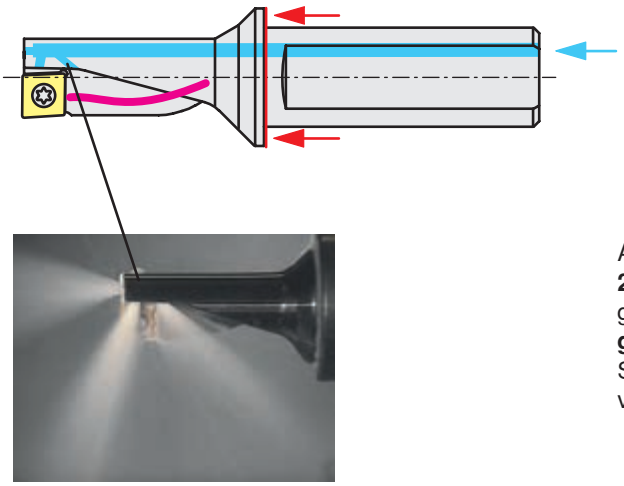

### Situation

Bei unzureichendem Verfahrweg der Maschine über die Mittelachse ist der Außendurchmesser nicht mit dem selben Werkzeug bearbeitbar.

### Lösung

Verwenden eines rechten EcoCut-Werkzeuges.

## Chipbooster/Kühlmitteldruck

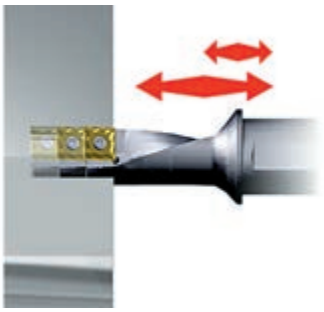


innere Kühlmittelzufuhr (Chip-Booster)

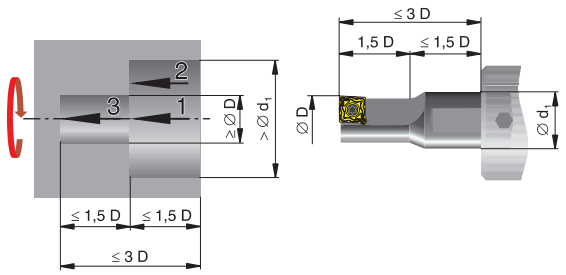
gedrallter Spanraum (Stabilität)

axiale Plananlage (Stabilität)

Als innovative Detaillösung bietet EcoCut **bei Ausführung 2.25D** eine spezielle Kühlmittelzufuhr zur besseren Ausbringung der Späne aus der Bohrung. Ein eigener, **rückwärtsgerichteter Kühlmittelstrahl** sorgt für einen verbesserten Spänetransport. Der Kühlmitteldruck muß dafür, unabhängig vom Durchmesser, 1,5 - 3 bar (optimal 5-7 bar) betragen.



Ist der notwendige Kühlmitteldruck maschinenseitig nicht vorhanden, kann es von Vorteil sein, den Bohrvorgang kurz zu unterbrechen, um die Bohrung zu entleeren.



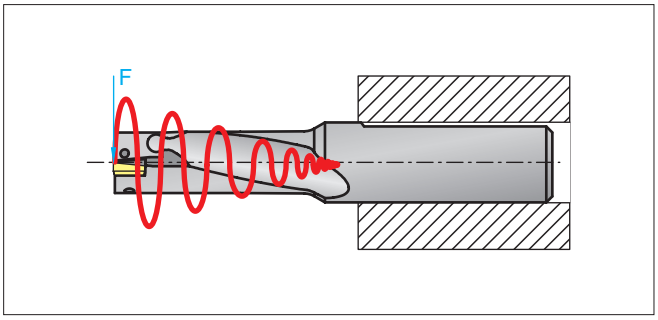

## Tiefe Bohrungen bis 3xD

Mit EcoCut-Werkzeugen EC.. 1.5D können, bei entsprechender Werkstückkontur, Bohrtiefen bis zum dreifachen des Nenndurchmessers erreicht werden (siehe Bild). Es ist dabei auf die Arbeitsabfolge 1, 2 und 3 zu achten!

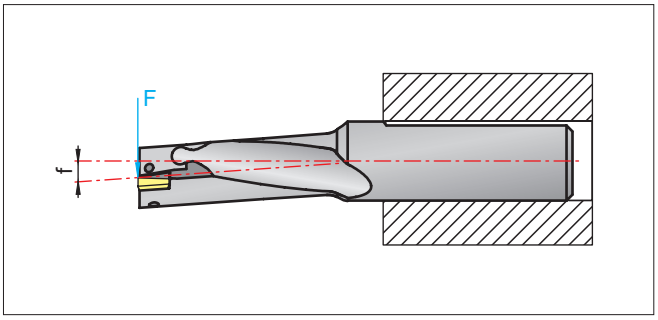
## Die Vorteile von DENSIMET gegenüber Stahl

Die neue, jetzt noch leistungsfähigere Generation unserer Eco-Cut 3.0D-Baureihe mit der neuen Bezeichnung **„ECC .. R/L-3.0D .. H"** wurde speziell für große Bohrtiefen bzw. höchste Genauigkeitsanforderungen entwickelt. Als Werkstoff dafür kommt DENSIMET, eine Plansee Wolfram-Schwermetalllegierung, zur Anwendung. Der hohe Elastizitätsmodul sowie die hohe Dichte machen diese Legierung besonders schwingungsdämpfend, was sich in der Erreichung höchster Präzision, bester Oberflächengüten und gesteigerter Werkzeugstandzeiten wiederspiegelt.

| Werkstoff | Werkzeugnenn - Ø<br>Elastizitätsmodul (N/mm²) | Dichte (g/mm³) |
|---|---|---|
| Stahl | 210 000 | 7,85 |
| **DENSIMET** | 360 000 | 17,50 |



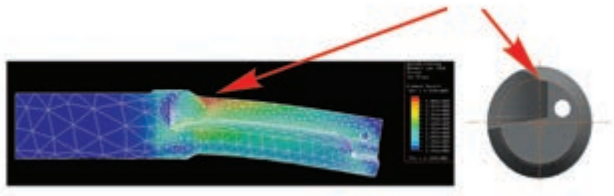

Vibrationsdämpfend




Um 40% geringere Durchbiegung als Stahl

### Das neue Spanraumdesign

Max. Spannungsspitze



Ausführung mit geradegenutetem Spanraum



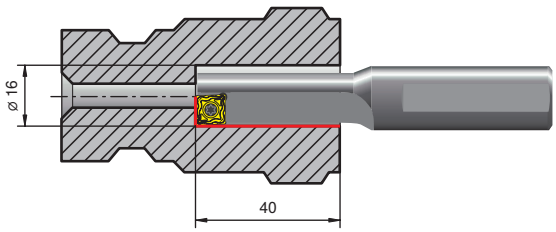
Ausführung mit gedralltem Spanraum

Bis zu 50% reduzierte Spannungen im Werkzeug durch die mit Hilfe von Finite Elemente Modellierung (FEM) optimiertem Spanraum.

| | Material | Type, Bezeichnung | Schlüsselgröße |
|---|---|---|---|
|  | 11206195 | 10002494/TORX 08IP F | T08IP |
| | 11488748 | 10007404/TORX 07IP F | T07IP |
| | 11843205 | 10014921/TORX 06IP F | T06IP |
| | 11843208 | 10014922/TORX 09IP F | T09IP |
|  | 8095012000 | SD-T15IP-80mm | T15IP |
| | 8095012100 | SD-T20IP-100mm | T20IP |
| | | | |
| | | | |

| | Material | Type, Bezeichnung | Länge [mm] | Gewindegröße | Schlüsselgröße |
|---|---|---|---|---|---|
|  | 310720 | 7897990/M8X1X8 DIN913 | 8,0 | M8 | SW4 |
| | | | | | |
| | | | | | |
| | | | | | |
|  | 11227305 | M3,0x7,0-09IP/10003007 | 7,0 | M3,0 | T09IP |
| | 11610311 | M3,5X8,6-15IP/10008749 | 8,6 | M3,5 | T15IP |
| | 11684214 | M2,2x5,0-07IP/10009244 | 5,0 | M2,2 | T07IP |
| | 11684216 | M2,5x6,0-08IP/10009243 | 6,0 | M2,5 | T08IP |
| | 11801441 | M4,5X10,5-20IP/10013040 | 10,5 | M4,5 | T20IP |
| | 11807480 | M2,0x4,3-06IP/10013332 | 4,3 | M2,0 | T06IP |
| | 11807484 | M1,8x3,6-06IP/10013338 | 3,6 | M1,8 | T06IP |

# Bearbeitungsbeispiel




## Technische Daten

| | |
|---|---|
| **Werkstück** | Hülse |
| **Material** | C45<br>ANSI 1045 |
| **Zugfestigkeit** | 730 - 900 N/mm$^2$ |
| **Werkzeug** | ECC 16L-3.0D 08 H |
| **Wendeschneidplatte** | XCNT 080304EN<br>CTCP435 |
| **Wettbewerb** | 2 Werkzeuge |

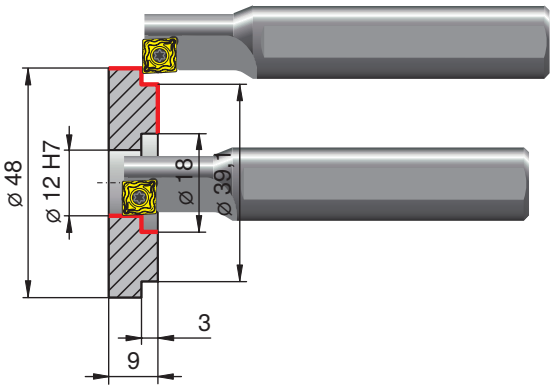
| | | Bohren | |
|---|---|---|---|
| $V_c$ | [m/min] | 176 | |
| f | [mm] | 0.06 | |
| $a_p$ | [Ø mm] | 16 | |

## Kriterium

- Tiefe Bohrung mit 90°-Schulter mit nur einem Werkzeug

## Resultat

- Um 50% verkürzte Bearbeitungszeit zur bisherigen Methode




## Technische Daten

| | |
|---|---|
| **Werkstück** | Flansch |
| **Material** | 16 MnCr5 / 1.7131<br>ANSI 5115 |
| **Zugfestigkeit** | 800 - 900 N/mm$^2$ |
| **Werkzeug** | ECC 12L-1.5D 06 |
| **Wendeschneidplatte** | XCNT 060204EN<br>CTCP435 |
| **Wettbewerb** | 3 Werkzeuge |

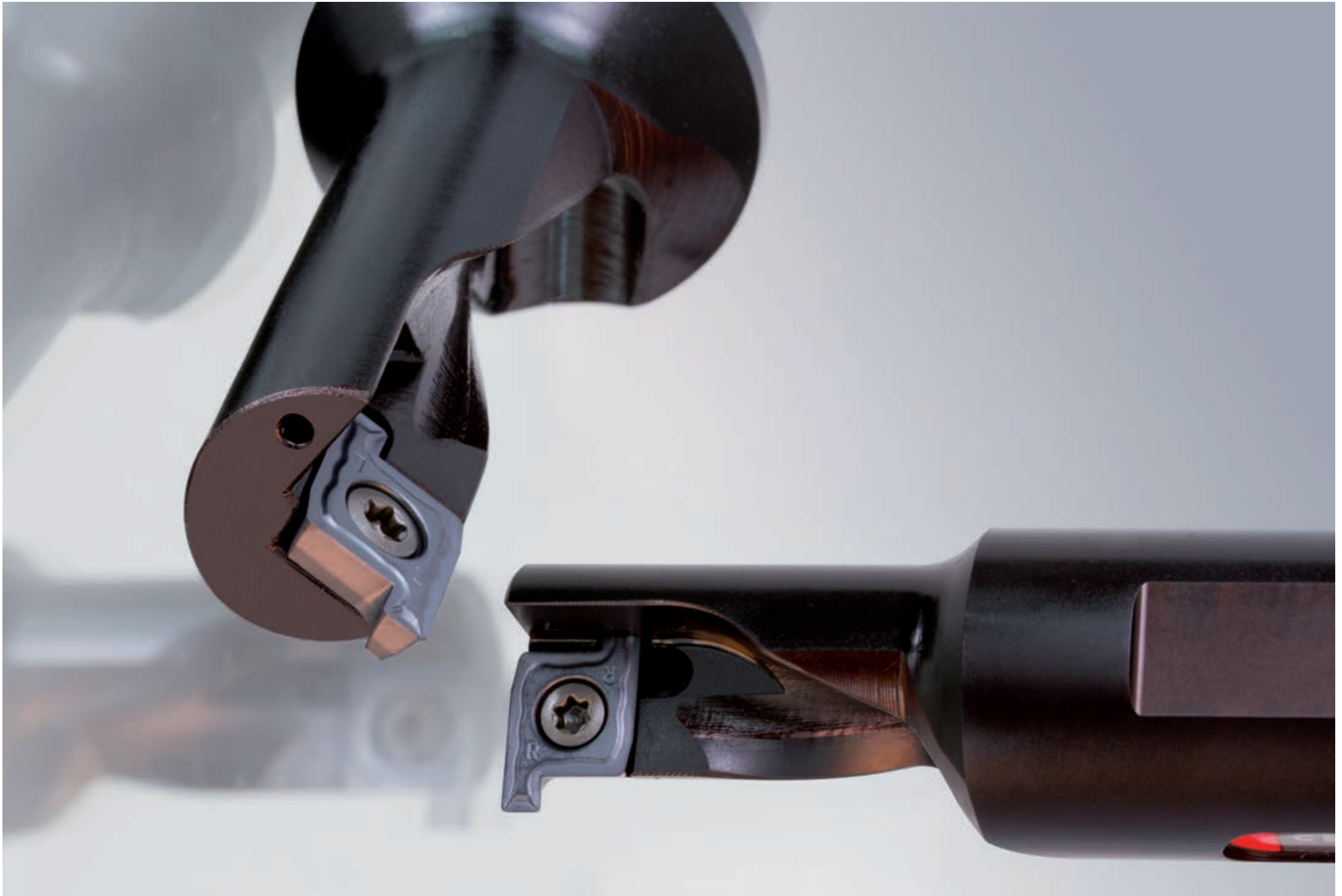
| | | Bohren | Innendrehen | Plandrehen | Außendrehen |
|---|---|---|---|---|---|
| $V_c$ | [m/min] | 150 | 150 | 200 | 150 |
| f | [mm] | 0.03 | 0.1 | 0.1 | 0.1 |

## Kriterium

- Erhöhung der Produktivität
- Einsparung von Werkzeugen im Revolver
- Reduzierung der Werkzeugkosten

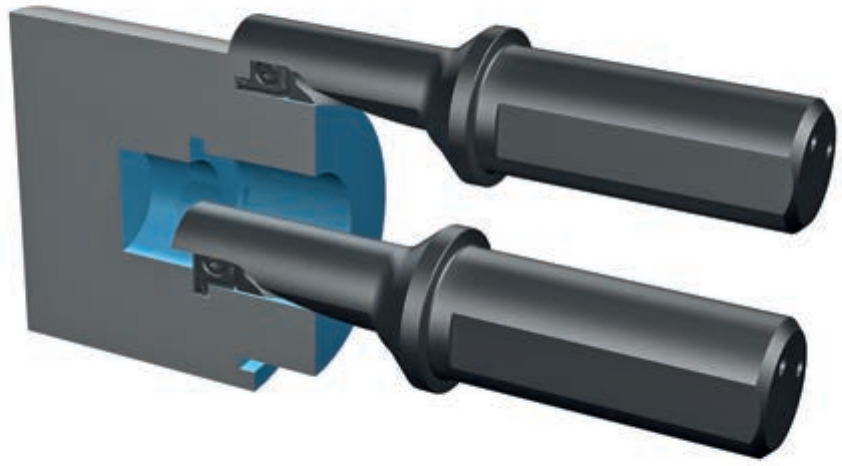
## Resultat

- Reduzierung der benötigten Werkzeuge von 3 auf 1
- Reduzierung der Bearbeitungszeit um 45%
- 2 freie Werkzeugplätze im Revolver


R
R

## Bohren, Drehen und Stechen mit einem einzigen Werkzeug

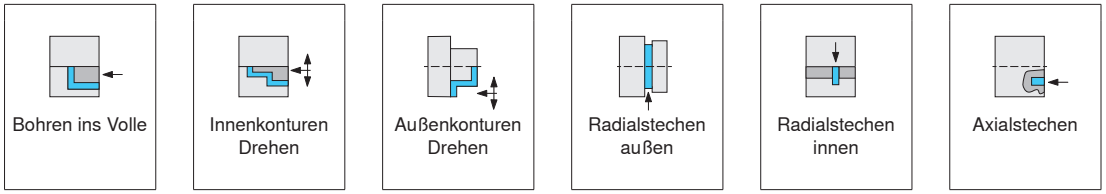
- Der ProfileMaster ist ideal für Konturen, die normalerweise aufgrund ihrer Komplexität mit mehreren Werkzeugen hergestellt werden müssen
- Es werden wertvolle Plätze an der Maschine frei und Werkzeugwechsel minimiert
- Dank des Masterfinish-Schlichtschneideneffekts erzeugt der ProfileMaster eine exzellente Oberflächengüte in kürzester Bearbeitungszeit



## Werkstoffgruppen

| | |
|---|---|
| P | ● |
| M | ● |
| K | |
| N | ○ |
| S | ● |
| H | |

## Einsatzmöglichkeiten




## Detailinformationen

| Durchmesser / Längenverhältins | Ø-Bereich | Schneidplatten |
|---|---|---|
| 1,5 x D<br>2,25 x D | Ø 10 - 32 mm | PM 10..<br>..<br>PM 32.. |

# Bezeichnungssystem CERATIZIT

## PM 25 R G 35 30 04 - M20

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|

1
ProfileMaster

2
Nenndurchmesser [mm]

3
Schneidrichtung

4
Ausführung

5
Stechbreite [$^{mm}/_{10}$]

6
Stechtiefe [$^{mm}/_{10}$]

7
Eckenradius

8
Spanleitstufe

## PM 25 R - 2.25D

| 1 | 2 | 3 | 4 |
|---|---|---|---|

1
ProfileMaster

2
Nenndurchmesser [mm]

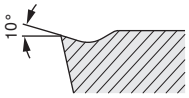
3
Schneidrichtung

4
maximale Bohrtiefe
z.B.: 3,0 x Durchmesser

## -M20

- positive Geometrie
- universell einsetzbar
- kleine bis mittlere Vorschübe






| f [mm] | Bearbeitungsbedingungen | | |
|---|---|---|---|
| | **CTC1435** | **CTC1435** | **CTP2440** |
| | **CTC1435** | **CTP2440** | **CTP2440** |
| | CTC1435 | CTC1435 | CTC1435 |
| 0,05 - 0,25 | | | |
| | CTP2440 | | |
| | | | |

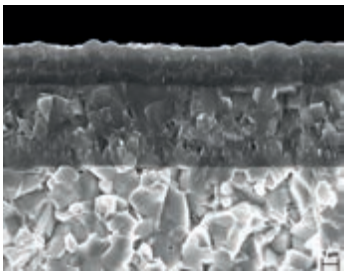
# Sortenübersicht

| Sortenbezeichnung | Normbezeichnung ISO | Normbezeichnung ANSI | Schneidstoffart | Anwendungsbereich 01 05 10 15 20 25 30 35 40 45 50 | P Stahl | M Rostfrei | K Eisenguss | N NE-Metalle | S Hochwarmfest | H Harte Werkstoffe |
|---|---|---|---|---|---|---|---|---|---|---|
| **CTC1435** | HC-P35 | C6 | C | | ● | | | | | |
| | HC-M30 | - | C | | | ○ | | | | |
| | HC-K20 | C2 | C | | | | ○ | | | |
| **CTP2440** | HC-M35 | - | P | | | ● | | | | |
| | HC-P40 | C5 | P | | ● | | | | | |
| | HC-N25 | C2 | P | | | | | ○ | | |
| | HC-S30 | - | P | | | | | | ○ | |

● Hauptanwendung

○ Erweiterte Anwendung

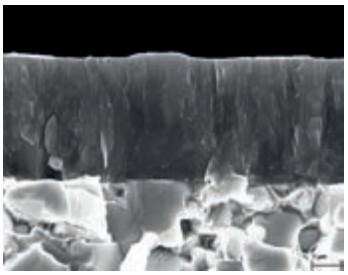
| CTC1435 | HC-P35 \| HC-M30 \| HC-K20 | ● ○ ○ |
|---|---|---|



**Spezifikation:**
Zusammensetzung: Co 9,6%; Mischkarbide 7,4%; WC Rest | Korngröße: 1 - 2 $\mu$m | Härte: $HV_{30}$ 1400 | Schichtsystem: CVD TiCN-$Al_2O_3$ Multilayer

**Einsatzempfehlung:**
Die erste Wahl für Stahl- und Gusswerkstoffe.

| CTP2440 | HC-M35 \| HC-P40 \| HC-N25 \| HC-S30 | ● ● ○ ○ |
|---|---|---|



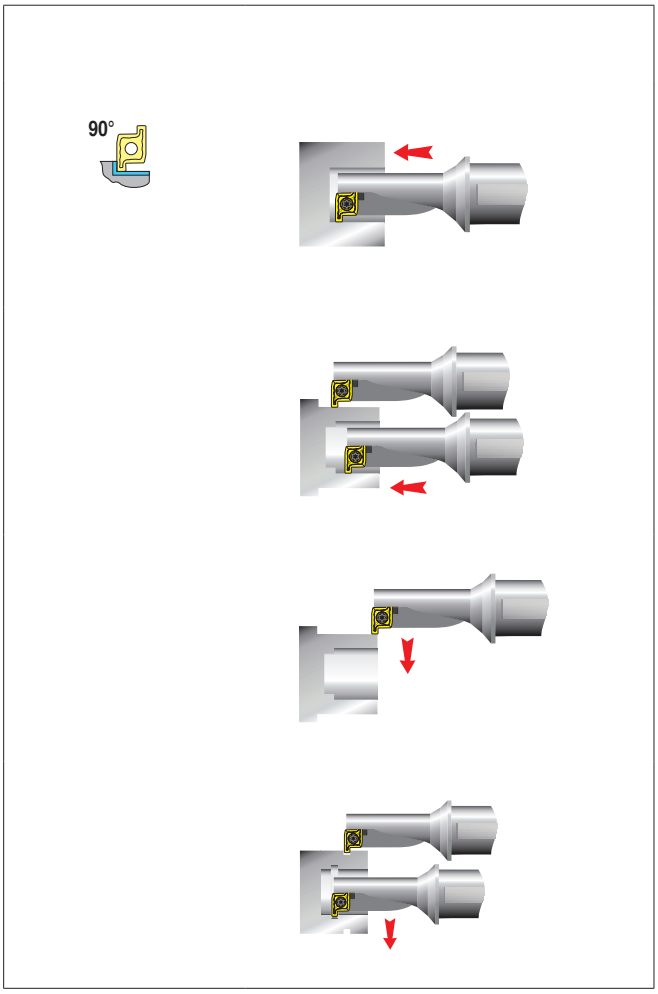
**Spezifikation:**
Zusammensetzung: Co 9,6%; Mischkarbide 7,4%; WC Rest | Korngröße: 1 - 2 $\mu$m | Härte: $HV_{30}$ 1400 | Schichtsystem: PVD TiAlN

**Einsatzempfehlung:**
Die erster Wahl für Rostfrei- und Stahlwerkstoffe bei instabilen Verhältnissen.

# ProfileMaster

Bearbeitungsverfahren






## Bearbeitungsverfahren – Variante 90°

Bohren ins Volle mit ebenem Bohrungsgrund

Aufbohren

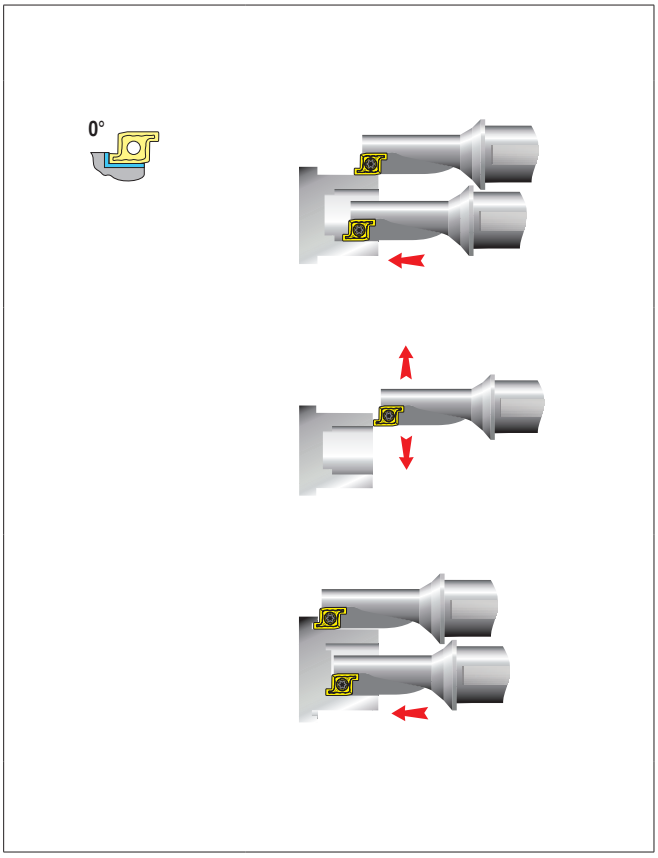
Drehen von Außenkonturen

Drehen von Innenkonturen

Drehen von Plankonturen

Radialstechen außen

Radialstechen innen




## Bearbeitungsverfahren – Variante 0°

Drehen von Außenkonturen

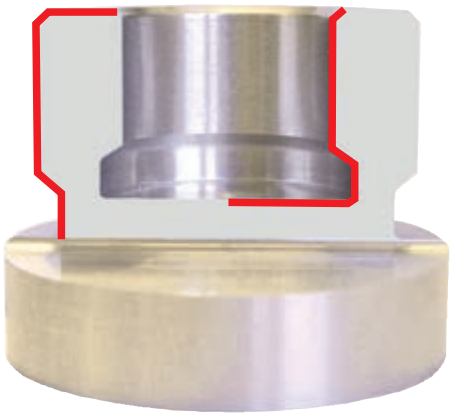
Drehen von Innenkonturen

Drehen von Plankonturen

Axialstechen außen

Axialstechen innen

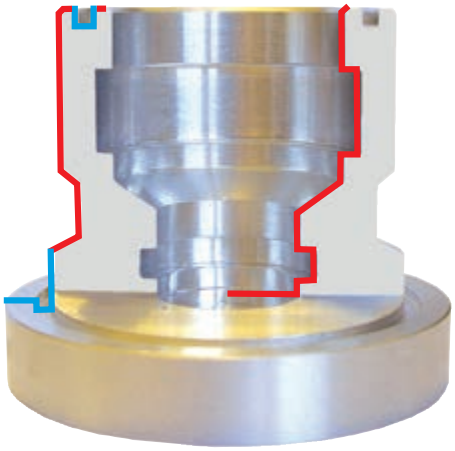
Bei Wechsel von Innen- zu Außenbearbeitung Drehrichtung ändern



rechtes Werkzeug



● rechte Platte



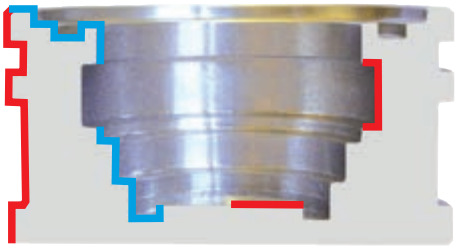
rechtes Werkzeug





● linke Platte

● rechte Platte



linkes Werkzeug



● rechte Platte

rechtes Werkzeug

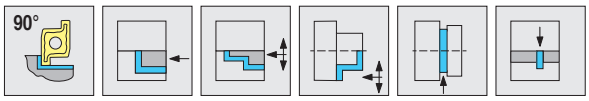


● rechte Platte

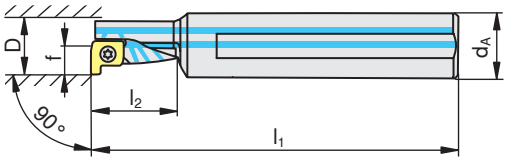
# ProfileMaster

PM..

| | | |





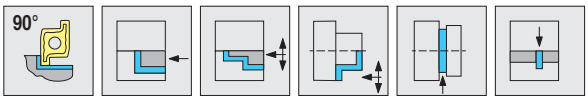

| $D_{min}$ [mm] | Type, Bezeichnung | LNR | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 10 | PM 10R-1.5D | R | 12 | 80 | 15 | 5 | 0,4 | PM 10.. | E01 |
| 10 | PM 10L-1.5D | L | 12 | 80 | 15 | 5 | 0,4 | PM 10.. | E01 |
| 12 | PM 12R-1.5D | R | 16 | 90 | 18 | 6 | 1,0 | PM 12.. | E02 |
| 12 | PM 12L-1.5D | L | 16 | 90 | 18 | 6 | 1,0 | PM 12.. | E02 |
| 16 | PM 16R-1.5D | R | 20 | 125 | 24 | 8 | 2,2 | PM 16.. | E03 |
| 16 | PM 16L-1.5D | L | 20 | 125 | 24 | 8 | 2,2 | PM 16.. | E03 |
| 20 | PM 20R-1.5D | R | 25 | 150 | 30 | 10 | 3,2 | PM 20.. | E04 |
| 20 | PM 20L-1.5D | L | 25 | 150 | 30 | 10 | 3,2 | PM 20.. | E04 |
| 25 | PM 25R-1.5D | R | 32 | 180 | 37,5 | 12,5 | 3,2 | PM 25.. | E05 |
| 25 | PM 25L-1.5D | L | 32 | 180 | 37,5 | 12,5 | 3,2 | PM 25.. | E05 |
| 32 | PM 32R-1.5D | R | 40 | 200 | 48 | 16 | 5,0 | PM 32.. | E06 |
| 32 | PM 32L-1.5D | L | 40 | 200 | 48 | 16 | 5,0 | PM 32.. | E06 |

| | | |
|---|---|---|
| E01 | 11161940 | 8095010000 |
| E02 | 169858 | 8095010100 |
| E03 | 169857 | 8095010200 |
| E04 | 54976 | 8095010500 |
| E05 | 165795 | 8095010500 |
| E06 | 11185832 | 8095010600 |

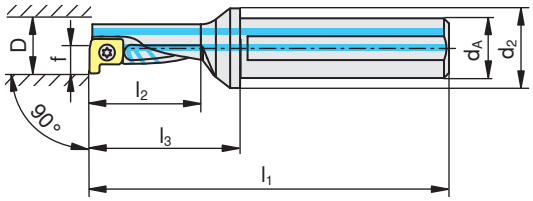

E57-E59 | E68 | E49

# ProfileMaster

90° / 2.25D



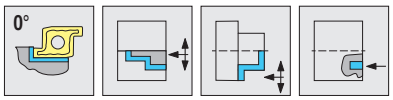


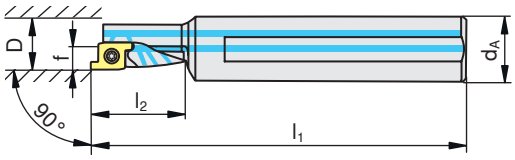

| $D_{min}$ [mm] | Type, Bezeichnung | LNR | $d_A$ [mm] | $d_2$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | f [mm] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | PM 10R-2.25D | R | 12 | 16 | 72,4 | 22,5 | 30,4 | 5 | 0,4 | PM 10.. | E01 |
| 10 | PM 10L-2.25D | L | 12 | 16 | 72,4 | 22,5 | 30,4 | 5 | 0,4 | PM 10.. | E01 |
| 12 | PM 12R-2.25D | R | 16 | 20 | 78 | 27 | 33,0 | 6 | 1,0 | PM 12.. | E02 |
| 12 | PM 12L-2.25D | L | 16 | 20 | 78 | 27 | 33,0 | 6 | 1,0 | PM 12.. | E02 |
| 16 | PM 16R-2.25D | R | 20 | 25 | 96,5 | 36 | 46,5 | 8 | 2,2 | PM 16.. | E03 |
| 16 | PM 16L-2.25D | L | 20 | 25 | 96,5 | 36 | 46,5 | 8 | 2,2 | PM 16.. | E03 |
| 20 | PM 20R-2.25D | R | 25 | 32 | 111 | 45 | 55,0 | 10 | 3,2 | PM 20.. | E04 |
| 20 | PM 20L-2.25D | L | 25 | 32 | 111 | 45 | 55,0 | 10 | 3,2 | PM 20.. | E04 |
| 25 | PM 25R-2.25D | R | 32 | 40 | 132,6 | 56,3 | 72,6 | 12,5 | 3,2 | PM 25.. | E05 |
| 25 | PM 25L-2.25D | L | 32 | 40 | 132,6 | 56,3 | 72,6 | 12,5 | 3,2 | PM 25.. | E05 |
| 32 | PM 32R-2.25D | R | 40 | 50 | 158 | 72 | 88,0 | 16 | 5,0 | PM 32.. | E06 |
| 32 | PM 32L-2.25D | L | 40 | 50 | 158 | 72 | 88,0 | 16 | 5,0 | PM 32.. | E06 |

| | | |
|---|---|---|
| E01 | 11161940 | 8095010000 |
| E02 | 169858 | 8095010100 |
| E03 | 169857 | 8095010200 |
| E04 | 54976 | 8095010500 |
| E05 | 165795 | 8095010500 |
| E06 | 11185832 | 8095010600 |

E57-E59 E68 E49





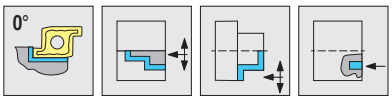

| $D_{min}$ [mm] | Type, Bezeichnung | LNR | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | f [mm] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | PM 16R-1.5D | R | 20 | 127,3 | 26,3 | 5,70 | 2,2 | PM 16.. | E01 |
| 16 | PM 16L-1.5D | L | 20 | 127,3 | 26,3 | 5,70 | 2,2 | PM 16.. | E01 |
| 20 | PM 20R-1.5D | R | 25 | 152,8 | 32,8 | 7,20 | 3,2 | PM 20.. | E02 |
| 20 | PM 20L-1.5D | L | 25 | 152,8 | 32,8 | 7,20 | 3,2 | PM 20.. | E02 |
| 25 | PM 25R-1.5D | R | 32 | 183,3 | 40,8 | 9,20 | 3,2 | PM 25.. | E03 |
| 25 | PM 25L-1.5D | L | 32 | 183,3 | 40,8 | 9,20 | 3,2 | PM 25.. | E03 |
| 32 | PM 32R-1.5D | R | 40 | 204,3 | 52,3 | 11,70 | 5,0 | PM 32.. | E04 |
| 32 | PM 32L-1.5D | L | 40 | 204,3 | 52,3 | 11,70 | 5,0 | PM 32.. | E04 |

| | | |
|---|---|---|
| E01 | 169857 | 8095010200 |
| E02 | 54976 | 8095010500 |
| E03 | 165795 | 8095010500 |
| E04 | 11185832 | 8095010600 |

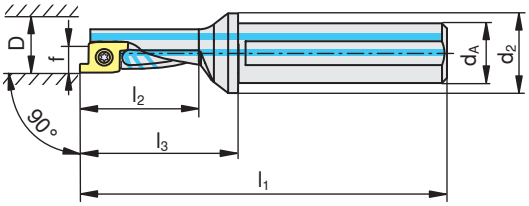

E60-E61 | E68 | E49

# ProfileMaster

0° / 2.25D






| $D_{min}$ [mm] | Type, Bezeichnung | LNR | $d_A$ [mm] | $d_2$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | f [mm] | [Nm] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | PM 16R-2.25D | R | 20 | 25 | 98,8 | 38,3 | 48,8 | 5,70 | 2,2 | PM 16.. | E01 |
| 16 | PM 16L-2.25D | L | 20 | 25 | 98,8 | 38,3 | 48,8 | 5,70 | 2,2 | PM 16.. | E01 |
| 20 | PM 20R-2.25D | R | 25 | 32 | 113,8 | 47,8 | 57,8 | 7,20 | 3,2 | PM 20.. | E02 |
| 20 | PM 20L-2.25D | L | 25 | 32 | 113,8 | 47,8 | 57,8 | 7,20 | 3,2 | PM 20.. | E02 |
| 25 | PM 25R-2.25D | R | 32 | 40 | 135,9 | 59,6 | 75,9 | 9,20 | 3,2 | PM 25.. | E03 |
| 25 | PM 25L-2.25D | L | 32 | 40 | 135,9 | 59,6 | 75,9 | 9,20 | 3,2 | PM 25.. | E03 |
| 32 | PM 32R-2.25D | R | 40 | 50 | 162,3 | 76,3 | 92,3 | 11,70 | 5,0 | PM 32.. | E04 |
| 32 | PM 32L-2.25D | L | 40 | 50 | 162,3 | 76,3 | 92,3 | 11,70 | 5,0 | PM 32.. | E04 |

| | | |
|---|---|---|
| E01 | 169857 | 8095010200 |
| E02 | 54976 | 8095010500 |
| E03 | 165795 | 8095010500 |
| E04 | 11185832 | 8095010600 |

E60-E61 E68 E49



# Schnittdatenrichtwerte

Sorten/Werkstoff

| Werkstück-werkstoff | | Behandlungsart / Legierung | | VDI 3323 Gruppe | Härte HB |
|---|---|---|---|---|---|
| P | unlegierter Stahl | geglüht | ≤ 0,15 % C | 1 | 125 |
| | | geglüht | 0,15 % - 0,45 % C | 2 | 150 - 250 |
| | | vergütet | ≥ 0,45 % C | 3 | 300 |
| | niedriglegierter Stahl | geglüht | | 6 | 180 |
| | | vergütet | | 7 / 8 | 250 - 300 |
| | | vergütet | | 9 | 350 |
| | hochlegierter Stahl | geglüht | | 10 | 200 |
| | | vergütet | | 11 | 350 |
| | rostfreier Stahl | geglüht | ferritisch / martensitisch | 12 | 200 |
| | | vergütet | martensitisch | 13 | 325 |
| | | wärmebehandelt | ferritisch / martensitisch | 13 | 200 |
| M | rostfreier Stahl | abgeschreckt | austenitisch | 14 | 180 |
| | | abgeschreckt | ferritisch / austenitisch (Duplex) | 14 | 230 - 260 |
| | | ausgehärtet | austenitisch ausscheidungsgehärtet (PH) | 14 | 330 |
| K | Grauguss | | perlitisch / ferritisch | 15 | 180 |
| | | | perlitisch / martensitisch | 16 | 260 |
| | Grauguss mit Kugelgraphit | | ferritisch | 17 | 160 |
| | | | perlitisch | 18 | 250 |
| | Temperguss | | ferritisch | 19 | 130 |
| | | | perlitisch | 20 | 230 |
| N | Aluminium Knetlegierung | nicht aushärtbar | | 21 | 60 |
| | | aushärtbar | | 22 | 100 |
| | Aluminium Gusslegierung | nicht aushärtbar | < 12 % Si | 23 | 75 |
| | | aushärtbar | < 12 % Si | 24 | 90 |
| | | nicht aushärtbar | > 12 % Si | 25 | 130 |
| | Kupfer und Kupferlegierungen (Bronze, Messing) | | Automatenlegierung (1% Pb) | 26 | (110) |
| | | | Messing, Rotguss | 27 | 90 |
| | | | Bronze | 28 | 100 |
| | | | bleifreies Kupfer und Elektrolytkupfer | 28 | 100 |
| | nichtmetallische Werkstoffe | | Duroplast | 29 | – |
| | | | faserverstärkter Kunststoff | 29 | – |
| | | | Hartgummi | 30 | – |
| S | warmfeste Legierungen | geglüht | Fe-Basis | 31 | 200 |
| | | ausgehärtet | Fe-Basis | 32 | 280 |
| | | geglüht | Ni- oder Co-Basis | 33 | 250 |
| | | ausgehärtet | Ni- oder Co-Basis 30 - 58 HRC | 34 | (350) |
| | | gegossen | Ni- oder Co-Basis 1500 - 2200 N/mm² | 35 | (320) |
| | Titanlegierungen | | Reintitan | 36 | $R_m$ 440* |
| | | | Alpha- + Beta-Legierung | 37 | $R_m$ 1050* |
| H | gehärteter Stahl | gehärtet u. angelassen | | 38 | 55 HRC |
| | | gehärtet u. angelassen | | 39 | 60 HRC |
| | Hartguss | gegossen | | 40 | 400 |
| | gehärtetes Gusseisen | gehärtet u. angelassen | | 41 | 55 HRC |

* $R_m$ = maximale Festigkeit, gemessen in MPa

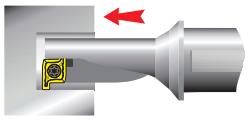
| CTC1435<br>$v_c$ [m/min] | CTP2440<br>$v_c$ [m/min] |
|---|---|
| 140 - 280 | 120 - 250 |
| 100 - 200 | 80 - 180 |
| 80 - 180 | 60 - 150 |
| 100 - 200 | 80 - 180 |
| 80 - 160 | 60 - 150 |
| 70 - 140 | 60 - 120 |
| 100 - 180 | 80 - 160 |
| 60 - 140 | 50 - 120 |
| 100 - 200 | 50 - 200 |
| 80 - 150 | 50 - 150 |
| 100 - 200 | 50 - 200 |
| 100 - 180 | 50 - 180 |
| | 50 - 100 |
| | 50 - 80 |
| 120 - 250 | |
| 120 - 250 | |
| 110 - 250 | |
| 110 - 250 | |
| 100 - 250 | |
| 100 - 250 | |
| | 100 - 500 |
| | 100 - 300 |
| | 100 - 500 |
| | 100 - 300 |
| | 100 - 200 |
| | 100 - 500 |
| | 100 - 500 |
| | 100 - 300 |
| | 100 - 300 |
| | 80 - 180 |
| | 60 - 150 |
| | 100 - 250 |
| | 20 - 50 |
| | 20 - 40 |
| | 15 - 25 |
| | 10 - 20 |
| | 10 - 20 |
| | 50 - 120 |
| | 30 - 50 |
| | |
| | |
| | |
| | |

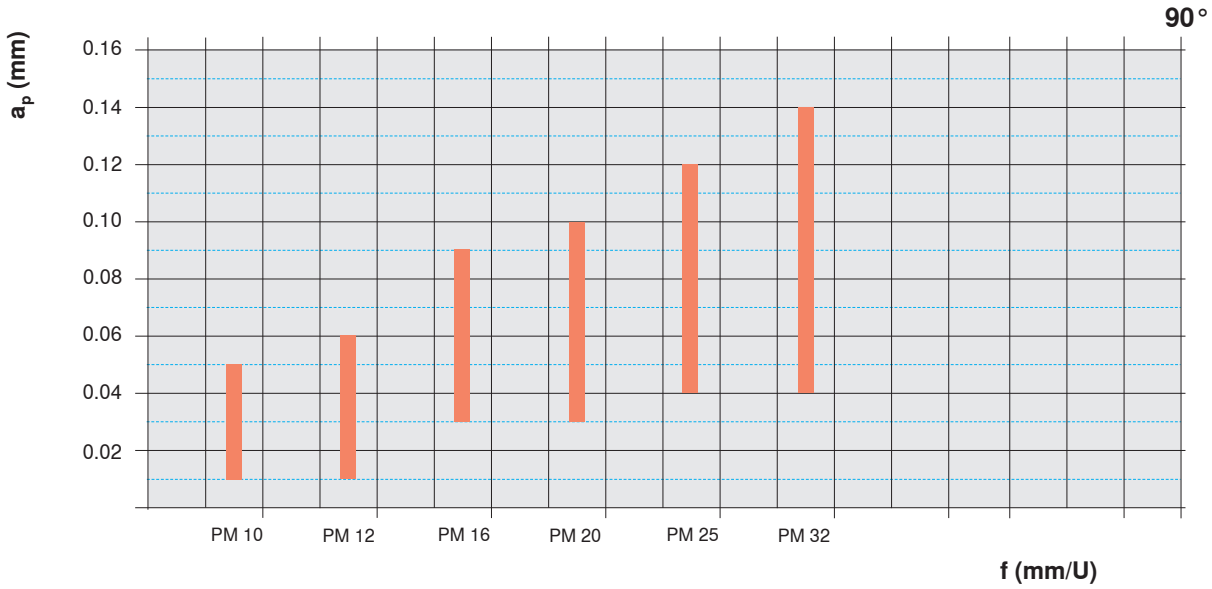
Die Schnittdaten sind unverbindliche Angaben für den Anwender. Eine Anpassung an die aktuellen Gegebenheiten ist zu empfehlen!

# ProfileMaster

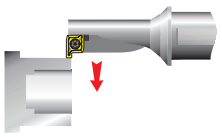
90° Schnitttiefe/Vorschub

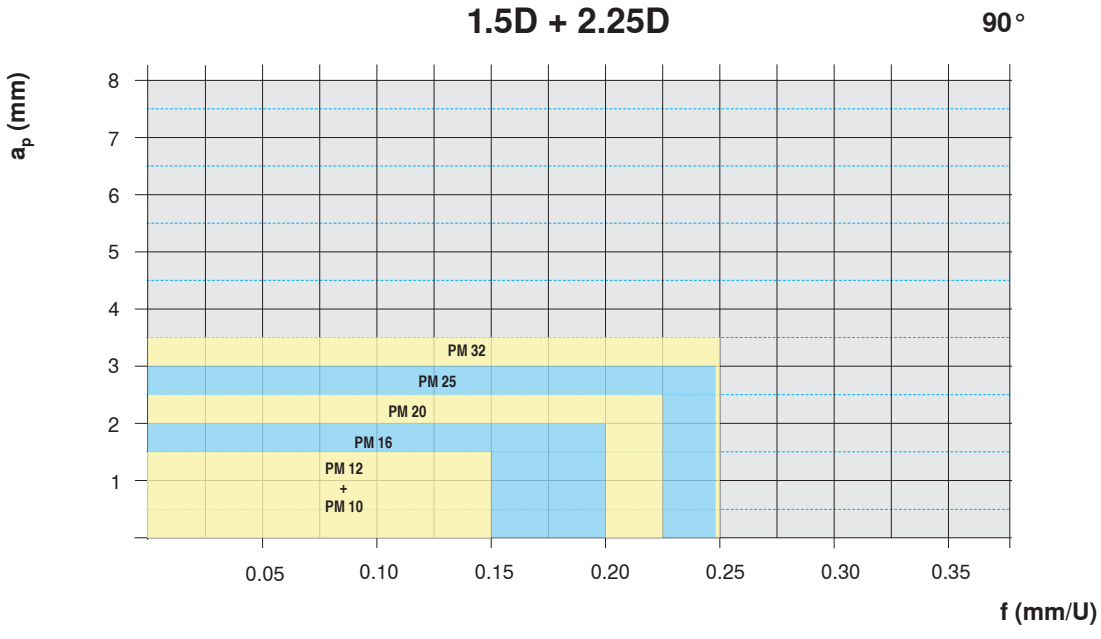
## Bohren



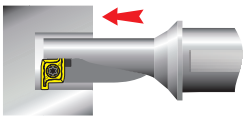


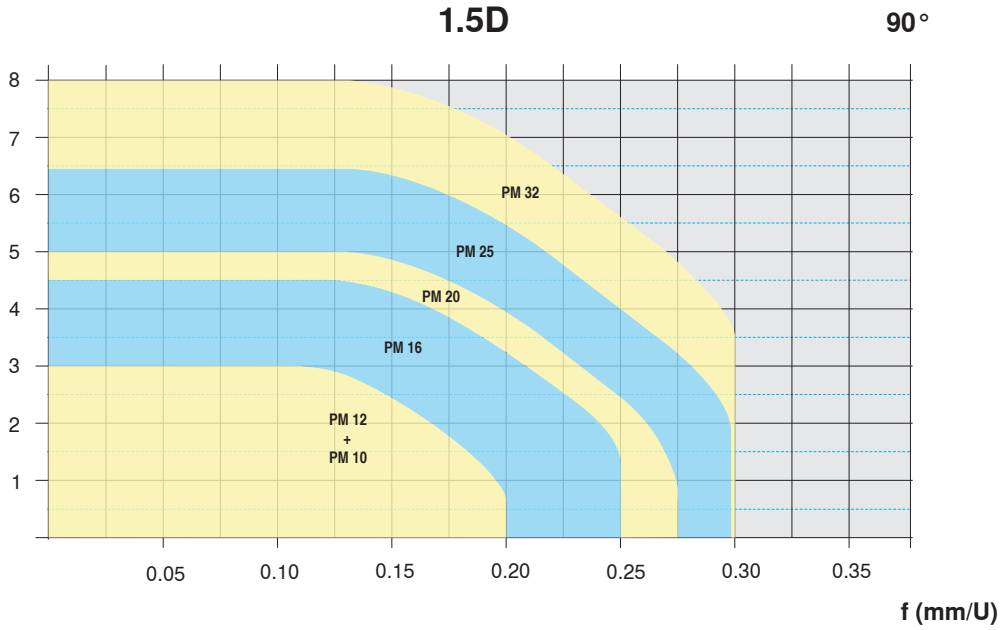

## Plandrehen



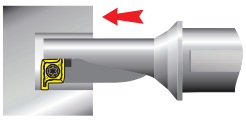


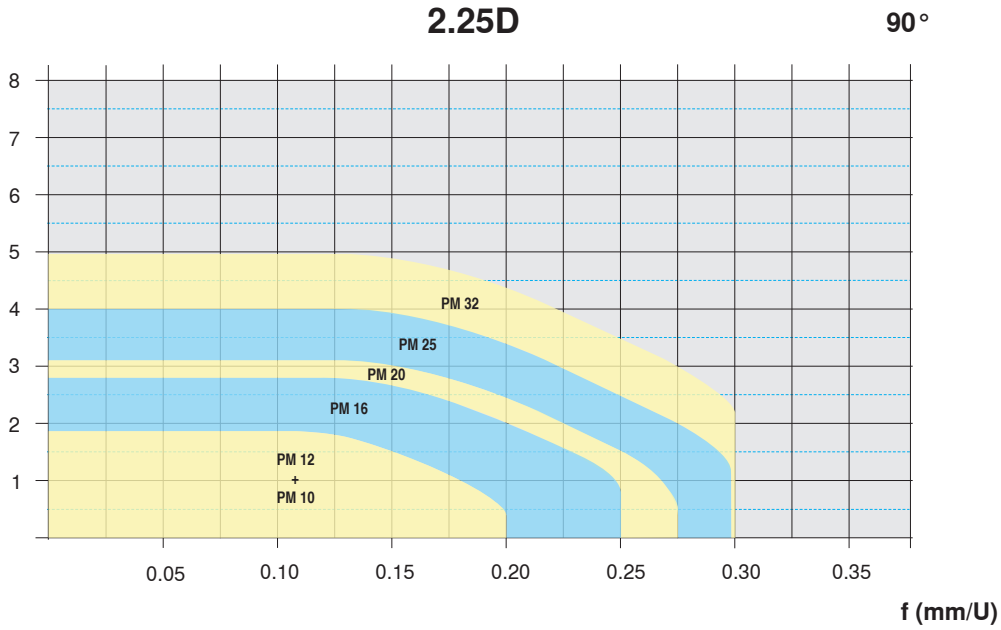
## Längsdrehen






## Längsdrehen

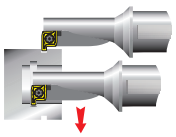


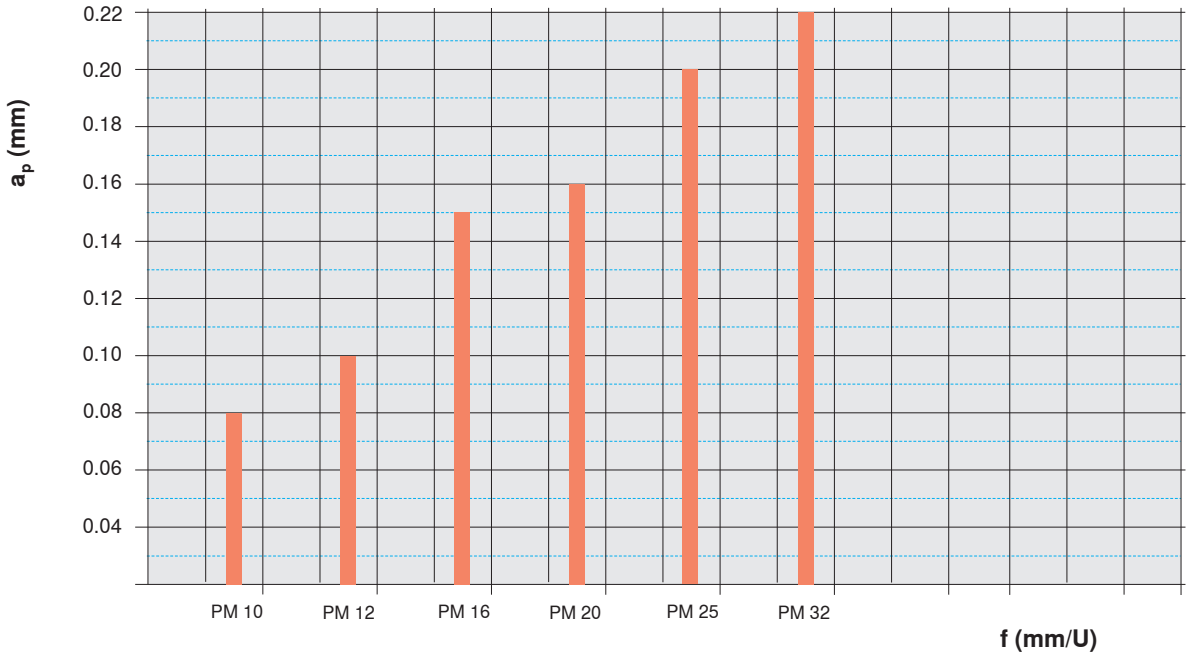


# ProfileMaster

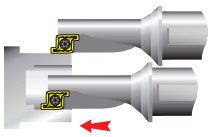
90° Schnitttiefe/Vorschub

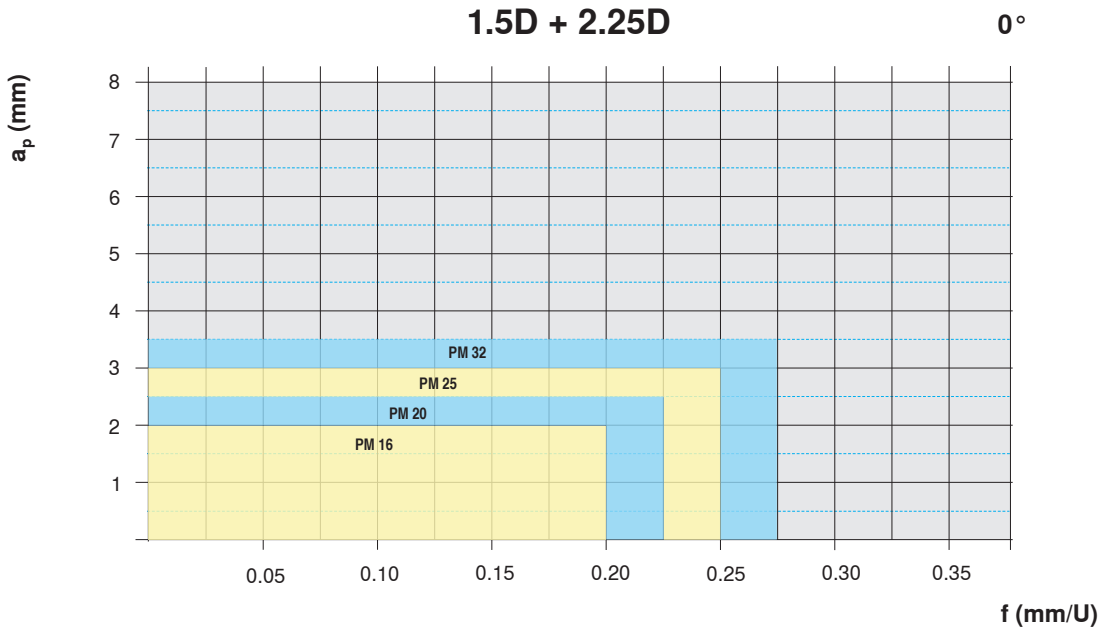
## Radialstechen innen + außen



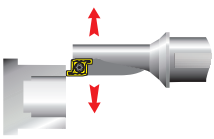



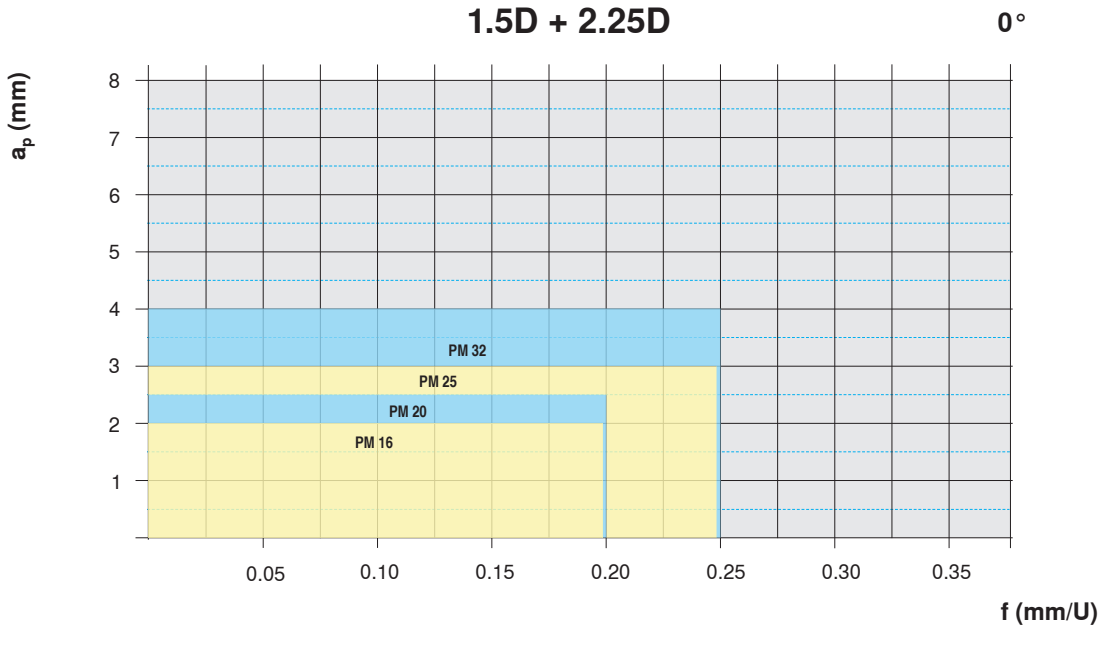
## Längsdrehen






## Plandrehen

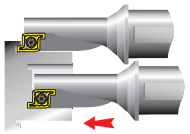


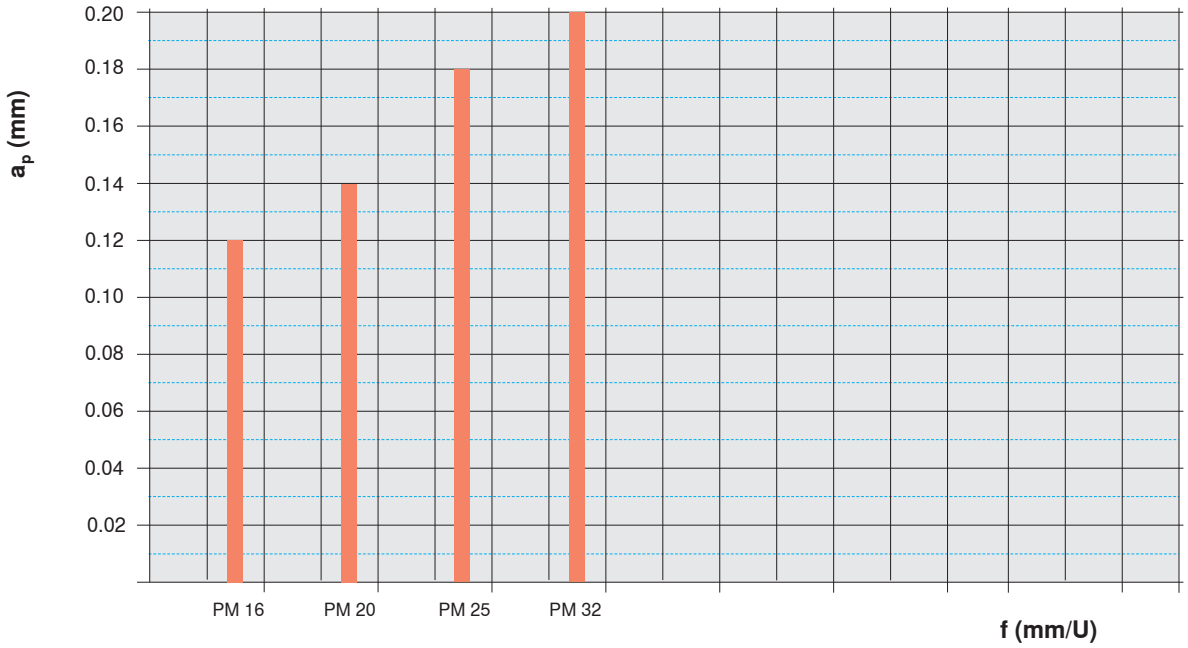


# ProfileMaster

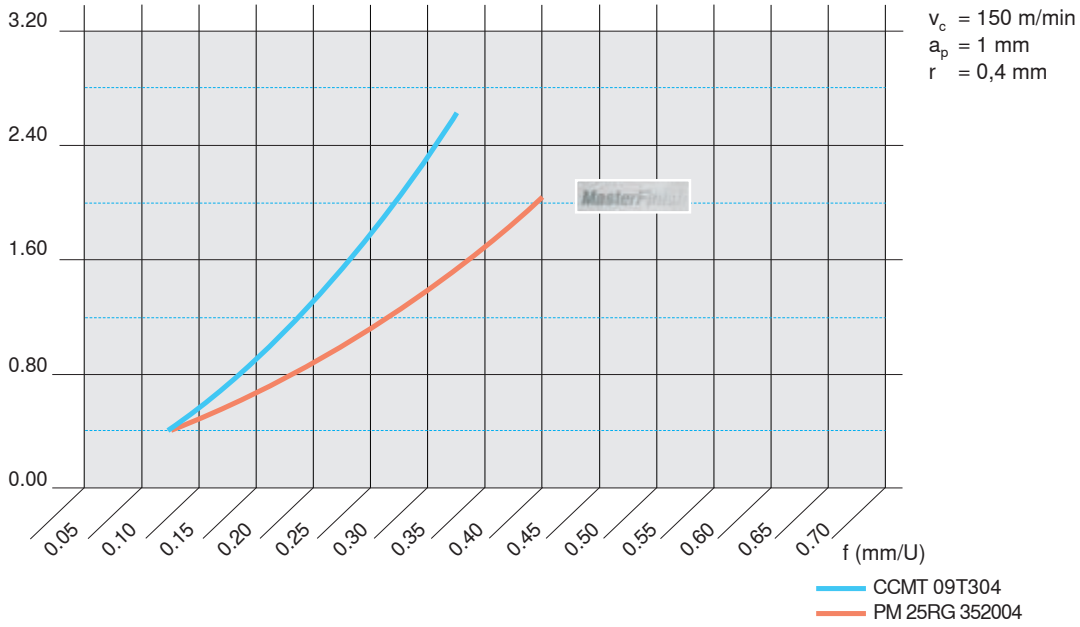
0° Schnitttiefe/Vorschub

## Axialstechen innen + außen



Werkstoff: Ck60 (1.1221)
mit Standardbohrstange und ProfileMaster



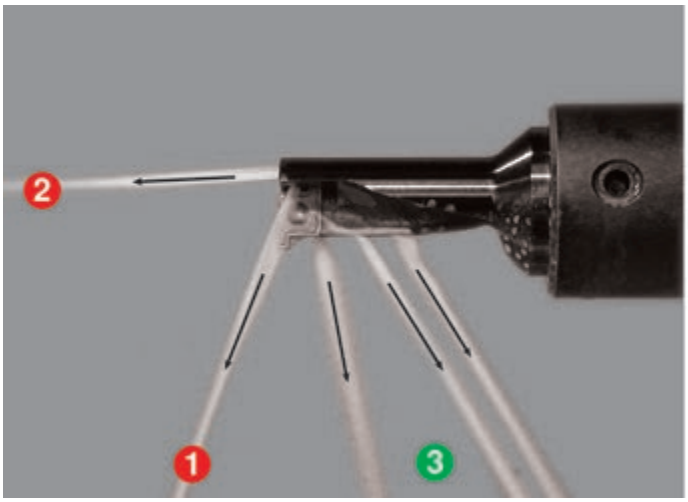
# ProfileMaster

Problemstellung / Maßnahmen

| Problemstellung | | | | | | | | Abhilfe, Maßnahmen | |
|---|---|---|---|---|---|---|---|---|---|
| Verschleißtyp | | | | Werkstückprobleme | | Spanbruch | | | |
| Ausbrüche | Aufbauschneiden | Freiflächenverschleiß | Plastische Verformung | Vibrationen | Oberflächengüte | Span zu lang (Wirrspan) | Span zu kurz (Bruchspan) | | |
| | ⇧ | ⇩ | ⇩ | ⇩ ⇧ | ⇩ ⇧ | ⇩ | | Schnittgeschwindigkeit | Schnittwerte |
| ⇩ | | ≈ | ⇩ | ⇩ ⇧ | ⇩ | ⇧ | ⇩ | Vorschub | |
| ⇧ | | ⇧ | ⇧ | ⇩ | ⇧ | | | Eckenradius (größer ⇧ / kleiner ⇩) | Wendeschneidplatten - Auswahl |
| ⇩ | | ⇧ | ⇧ | | | | | Schneidstoff (Verschleißfestigkeit ⇧ / Zähigkeit ⇩) | |
| ≈ | | | | ≈ | ≈ | | | Spannung Werkzeug | Allgemeine Kriterien |
| ≈ | | | | ≈ | ≈ | | | Spannung Werkstück | |
| ≈ | | | | ≈ | ≈ | | | Auskragung | |
| ≈ | | ≈ | | ≈ | ≈ | | | Spitzenhöhe | |
| | ▢ | ▢ | ▢ | | ▢ | | | Kühlschmierstoff | |

| | | | | | |
|---|---|---|---|---|---|
| ⇧ | erhöhen, vergrößern, großer Einfluss | ⇩ | vermeiden, verkleinern, großer Einfluss | ≈ | kontrollieren, optimieren |
| ⇧ | erhöhen, vergrößern, kleiner Einfluss | ⇩ | vermeiden, verkleinern, kleiner Einfluss | ▢ | verwenden |

ProfileMaster ist serienmäßig mit einem einzigartigen Kühl- und Spänetransportsystem ausgerüstet.




1 Kühlung der Wendeschneidplatten

2 Allgemeiner Kühl- und Spülstrom

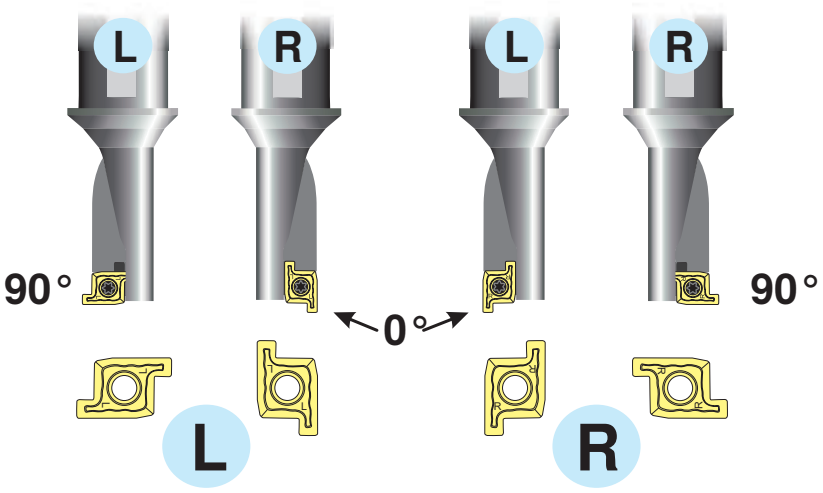
3 „Chipbooster“ verhindert das Verklemmen von Spänen zwischen Werkzeug und Werkstück

⚠ Um einen effizienten Spänetransport aus einer Bohrung zu gewährleisten, muss der Kühlmitteldruck mindestens 3 - 6 bar (optimal 7 - 10 bar) betragen.

# ProfileMaster

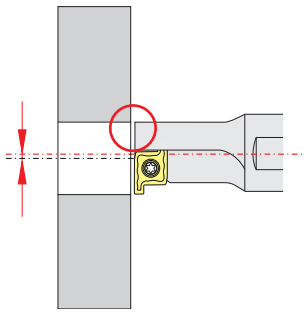
Anwendungshinweise

## Einbau der Wendeschneidplatte

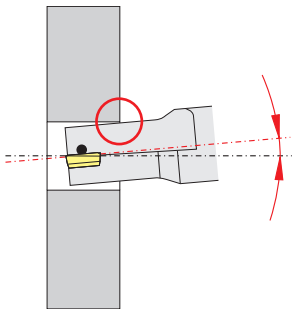



## Achsversatz der Maschine

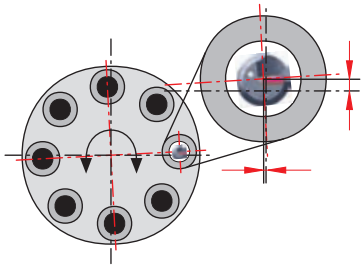
**Versatz in X-Richtung**



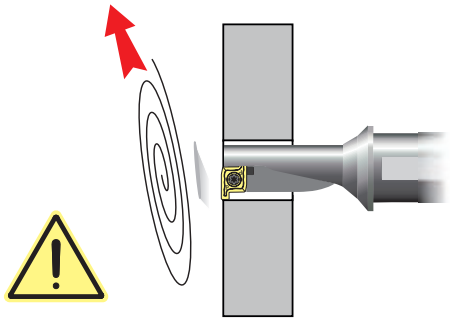
**Winkelfehler**



**Revolverpositionierfehler**

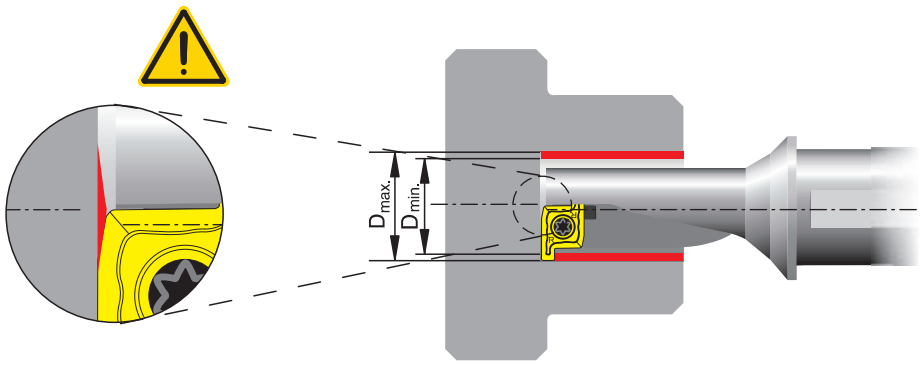


## Durchgangsbohrung



Bei Durchgangsbohrungen fällt eine **scharfkantige Scheibe** ab. Sicherheitsvorkehrungen sind erforderlich.

## Bohren - außer Mitte



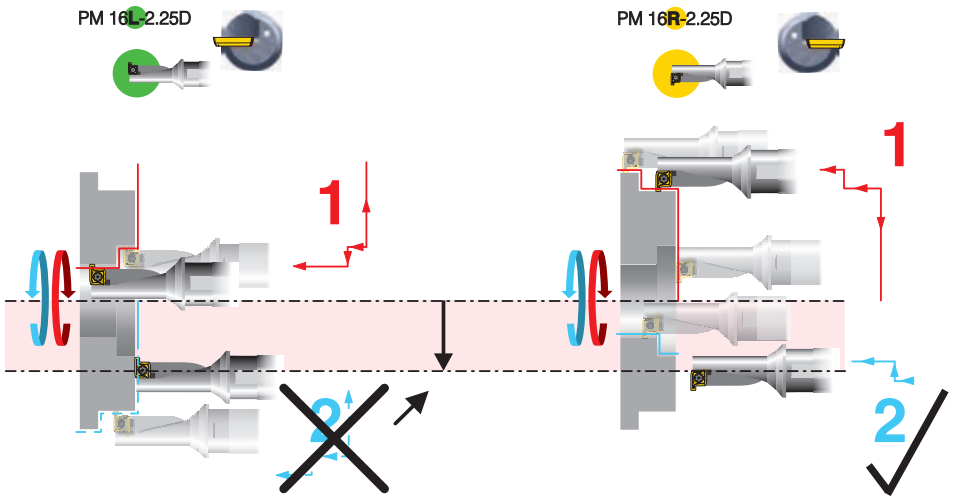

Durch die spezielle konstruktive Auslegung von Werkzeug und Wendeplatte ist es mit ProfileMaster-Werkzeugen möglich, außer Mitte zu bohren. Es können somit entsprechende Abweichungen vom Werkzeugnenndurchmesser erzielt werden, die Sie bitte untenstehender Tabelle entnehmen.

| Werkzeugtype | Werkzeugnenndurchmesser | Werkstückbohrdurchmesser | |
|---|---|---|---|
| | D [mm] | $D_{min}$ [mm] | $D_{max}$ [mm] |
| PM 10R/L ... | 10 | 9,85 | 12 |
| PM 12R/L ... | 12 | 11,85 | 15 |
| PM 16R/L ... | 16 | 15,85 | 19 |
| PM 20R/L ... | 20 | 19,80 | 24 |
| PM 25R/L ... | 25 | 24,80 | 29 |
| PM 32R/L ... | 32 | 31,80 | 38 |

## Bearbeiten über Mitte

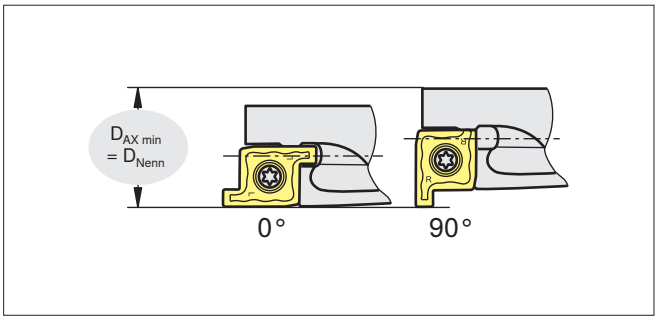
**Situation:**
Bei unzureichendem Verfahrweg der Maschine über die Mittelachse ist der Außendurchmesser nicht mit dem selben Werkzeug bearbeitbar.

**Lösung:**
Verwenden eines rechten ProfileMaster-Werkzeuges.

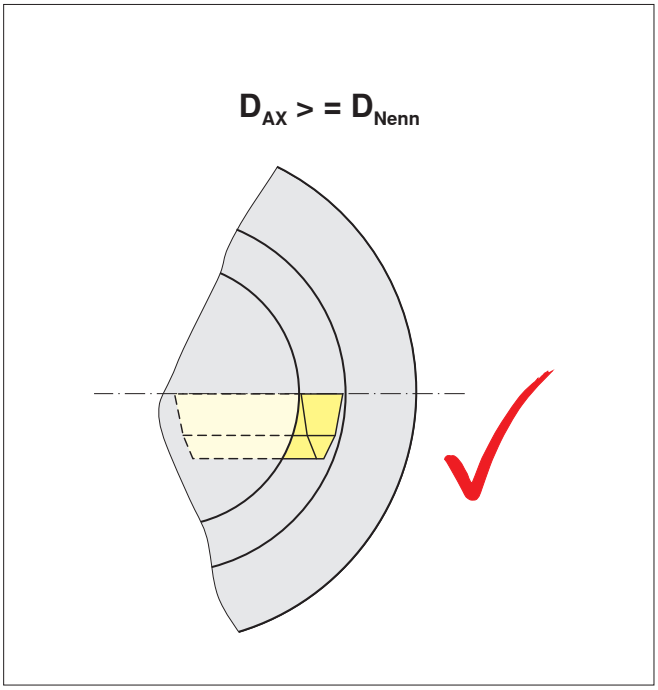


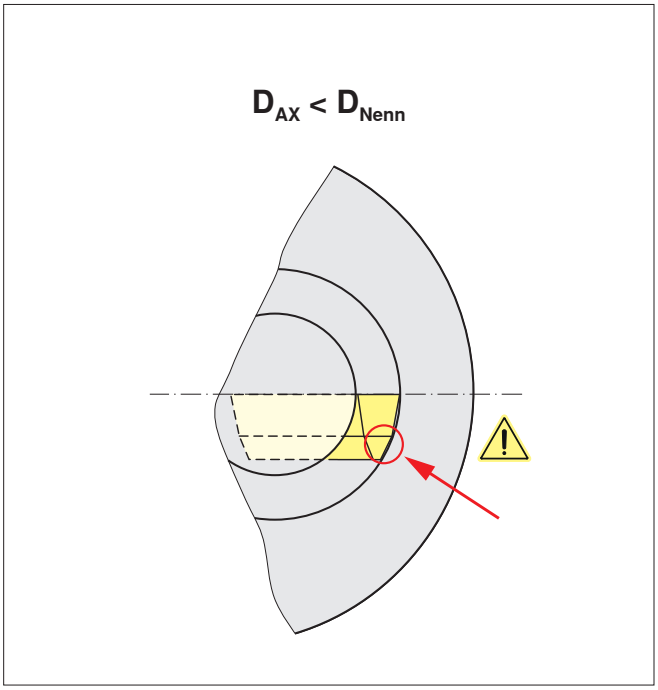
# ProfileMaster

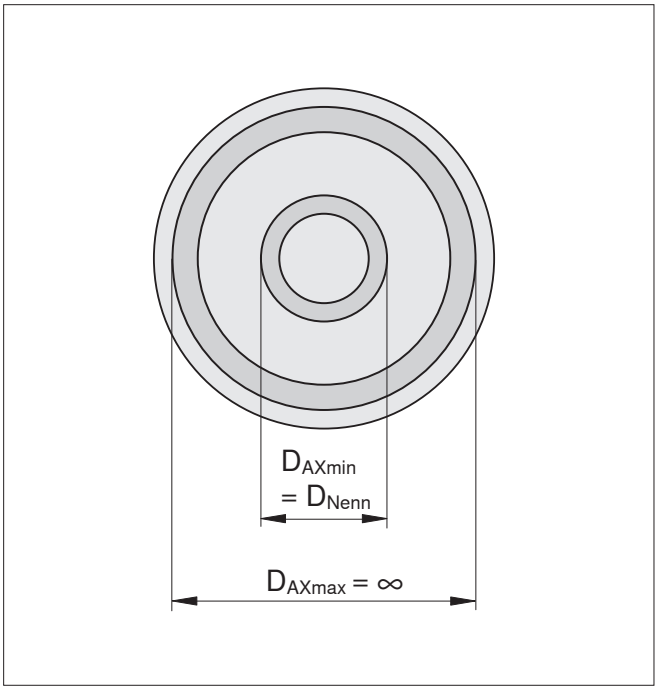
Anwendungshinweise Axialstechen - Variante 0°




| $D_{Nenn}$ | $D_{AXmin}$ | $D_{AXmax}$ |
|---|---|---|
| 16 | 16 | ∞ |
| 20 | 20 | ∞ |
| 25 | 25 | ∞ |
| 32 | 32 | ∞ |



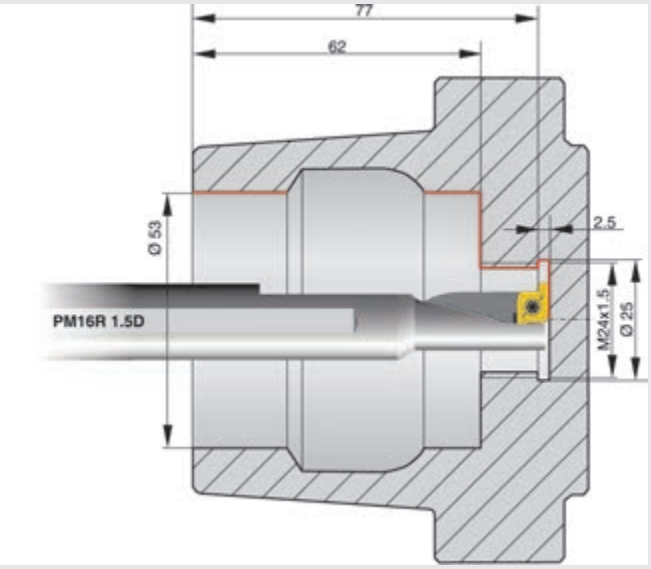




Erfolgt der erste Einstich in einem Bereich kleiner dem Werkzeugnenndurchmesser $D_{Nenn}$ (90°-Variante) kommt es zu einer Kollision.

| | Material | Type, Bezeichnung | Schlüsselgröße |
|---|---|---|---|
|  | 8095010000 | SD-T06-60mm | T06 |
| | 8095010100 | SD-T07-60mm | T07 |
| | 8095010200 | SD-T08-60mm | T08 |
| | 8095010500 | SD-T15-80mm | T15 |
| | 8095010600 | SD-T20-100mm | T20 |

| | Material | Type, Bezeichnung | Länge [mm] | Gewindegröße | Schlüsselgröße |
|---|---|---|---|---|---|
|  | 11161940 | 10001230/M1,8X3,8/T06 | 3,8 | M1,8 | T6 |
| | 11185832 | 10001785/M5,0X10,8/T20 | 10,8 | M5 | T20 |
| | 165795 | 7883209/M3,5X8,6/T15 | 8,6 | M3,5 | T15 |
| | 169857 | 7883214/M3,0X5,7/T08 | 5,7 | M3 | T08 |
| | 169858 | 7883215/M2,2X4,0/T07 | 4 | M2,2 | T07 |
| | 54976 | 7722111/M3,5X7,2/T15 | 7,2 | M3,5 | T15 |

# Bearbeitungsbeispiel




## Technische Daten

| | |
|---|---|
| **Werkstück** | Aufnahme HSK100 |
| **Material** | 1.2342<br>X38 CrMoV 5 1 |
| **Zugfestigkeit** | ca. 1100 N/mm$^2$ |
| **Werkzeug** | PM 16R-1.5D |
| **Wendeschneidplatte** | PM 16RG 252004-M20<br>CTP2440 |
| **Wettbewerb** | 2 Werkzeuge |

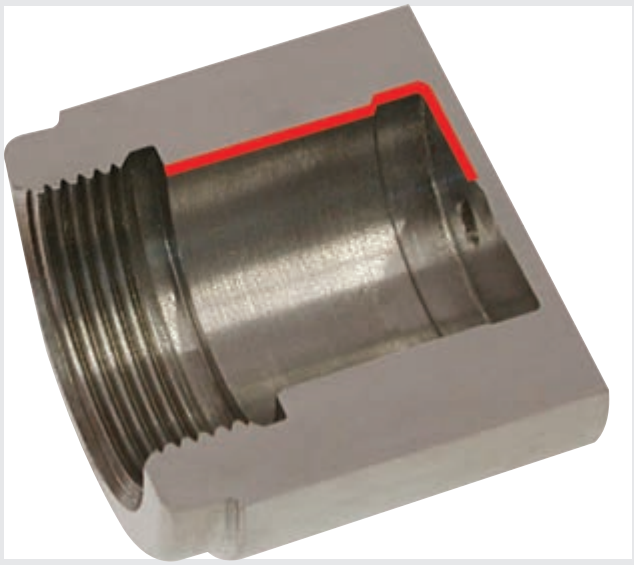
| | | CERATIZIT | |
|---|---|---|---|
| $v_c$ | [m/min] | 150 | |
| f | [mm] | 0.15 | |
| $a_p$ | [Ø mm] | 1 | |

## Kriterium

○ Probleme wegen geringer Anzahl der Revolverplätze
○ Optimierung der Bearbeitungszeit

## Resultat

○ Reduzierung der benötigten Werkzeuge von 2 auf 1
○ 1 freier Werkzeugplatz im Revolver



## Technische Daten

| | |
|---|---|
| **Werkstück** | Kolben |
| **Material** | 1.756<br>35SPb20+C |
| **Zugfestigkeit** | - |
| **Werkzeug** | PM 16R-1.5D |
| **Wendeschneidplatte** | PM 16RG 252004-M20<br>CTC1435 |
| **Wettbewerb** | 2 Werkzeuge |

| | | CERATIZIT | Wettbewerb |
|---|---|---|---|
| $v_c$ | [m/min] | 105 | 105 |
| $a_p$ | [mm] | 0,03 - 5,0 | 0,3 - 5,0 |
| $f_{Drehen}$ | [mm] | 0,15 | 0,1 |
| $f_{Einstich}$ | [mm] | 0,06 | 0,06 |

## Kriterium

- Erhöhung der Produktivität
- Qualität der Nutoberfläche nicht ausreichend

## Resultat

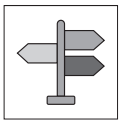
- Reduktion der Bearbeitungszeit um 50%
- Verbesserung der Nutqualität

# Vollhartmetallwerkzeuge

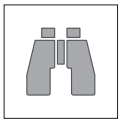
Inhaltsverzeichnis



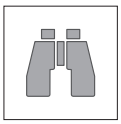
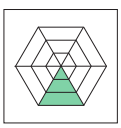
## Einleitung


| | | |
|---|---|---|
|  | Der Leitfaden durch den Katalog | F3-F4 |
|  | Bezeichnungssystem Schneidstoffe | F6 |

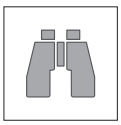

## Vollhartmetallwerkzeuge Fräsen


| | | |
|---|---|---|
|  | Einführung | F7-F16 |
|  | Übersicht | F17-F35 |
|  | Werkstoffgruppe UN | F37-F78 |
|  | Werkstoffgruppe ST | F79-F104 |
|  | Werkstoffgruppe VA | F105-F114 |
|  | Werkstoffgruppe TI | F115-F120 |
|  | Werkstoffgruppe H | F121-F136 |
|  | Werkstoffgruppe AL | F137-F234 |
|  | Werkstoffgruppe V | F235-F278 |

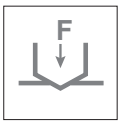

## Vollhartmetallwerkzeuge Bohren


| | | |
|---|---|---|
|  | Einführung | F281 |
|  | Übersicht | F289-F295 |
|  | Werkstoffgruppe UN | F297-F340 |
|  | Werkstoffgruppe ST | F341-F380 |
|  | Werkstoffgruppe VA | F381-F396 |
|  | Werkstoffgruppe TI | F397-F400 |
|  | Werkstoffgruppe H | F401-F404 |
|  | Werkstoffgruppe AL | F405-F432 |
|  | Werkstoffgruppe V | F433-F444 |


## Vollhartmetallwerkzeuge Reiben


| | | |
|---|---|---|
|  | Einführung | F447-F451 |
|  | Übersicht | F452 |
|  | Werkstoffgruppe UN | F453-F460 |
|  | Werkstoffgruppe H | F461-F464 |

## Technische Informationen


| | | |
|---|---|---|
|  | Werkstofftabelle | F467-F485 |
|  | Härtewerte | F486 |
|  | Anwendungshinweise | F487-F496 |


## Index


| | | |
|---|---|---|
|  | Index | G7 |

# Der Leitfaden durch den Katalog

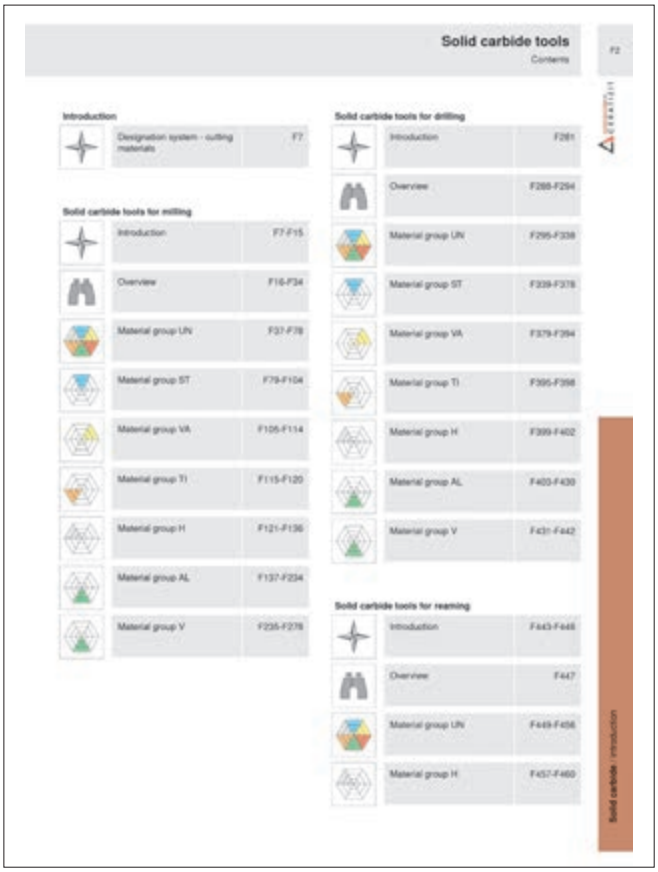
## In wenigen Schritten die richtige Auswahl treffen

1

### Auswahl der Werkzeuggruppe

Das Inhaltsverzeichnis gibt einen ersten Überblick zu den Werkzeugen

- ○ Fräsen
- ○ Bohren
- ○ Reiben




2

### Auswahl des Werkzeugtyps

Die Übersicht erleichtert die Auswahl des geeigneten Werkzeugtyps

1 Werkstoffgruppe

2 Werkzeugart

3 Bezeichnung Werkzeugtyp

4 Werkzeugeigenschaften

5 Bearbeitungsverfahren



3

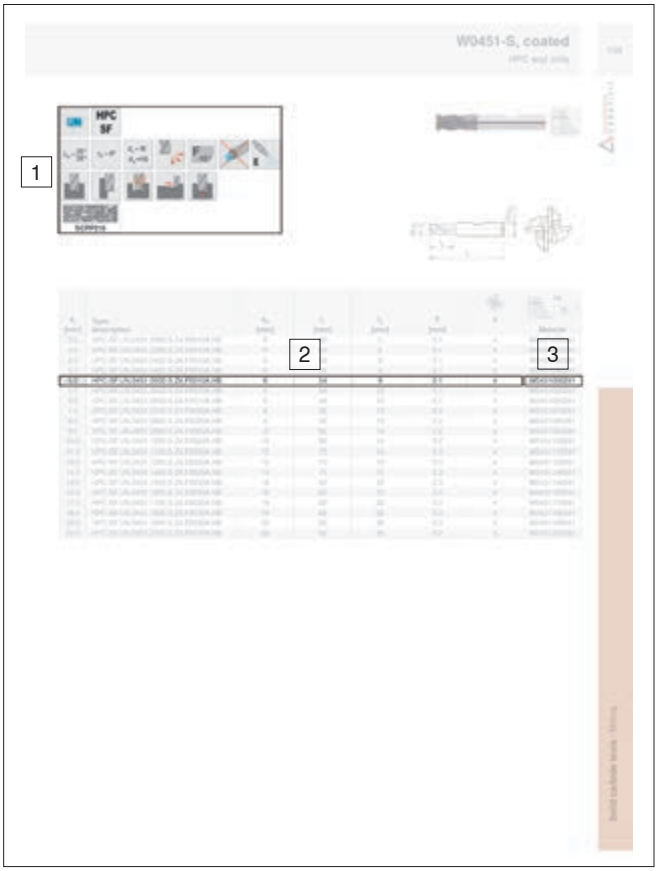
## Festlegung Werkzeug

Die Produktseite zeigt das Programm mit den Hauptabmessungen

1 Mögliche Anwendungen und Eigenschaften

2 Die Hauptabmessungen

3 Die Bestellnummer



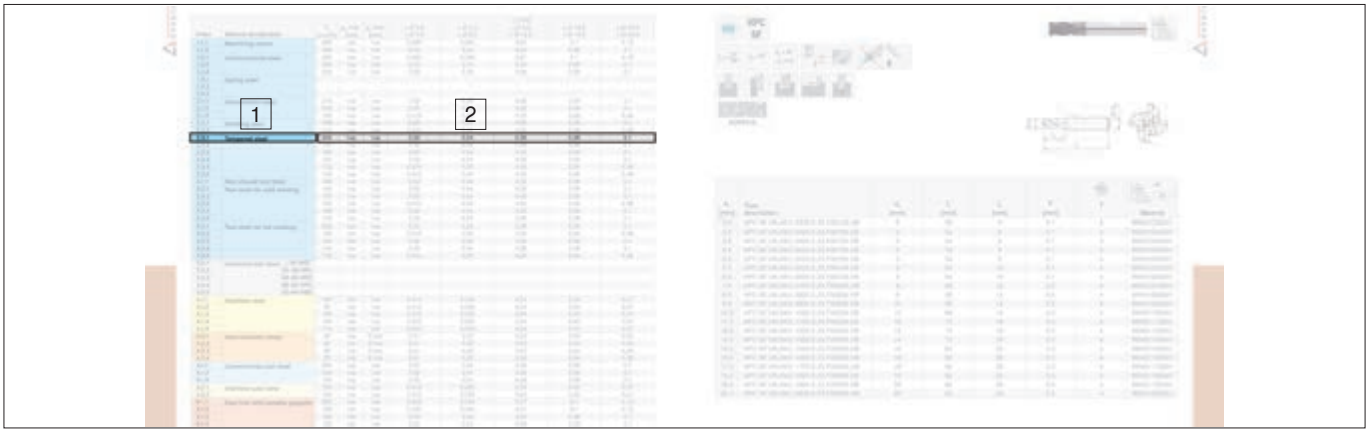

4

## Festlegung Startparameter

Direkt gegenüberliegend zur Produktseite können die empfohlenen Startwerte ermittelt werden

1 Zu bearbeitender Werkstoff

2 Die empfohlenen Startparameter





CERATIZIT

# S C P  P 2 3 5

1 2 3 4 5

## 1 Vollhartmetall

## 2 Schneidstoffart

| | |
|---|---|
| W | Hartmetall unbeschichtet |
| C | Hartmetall beschichtet CVD |
| P | Hartmetall beschichtet PVD |
| T | Cermet unbeschichtet |
| E | Cermet beschichtet |
| N | Siliziumnitrid unbeschichtet |
| M | Siliziumnitrid beschichtet |
| S | Mischkeramik |
| I | Sialon |
| D | PKD |
| B | CBN |
| L | CBN beschichtet |
| H | PM-HSS |

## 3 Primäre Eignung für Werkstoff

| | |
|---|---|
| P | Stahl |
| M | rostfreier Stahl |
| K | Eisenguss |
| N | Leicht- und Buntmetalle/Nichtmetalle |
| S | Superlegierungen/Titan |
| H | harte Werkstoffe |
| X | Mehrbereichssorte ohne besonderen Werkstoffschwerpunkt |

## 4 Primäre Eignung für Anwendung

| | |
|---|---|
| 1 | Drehen |
| 2 | Fräsen |
| 3 | Stechen |
| 4 | Bohren |
| 5 | Gewindedrehen |
| 6 | Andere |
| 7 | Mehrbereichssorte ohne besonderen Anwendungsschwerpunkt |

## 5 ISO 513 Anwendungsbereich

z.B.
05
10
15
25
35 ISO P35
.
.
.

# Bezeichnungssystem Werkzeuge

Vollhartmetallwerkzeuge Fräsen

CUTTING SOLUTIONS BY CERATIZIT

MRO . V . 0839 . 0800 . L

1 2 3 4 5

1

| Werkzeuggruppe | | |
|---|---|---|
| HPC-SF | – | HPC-Schaftfräser |
| SF | – | Schaftfräser |
| SFM | – | Mini-Schaftfräser |
| CPC-SF | – | CPC-Schaftfräser (Circle Power Cutting) |
| HPC-SR | – | HPC-Schruppfräser |
| SR | – | Schruppfräser |
| SRS | – | Schrupp-Schlichtfräser |
| VR | – | Vollradiusfräser |
| HPC-TF | – | HPC-Torusfräser |
| TF | – | Torusfräser |
| MSF | – | Micro-Schaftfräser |
| MVR | – | Micro-Vollradiusfräser |
| MTF | – | Micro-Torusfräser |
| HG-SC | – | Hochgenauigkeits-Schlichtfräser |
| SC | – | Schlichtfräser |
| EZ | – | Einzahnfräser |
| E | – | Entgrater |
| FF | – | Fasenfräser |
| R | – | Router |
| MRO | – | Multirouter |

2

| Werkstoff Hauptanwendung | | |
|---|---|---|
| UN | – | Universal |
| ST | – | Stahl |
| VA | – | rostfreier Stahl |
| TI | – | Titan |
| H | – | gehärteter Stahl |
| AL | – | Aluminium |
| V | – | Verbundwerkstoffe |

3

| Typ |
|---|

4

| Ø $d_1$ |
|---|
| 0600 ➢ Ød1 = 6,00 mm |

5

| Längen Kategorie | | |
|---|---|---|
| XS | – | Extra Kurz |
| S | – | Kurz |
| L | – | Lang |
| LS | – | Lang S |
| OL | – | Überlang |
| OLS | – | Überlang S |
| XL | – | Extra Lang |

# Z6 . F0020A . HA | SCPX215

6 7 8 9

6

| Zähnezahl |
|---|

8

| Schaft |
|---|
| HE |
| HA |
| HB |

7

| Ausführung Schneidecke | | | | | |
|---|---|---|---|---|---|
| F | Fase | 1.-4. Stelle | Größe | 0040 | 0.40 mm |
| | | 5. Stelle | Winkel | A | 45° |
| | | | | D | 60° |
| | | | | E | 75° |
| | | | | F | 85° |
| R | Radius | 0005 | R = 0.05 | | |
| | | 0400 | R = 4.00 | | |
| S | Scharf | | | | |

9

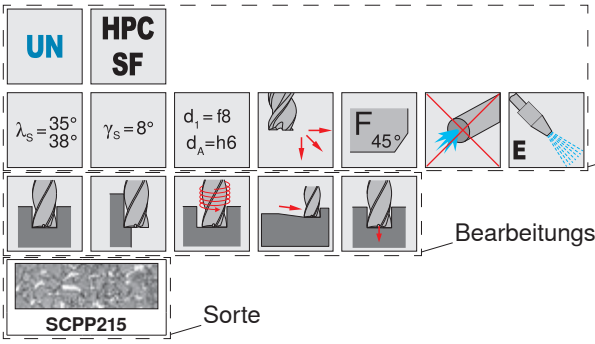
| Sorte |
|---|

# Symbolerklärung

Vollhartmetallwerkzeuge Fräsen

| | |
|---|---|
| UN | Werkstoffgruppe, z.B. UN = Universal |
|  | Baulänge z.B. kurz |
| EZ | Werkzeuggruppe, z.B. EZ = Einzahnfräser |
| σ 120° | Schneideckenwinkel, z.B. bei Fasenfräser |
|  | ohne Innenkühlung |
|  | mit Innenkühlung |
|  E | Emulsion empfohlen |
|  D | Druckluft empfohlen |
|  E/D | Emulsion / Druckluft empfohlen |
|  | mögliche Bearbeitungsrichtungen |
|  | Bearbeitungsbeispiel |
| $\lambda_S = \frac{44,5°}{46,5°}$ | Drallwinkel |

| | |
|---|---|
|  z | Zähnezahl |
| HA  | Schaftausführung DIN6535-HA |
| HB  | Schaftausführung DIN6535-HB |
| HE  | Schaftausführung DIN6535-HE |
| $\gamma_S = 20°$ | Spanwinkel |
| S | Schneideckenausführung scharf |
| F 45° | Schneideckenausführung mit Fase<br>F = Fasenbreite [mm] |
| R | Schneideckenausführung mit Radius<br>R = Radiusgröße [mm] |
| R | Schneideckenausführung mit Vollradius<br>R = Radiusgröße [mm] |
| $d_1 = e8$<br>$d_A = h6$ | Toleranz Schneidendurchmesser<br>Toleranz Schaftdurchmesser |
|  | Untermaßfräser |



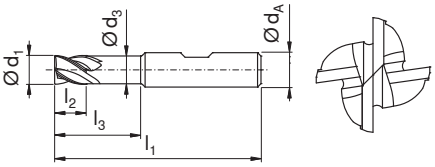

Anwendungshinweise/ Geometriedaten

Bearbeitungsmöglichkeiten

Sorte



Schaftlänge




Länge/Schaftausführung

| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|---|---|
| 6,0 | HPC-SF.UN.0451.0600.LS.Z4.F0010A.HB | 6 | 5,8 | 57 | 7 | 19 | 0,1 | 4 | W0451060R41 |

Materialkurztext

Abmessungen

Materialnummer

# Sortenübersicht

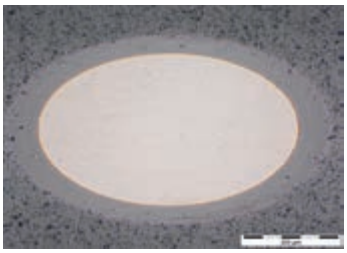
Vollhartmetallwerkzeuge Fräsen

| Sortenbezeichnung | Normbezeichnung | | Schneidstoffart | Anwendungsbereich | P | M | K | N | S | H |
|---|---|---|---|---|---|---|---|---|---|---|
| | ISO | ANSI | | 01 05 10 15 20 25 30 35 40 45 50 | Stahl | Rostfrei | Eisenguss | NE-Metalle | Hochwarmfest | Harte Werkstoffe |
| **SCPP215** | HC-P15 | C7 | P | | ● | ○ | ○ | ○ | ○ | ○ |
| **SCPP220** | HC-P20 | C6 | P | | ● | ○ | ○ | ○ | ○ | |
| **SCPP225** | HC-P25 | C6 | P | | ● | ○ | ○ | ○ | ○ | |
| **SCWP225** | HW-P25 | C6 | W | | ● | | | ○ | | |
| **SCPP230** | HC-P30 | C6 | P | | ● | ○ | ○ | | | |
| **SCPP235** | HC-P35 | C6 | P | | ● | ○ | ○ | | | |
| **SCPP240** | HC-P40 | C5 | P | | ● | ○ | ○ | ○ | ○ | |
| **SCPM225** | HC-M25 | | P | | ○ | ● | ○ | ○ | ○ | |
| **SCPM240** | HC-M40 | | P | | ○ | ● | ○ | | | |
| **SCPX210** | HC-N10 | C3 | P | | | | | ● | | |
| **SCWX210** | HW-N10 | C4 | W | | | | | ● | | |
| **SCPX215** | HC-N15 | C3 | P | | | | | ● | | |
| **SCWN225** | HW-N25 | C2 | W | | | | | ● | ○ | |
| **SCWX225** | HW-N25 | C2 | W | | | | | ● | | |
| **SCPX230** | HC-N30 | C1 | P | | | | | ● | | |
| **SCPN235** | HC-N30 | C1 | P | | | | | ● | | |
| **SCPS240** | HC-S30 | | P | | | ○ | | | ● | |
| **SCPH205** | HC-H05 | C4 | P | | ○ | | ○ | | | ● |
| **SCPH215** | HC-H15 | C3 | P | | ○ | | | | | ● |

● Hauptanwendung

○ Erweiterte Anwendung

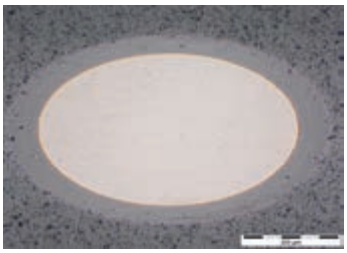
| SCPP215 | HC-P15 | ● ○ ○ ○ ○ ○ |
|---|---|---|



**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1660 | Beschichtungsart: Ti Al Cr X N | Beschichtungsaufbau: nanostrukturierte Gradientenschicht mit Legierungszusätzen

**Einsatzempfehlung:**
Gute Kombination zwischen Hartmetall und Beschichtung für universell einsetzbare Werkzeuge

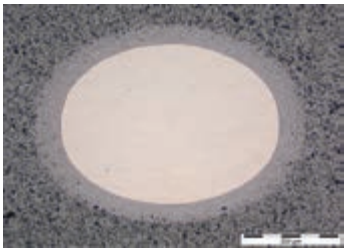
| SCPP220 | HC-P20 | ● ○ ○ ○ ○ |
|---|---|---|



**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: Ti Al Cr X N | Beschichtungsaufbau: nanostrukturierte Gradientenschicht mit Legierungszusätzen

**Einsatzempfehlung:**
Gute Kombination zwischen Hartmetall und Beschichtung für universell einsetzbare Werkzeuge, optimierte Spanausbringung

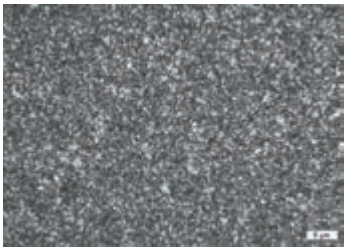
| SCPP225 | HC-P25 | ● ○ ○ ○ ○ |
|---|---|---|



**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: Ti Al C N | Beschichtungsaufbau: Mehrlage (gestapelt)

**Einsatzempfehlung:**
Gute Kombination zwischen Hartmetall und Beschichtung für universell einsetzbare Werkzeuge

| SCWP225 | HW-P25 | ● ○ |
|---|---|---|



**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600

**Einsatzempfehlung:**
Feinstkornhartmetall zur spanenden Bearbeitung von Nichteisenmetallen, Kunstoffen und Verbundwerkstoffen (CFK, GFK)

# Sortenbeschreibung

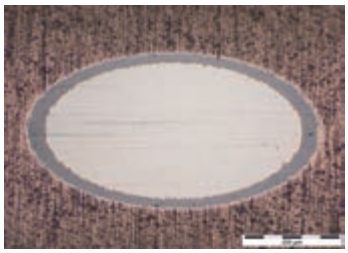
Vollhartmetallwerkzeuge Fräsen



## SCPP230

HC-P30

● ○ ○



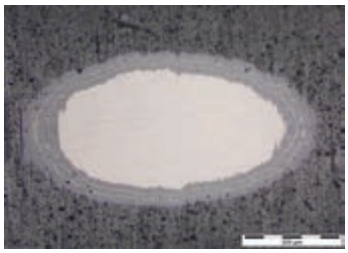
**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: Ti Al C N | Beschichtungsaufbau: Mehrlage

**Einsatzempfehlung:**
Gute Kombination zwischen Hartmetall und Beschichtung für universell einsetzbare Werkzeuge, optimierte Spanausbringung & niedriger Reibkoeffizient

## SCPP235

HC-P35

● ○ ○



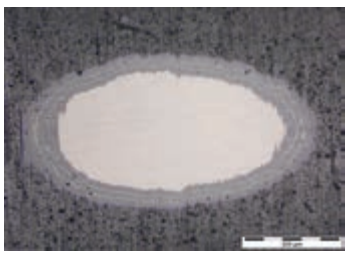
**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: Ti Al C N | Beschichtungsaufbau: Mehrlage (gestapelt)

**Einsatzempfehlung:**
Gute Kombination zwischen Hartmetall und Beschichtung zur Bearbeitung von Stählen

## SCPP240

HC-P40

● ○ ○ ○ ○



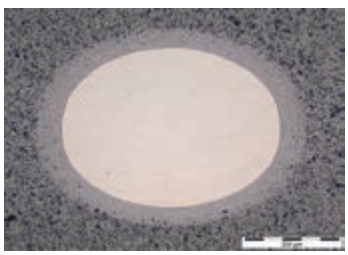
**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: Ti Al C N | Beschichtungsaufbau: Mehrlage (gestapelt)

**Einsatzempfehlung:**
Gute Kombination zwischen Hartmetall und Beschichtung für universell einsetzbare Werkzeuge, optimierte Spanausbringung

## SCPM225

HC-M25

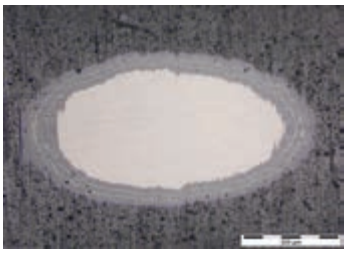
○ ● ○ ○ ○



**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: Ti Al C N | Beschichtungsaufbau: Mehrlage (gestapelt)

**Einsatzempfehlung:**
Feinstkornhartmetall zur universellen spanenden Bearbeitung von legierten und unlegierten Stählen, Titanlegierungen und Nickelbasislegierungen.

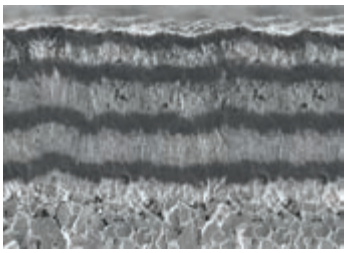
| SCPM240 | HC-M40 | ○ ● ○ |
|---|---|---|



**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: Ti Al C N | Beschichtungsaufbau: Mehrlage (gestapelt)

**Einsatzempfehlung:**
Gute Kombination zwischen Hartmetall und Beschichtung u. A. zur Bearbeitung von rostfreien Stählen, Trockenbearbeitung ebenfalls möglich

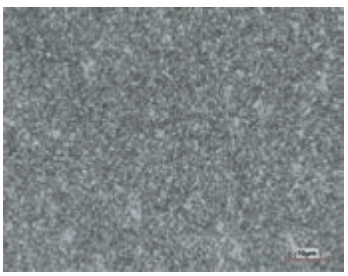
| SCPX210 | HC-N10 | ● |
|---|---|---|



**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1660 | Beschichtungsart: Diamant | Beschichtungsaufbau: Mehrlage, kristallin

**Einsatzempfehlung:**
Gute Kombination zwischen Hartmetall und Diamant-Beschichtung, zur Bearbeitung von Faserverbundwerkstoffen.

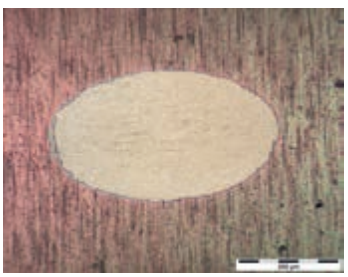
| SCWX210 | HW-N10 | ● |
|---|---|---|



**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1800

**Einsatzempfehlung:**
Feinstkornhartmetall zur spanenden Bearbeitung von Alu-Legierungen, faserverstärkten Kunststoffen (CFK, GFK), Verbundwerkstoffen und Graphit.

| SCPX215 | HC-N15 | ● |
|---|---|---|



**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1800 | Beschichtungsart: DLC | Beschichtungsaufbau: Amorphe, wasserstofffreie Kohlenstoffschicht

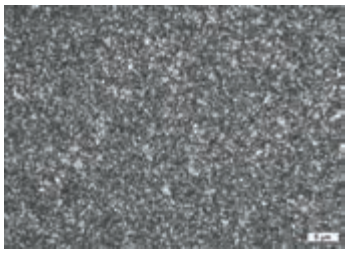
**Einsatzempfehlung:**
Erste Wahl aus Hartmetall und DLC-Beschichtung, zur Bearbeitung von Faserverbundwerkstoffen.

# Sortenbeschreibung

Vollhartmetallwerkzeuge Fräsen



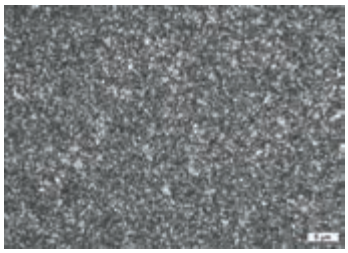
| SCWN225 | HW-N25 | ● ○ |
|---|---|---|



**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600

**Einsatzempfehlung:**
Feinstkornhartmetall zur universellen spanenden Bearbeitung von legierten und unlegierten Stählen, Titanlegierungen und Nickelbasislegierungen

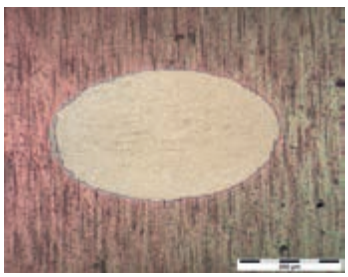
| SCWX225 | HW-N25 | ● |
|---|---|---|



**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600

**Einsatzempfehlung:**
Feinstkornhartmetall zur spanenden Bearbeitung von Nichteisenmetallen, Kunstoffen und Verbundwerkstoffen (CFK, GFK)

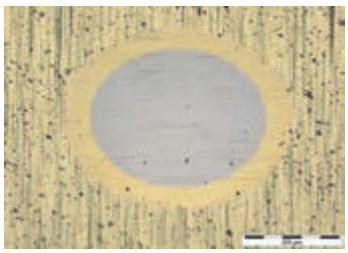
| SCPX230 | HC-N30 | ● |
|---|---|---|



**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1660 | Beschichtungsart: DLC | Beschichtungsaufbau: Amorphe, wasserstofffreie Kohlenstoffschicht

**Einsatzempfehlung:**
Gute Kombination zwischen Hartmetall und DLC-Beschichtung, zur Bearbeitung von Faserverbundwerkstoffen.

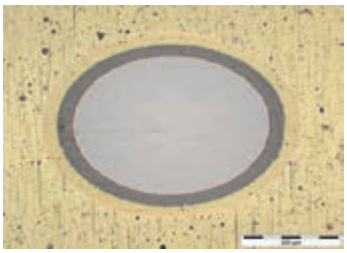
| SCPN235 | HC-N30 | ● |
|---|---|---|



**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: basiert auf Zr N | Beschichtungsaufbau: Mehrlage

**Einsatzempfehlung:**
Erste Wahl aus Hartmetall und Beschichtung zur Bearbeitung von Nichteisenmetallen

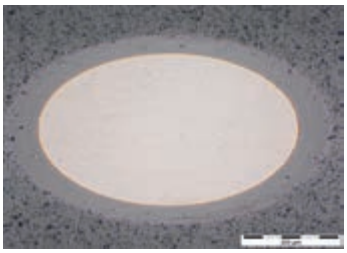
| SCPS240 | HC-S40 | ○ ● |
|---|---|---|



**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: Ti Al Zr N | Beschichtungsaufbau: Mehrlage

**Einsatzempfehlung:**
Erste Wahl aus Hartmetall und Beschichtung zur Bearbeitung von Nickel-Basislegierungen

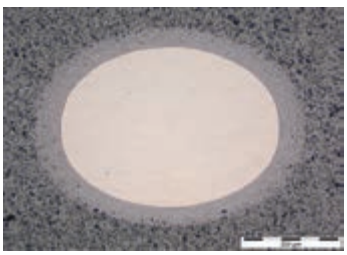
| SCPH205 | HC-H05 | ○ ○ ● |
|---|---|---|



**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: Ti Al Cr X N | Beschichtungsaufbau: nanostrukturierte Gradientenschicht mit Legierungszusätzen

**Einsatzempfehlung:**
Gute Kombination zwischen Hartmetall und Beschichtung zur Hartbearbeitung, Trockenzerspanung ist ebenfalls möglich

| SCPH215 | HC-H15 | ○ ● |
|---|---|---|



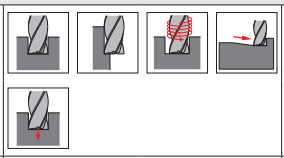
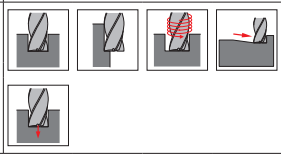
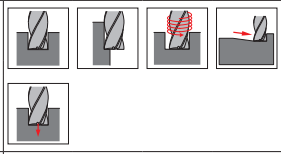
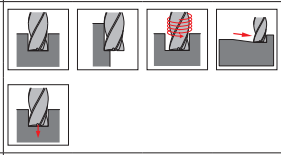
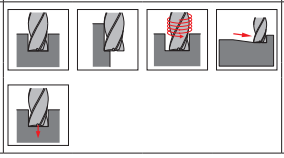
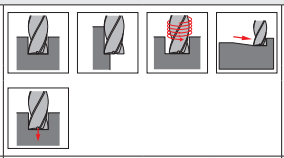
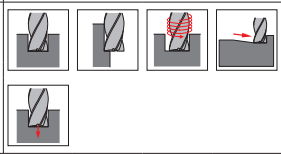
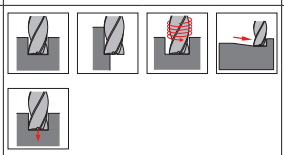
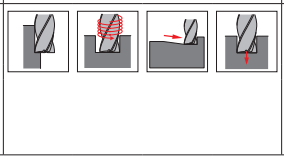
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Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: Ti Al C N | Beschichtungsaufbau: Mehrlage (gestapelt)

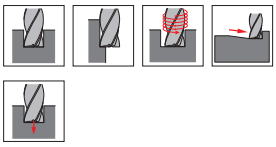
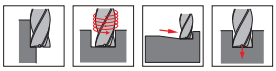
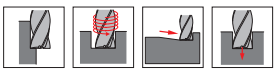
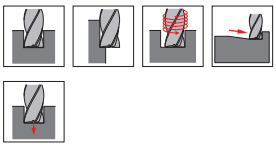
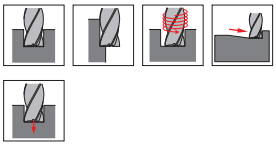
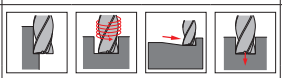
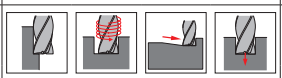
**Einsatzempfehlung:**
Gute Kombination aus Hartmetall und Beschichtung zur Hartbearbeitung.

# Übersicht

Vollhartmetallwerkzeuge Fräsen



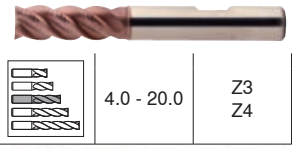
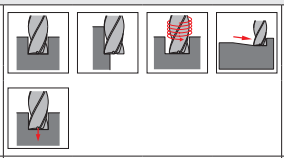
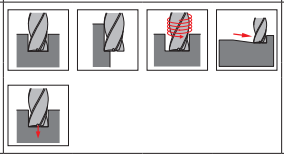
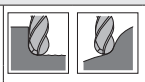
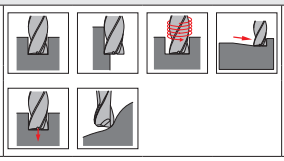
| Werkzeugtyp | Länge | Ø-Bereich [mm] | Zähnezahl | Drallwinkel | Spanwinkel | Innenkühlung | Schneidecke | Schaft | Bearbeitungs-richtung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **UN** | **HPC SF** | HPC-Schaftfräser, beschichtet | | | | | | | | | |
| W0451 |  | 3.0 - 20.0 | Z4 | $\lambda_S = 35° / 38°$ | $\gamma_S = 8°$ |  | F 45° | HB |  |  | F38 |
| W0451 |  | 3.0 - 20.0 | Z4 | $\lambda_S = 35° / 38°$ | $\gamma_S = 8°$ |  | F 45° | HB |  |  | F40 |
| W0451 |  | 3.0 - 20.0 | Z4 | $\lambda_S = 35° / 38°$ | $\gamma_S = 8°$ |  | F 45° | HB |  |  | F40 |
| W0451 |  | 6.0 - 20.0 | Z4 | $\lambda_S = 35° / 38°$ | $\gamma_S = 8°$ |  | F 45° | HB |  |  | F42 |
| W0459 |  | 6.0 - 20.0 | Z4 | $\lambda_S = 35° / 38°$ | $\gamma_S = 12°$ |  | F 45° | HB |  |  | F44 |
| **UN** | **SF** | Schaftfräser, beschichtet | | | | | | | | | |
| W0264 |  | 2.8 - 20.0 | Z2 | $\lambda_S = 30°$ | $\gamma_S = 13°$ |  | F 45° | HB |  |  | F46 |
| W0306 |  | 2.8 - 20.0 | Z3 | $\lambda_S = 30°$ | $\gamma_S = 13°$ |  | F 45° | HB |  |  | F48 |
| W0314 |  | 3.0 - 20.0 | Z3 | $\lambda_S = 45°$ | $\gamma_S = 13°$ |  | F 45° | HA HB |  |  | F50 |
| W0314 |  | 3.5 - 20.0 | Z3 | $\lambda_S = 45°$ | $\gamma_S = 13°$ |  | F 45° | HB |  |  | F52 |

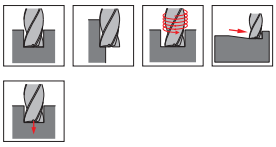
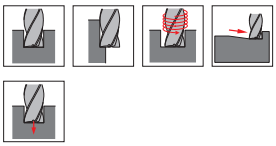
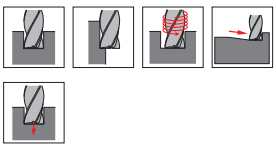
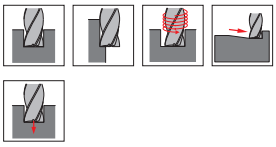
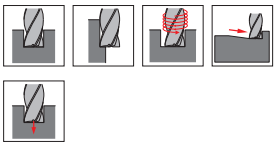
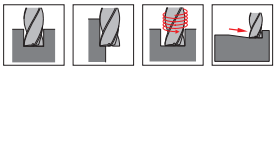
| Werkzeugtyp | Länge | Ø-Bereich [mm] | Zähnezahl | Dralwinkel | Spanwinkel | Innenkühlung | Schneidecke | Schaft | Bearbeitungs-richtung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **UN** | **SF** | Schaftfräser, beschichtet | | | | | | | | | |
| W0316 |  | 3.0 - 20.0 | Z3 | $\lambda_s = 45°$ | $\gamma_s = 13°$ |  | F 45° |  |  |  | F54 |
| W0406 |  | 2.0 - 20.0 | Z4 | $\lambda_s = 30°$ | $\gamma_s = 6°$ |  | S |  |  |  | F56 |
| W0406 |  | 8.0 - 20.0 | Z4 | $\lambda_s = 30°$ | $\gamma_s = 6°$ |  | S |  |  |  | F58 |
| **UN** | **SFM** | Mini-Schaftfräser, beschichtet | | | | | | | | | |
| W0318 |  | 2.0 - 20.0 | Z3 | $\lambda_s = 30°$ | $\gamma_s = 5°$ |  | S |  |  |  | F60 |
| **UN** | **CPC SF** | CPC-Schaftfräser (Circle Power Cutting), beschichtet | | | | | | | | | |
| W0444 |  | 3.0 - 20.0 | Z4 | $\lambda_s = 35°$ 36,5° | $\gamma_s = 8°$ |  | F 45° |  |  |  | F62 |
| W0444 |  | 6.0 - 20.0 | Z4 | $\lambda_s = 35°$ 36,5° | $\gamma_s = 8°$ |  | F 45° |  |  |  | F64 |
| W0444 |  | 6.0 - 20.0 | Z4 | $\lambda_s = 35°$ 36,5° | $\gamma_s = 8°$ |  | F 45° |  |  |  | F66 |

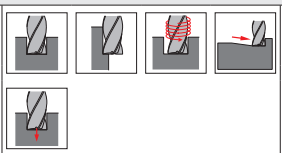
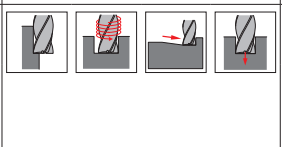
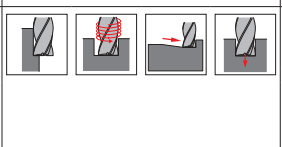
# Übersicht

Vollhartmetallwerkzeuge Fräsen



| Werkzeugtyp | Länge | Ø-Bereich [mm] | Zähnezahl | Drallwinkel | Spanwinkel | Innenkühlung | Schneidecke | Schaft | Bearbeitungs-richtung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **UN** | **HPC SR** | HPC-Schruppfräser, beschichtet | | | | | | | | | |
| W0422 |  | 4.0 - 20.0 | Z3<br>Z4 | $\lambda_S = 45°$ | $\gamma_S = 8°$ |  |  |  |  |  | F68 |
| W0422 |  | 4.0 - 20.0 | Z3<br>Z4 | $\lambda_S = 45°$ | $\gamma_S = 8°$ |  |  |  |  |  | F68 |
| **UN** | **VR** | Vollradiusfräser, beschichtet | | | | | | | | | |
| W0216 |  | 3.0 - 20.0 | Z2 | $\lambda_S = 30°$ | $\gamma_S = 13°$ |  |  |  |  |  | F70 |
| **UN** | **HPC TF** | HPC-Torusfräser, beschichtet | | | | | | | | | |
| W0448 |  | 3.0 - 20.0 | Z4 | $\lambda_S = \frac{35°}{38°}$ | $\gamma_S = 8°$ |  |  |  |  |  | F72 |
| **UN** | **E** | Entgrater, beschichtet | | | | | | | | | |
| W0740 |  | 4.0 - 12.0 | Z4 | $\lambda_S = 0°$ | $\gamma_S = 0°$ |  | σ 90° |  |  |  | F74 |
| W0741 |  | 4.0 - 12.0 | Z4 | $\lambda_S = 0°$ | $\gamma_S = 0°$ |  | σ 60° |  |  |  | F76 |
| W0742 |  | 4.0 - 12.0 | Z4 | $\lambda_S = 0°$ | $\gamma_S = 0°$ |  | σ 120° |  |  |  | F78 |

| Werkzeugtyp | Länge | Ø-Bereich [mm] | Zähnezahl | Drallwinkel | Spanwinkel | Innenkühlung | Schneidecke | Schaft | Bearbeitungs-richtung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **ST** | **HPC SF** | HPC-Schaftfräser, beschichtet | | | | | | | | | |
| W0450 |  | 3.0 - 20.0 | Z4 | $\lambda_s = \frac{35°}{38°}$ | $\gamma_s = 12°$ |  | F 45° | HB |  |  | F80 |
| W0450 |  | 3.0 - 20.0 | Z4 | $\lambda_s = \frac{35°}{38°}$ | $\gamma_s = 12°$ |  | F 45° | HB |  |  | F80 |
| W0452 |  | 3.0 - 20.0 | Z4 | $\lambda_s = \frac{44,5°}{46,5°}$ | $\gamma_s = 12°$ |  | F 45° | HB |  |  | F82 |
| W0452 |  | 3.0 - 20.0 | Z4 | $\lambda_s = \frac{44,5°}{46,5°}$ | $\gamma_s = 12°$ |  | F 45° | HB |  |  | F82 |
| W0452 |  | 6.0 - 20.0 | Z4 | $\lambda_s = \frac{44,5°}{46,5°}$ | $\gamma_s = 12°$ |  | F 45° | HB |  |  | F84 |
| W0550 |  | 6.0 - 20.0 | Z5 | $\lambda_s = 38°$ | $\gamma_s = 6°$ |  | F 45° | HB |  |  | F86 |

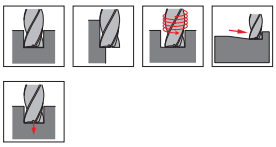
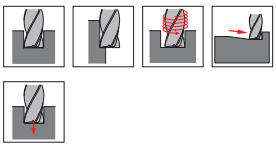
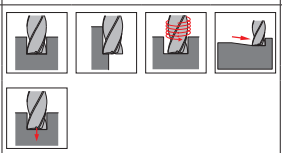
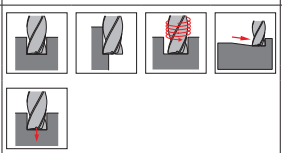
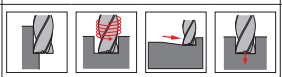
| Werkzeugtyp | Länge | Ø-Bereich [mm] | Zähnezahl | Drallwinkel | Spanwinkel | Innenkühlung | Schneidecke | Schaft | Bearbeitungs-richtung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **ST** | **CPC SF** | CPC-Schaftfräser (Circle Power Cutting), beschichtet | | | | | | | | | |
| W0446 |  | 3.0 - 20.0 | Z4 | $\lambda_s = \frac{35°}{36,5°}$ | $\gamma_s = 12°$ |  | F 45° | HB |  |  | F88 |
| W0446 |  | 6.0 - 20.0 | Z4 | $\lambda_s = \frac{35°}{36,5°}$ | $\gamma_s = 12°$ |  | F 45° | HB |  |  | F90 |
| W0446 |  | 6.0 - 20.0 | Z4 | $\lambda_s = \frac{35°}{36,5°}$ | $\gamma_s = 12°$ |  | F 45° | HB |  |  | F92 |

# Übersicht

Vollhartmetallwerkzeuge Fräsen

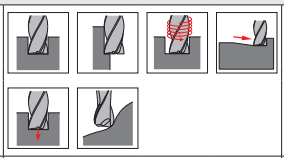
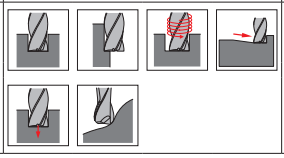
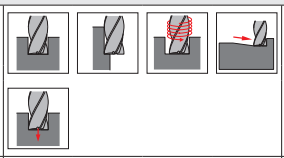
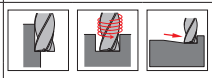
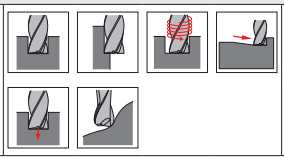


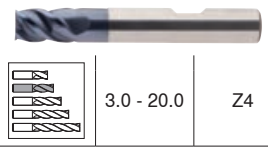
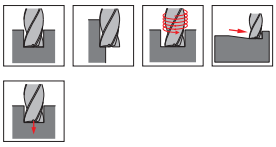
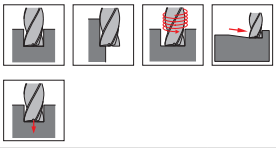
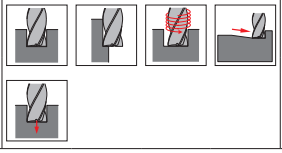
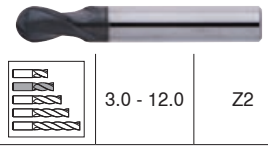
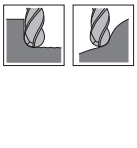
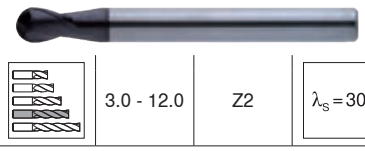
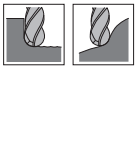
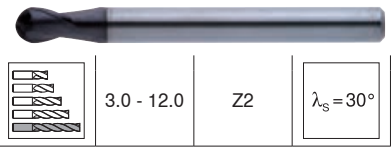
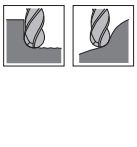
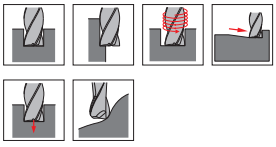
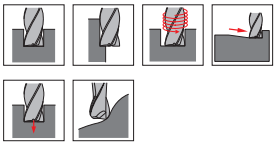
| Werkzeugtyp | Länge | Ø-Bereich [mm] | Zähnezahl | Drallwinkel | Spanwinkel | Innenkühlung | Schneidecke | Schaft | Bearbeitungs-richtung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **ST** | **HPC SR** | HPC-Schruppfräser, beschichtet | | | | | | | | | |
| W0421 | | 6.0 - 20.0 | Z5 | $\lambda_s = 38°$ | $\gamma_s = 6°$ | | F 45° | HB | | | F94 |
| **ST** | **MSF** | Micro-Schaftfräser, beschichtet | | | | | | | | | |
| W0286 | | 0.5 - 2.0 | Z2 | $\lambda_s = 30°$ | $\gamma_s = 5°$ | | F 45° | HA | | | F96 |
| W0286 | | 0.5 - 2.0 | Z2 | $\lambda_s = 30°$ | $\gamma_s = 5°$ | | F 45° | HA | | | F96 |
| **ST** | **MVR** | Micro-Vollradiusfräser, beschichtet | | | | | | | | | |
| W0285 | | 0.5 - 2.0 | Z2 | $\lambda_s = 30°$ | $\gamma_s = 5°$ | | R | HA | | | F98 |
| W0285 | | 0.5 - 2.0 | Z2 | $\lambda_s = 30°$ | $\gamma_s = 5°$ | | R | HA | | | F98 |
| **ST** | **MTF** | Micro-Torusfräser, beschichtet | | | | | | | | | |
| W0289 | | 0.5 - 2.0 | Z2 | $\lambda_s = 30°$ | $\gamma_s = 5°$ | | R | HA | | | F100 |
| W0289 | | 0.5 - 2.0 | Z2 | $\lambda_s = 30°$ | $\gamma_s = 5°$ | | R | HA | | | F100 |

| Werkzeugtyp | Länge | Ø-Bereich [mm] | Zähnezahl | Drallwinkel | Spanwinkel | Innenkühlung | Schneidecke | Schaft | Bearbeitungs-richtung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **ST** | **HG SC** | Hochgenauigkeits-Schlichtfräser, beschichtet | | | | | | | | | |
| W0374 |  | 6.0 - 20.0 | Z6 | $\lambda_s$ = 48° 49,5° | $\gamma_s$ = 12° |  | S | HA |  |  | F102 |
| W0374 |  | 6.0 - 20.0 | Z6<br>Z8 | $\lambda_s$ = 48° 49,5° | $\gamma_s$ = 12° |  | S | HA |  |  | F104 |
| W0374 |  | 6.0 - 20.0 | Z6<br>Z8 | $\lambda_s$ = 48° 49,5° | $\gamma_s$ = 12° |  | S | HA |  |  | F104 |
| **VA** | **HPC SF** | HPC-Schaftfräser, beschichtet | | | | | | | | | |
| W0340 |  | 1.0 - 20.0 | Z3 | $\lambda_s$ = 42,5° 45° 47,5° | $\gamma_s$ = 4° |  | F 45° | HB |  |  | F106 |
| W0340 |  | 1.0 - 20.0 | Z3 | $\lambda_s$ = 42,5° 45° 47,5° | $\gamma_s$ = 4° |  | F 45° | HB |  |  | F106 |
| W0340 |  | 4.0 - 20.0 | Z3 | $\lambda_s$ = 43,5° 45° 46,5° | $\gamma_s$ = 4° |  | F 45° | HB |  |  | F108 |
| W0345 |  | 3.0 - 20.0 | Z3 | $\lambda_s$ = 33° 34° 35° | $\gamma_s$ = 12° |  | F 45° | HB |  |  | F110 |
| W0445 |  | 4.0 - 20.0 | Z4 | $\lambda_s$ = 35° 38° | $\gamma_s$ = 12° |  | F 45° | HB |  |  | F112 |

# Übersicht

Vollhartmetallwerkzeuge Fräsen

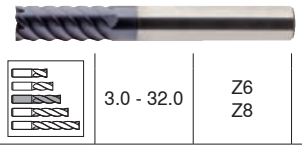
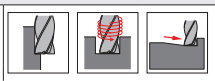
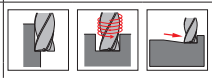
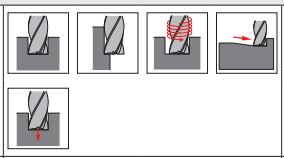
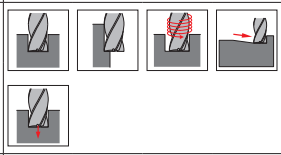
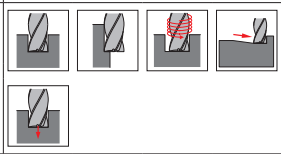
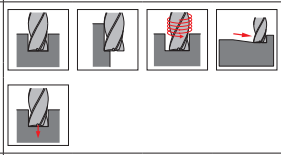
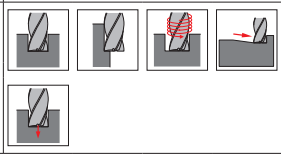
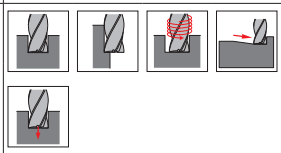
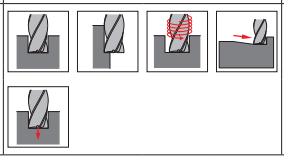
| Werkzeugtyp | Länge | Ø-Bereich [mm] | Zähnezahl | Drallwinkel | Spanwinkel | Innenkühlung | Schneidecke | Schaft | Bearbeitungs-richtung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **VA** | **HPC TF** | HPC-Torusfräser, beschichtet | | | | | | | | | |
| W0342 |  | 4.0 - 20.0 | Z3 | $\lambda_S$ = 42,5° 45° 47,5° | $\gamma_S$ = 4° |  | R | HB |  |  | F114 |
| W0342 |  | 4.0 - 20.0 | Z3 | $\lambda_S$ = 42,5° 45° 47,5° | $\gamma_S$ = 4° |  | R | HB |  |  | F114 |
| **TI** | **HPC SF** | HPC-Schaftfräser, beschichtet | | | | | | | | | |
| W0456 |  | 4.0 - 20.0 | Z4 | $\lambda_S$ = 35° 38° | $\gamma_S$ = 12° |  | R | HB |  |  | F116 |
| W0556 |  | 4.0 - 20.0 | Z5 | $\lambda_S$ = 38° | $\gamma_S$ = 6° |  | R | HB |  |  | F118 |
| **TI** | **HPC TF** | HPC-Torusfräser, beschichtet | | | | | | | | | |
| W0457 |  | 4.0 - 20.0 | Z4 | $\lambda_S$ = 35° 38° | $\gamma_S$ = 12° |  | R | HB |  |  | F120 |

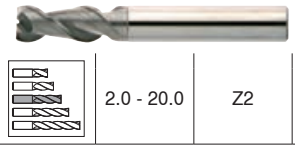
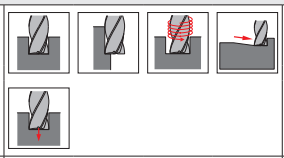
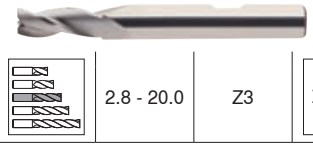
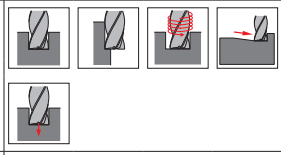
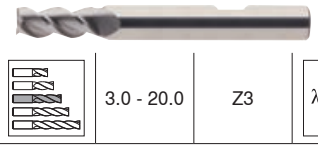
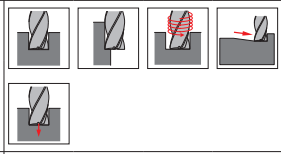
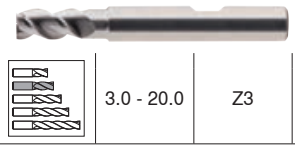
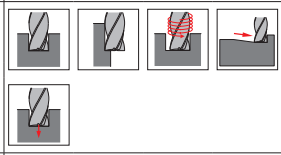
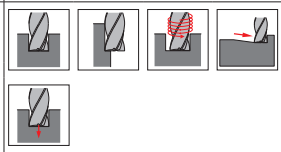
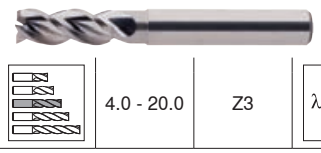
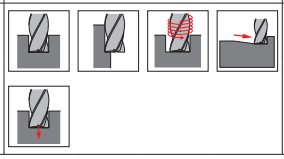
| Werkzeugtyp | Länge | Ø-Bereich [mm] | Zähnezahl | Drallwinkel | Spanwinkel | Innenkühlung | Schneidecke | Schaft | Bearbeitungs-richtung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **H** | **HPC SF** HPC-Schaftfräser, beschichtet | | | | | | | | | | |
| W0453 |  | 3.0 - 20.0 | Z4 | $\lambda_S = 44° 47°$ | $\gamma_S = 2°$ |  |  |  |  |  | F122 |
| W0453 |  | 3.0 - 20.0 | Z4 | $\lambda_S = 44° 47°$ | $\gamma_S = 2°$ |  |  |  |  |  | F122 |
| W0453 |  | 4.0 - 20.0 | Z4 | $\lambda_S = 44° 46°$ | $\gamma_S = 2°$ |  |  |  |  |  | F124 |
| **H** | **VR** Vollradiusfräser, beschichtet | | | | | | | | | | |
| W0281 |  | 3.0 - 12.0 | Z2 | $\lambda_S = 30°$ | $\gamma_S = -15°$ |  |  |  |  |  | F126 |
| W0281 |  | 3.0 - 12.0 | Z2 | $\lambda_S = 30°$ | $\gamma_S = -15°$ |  |  |  |  |  | F128 |
| W0281 |  | 3.0 - 12.0 | Z2 | $\lambda_S = 30°$ | $\gamma_S = -15°$ |  |  |  |  |  | F128 |
| **H** | **TF** Torusfräser, beschichtet | | | | | | | | | | |
| W0441 |  | 4.0 - 20.0 | Z4 | $\lambda_S = 52°$ | $\gamma_S = -10°$ |  |  |  |  |  | F130 |
| W0441 |  | 4.0 - 20.0 | Z4 | $\lambda_S = 52°$ | $\gamma_S = -10°$ |  |  |  |  |  | F132 |

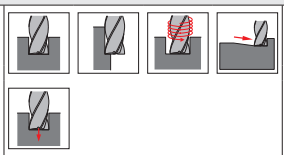
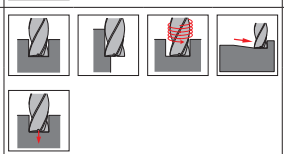
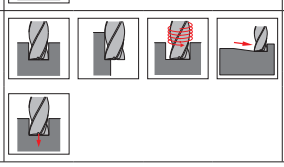
# Übersicht

Vollhartmetallwerkzeuge Fräsen



| Werkzeugtyp | Länge | Ø-Bereich [mm] | Zähnezahl | Drallwinkel | Spanwinkel | Innenkühlung | Schneidecke | Schaft | Bearbeitungs-richtung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **H** | **SC** | Schlichtfräser, beschichtet | | | | | | | | | |
| W0367 |  | 3.0 - 32.0 | Z6<br>Z8 | $\lambda_S = 50°$ | $\gamma_S = -5°$ |  | S | HA |  |  | F134 |
| W0367 |  | 3.0 - 32.0 | Z6<br>Z8 | $\lambda_S = 50°$ | $\gamma_S = -5°$ |  | S | HA |  |  | F136 |
| **AL** | **HPC SF** | HPC-Schaftfräser, beschichtet | | | | | | | | | |
| W0360 |  | 3.0 - 20.0 | Z3 | $\lambda_S = \frac{42,5°}{45°}\ \frac{}{47,5°}$ | $\gamma_S = 12°$ |  | F 45° | HA<br>HB |  |  | F138 |
| W0360 |  | 6.0 - 20.0 | Z3 | $\lambda_S = \frac{42,5°}{45°}\ \frac{}{47,5°}$ | $\gamma_S = 12°$ |  | F 45° | HA<br>HB |  |  | F140 |
| W0360 |  | 3.0 - 20.0 | Z3 | $\lambda_S = \frac{42,5°}{45°}\ \frac{}{47,5°}$ | $\gamma_S = 12°$ |  | F 45° | HA<br>HB |  |  | F142 |
| W0361 |  | 6.0 - 20.0 | Z3 | $\lambda_S = \frac{42,5°}{45°}\ \frac{}{47,5°}$ | $\gamma_S = 12°$ |  | F 45° | HA<br>HB |  |  | F144 |
| W0361 |  | 6.0 - 12.0 | Z3 | $\lambda_S = \frac{42,5°}{45°}\ \frac{}{47,5°}$ | $\gamma_S = 12°$ |  | F 45° | HA |  |  | F146 |
| W0460 |  | 3.0 - 20.0 | Z4 | $\lambda_S = \frac{44°}{47°}$ | $\gamma_S = 12°$ |  | F 45° | HA<br>HB |  |  | F148 |
| W0460 |  | 4.0 - 20.0 | Z4 | $\lambda_S = \frac{44°}{47°}$ | $\gamma_S = 12°$ |  | F 45° | HA<br>HB |  |  | F150 |

| Werkzeugtyp | Länge | Ø-Bereich [mm] | Zähnezahl | Drallwinkel | Spanwinkel | Innenkühlung | Schneidecke | Schaft | Bearbeitungs-richtung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **AL** | **SF** | Schaftfräser, unbeschichtet | | | | | | | | | |
| W0224 |  | 2.0 - 20.0 | Z2 | $\lambda_s = 45°$ | $\gamma_s = 20°$ |  |  |  |  |  | F152 |
| W0306 |  | 2.8 - 20.0 | Z3 | $\lambda_s = 30°$ | $\gamma_s = 13°$ |  |  |  |  |  | F154 |
| W0314 |  | 3.0 - 20.0 | Z3 | $\lambda_s = 45°$ | $\gamma_s = 13°$ |  |  |  |  |  | F156 |
| W0316 |  | 3.0 - 20.0 | Z3 | $\lambda_s = 45°$ | $\gamma_s = 13°$ |  |  |  |  |  | F158 |
| W0319 |  | 4.0 - 20.0 | Z3 | $\lambda_s = 45°$ | $\gamma_s = 8°$ |  |  |  |  |  | F160 |
| W0320 |  | 4.0 - 20.0 | Z3 | $\lambda_s = 45°$ | $\gamma_s = 8°$ |  |  |  |  |  | F162 |

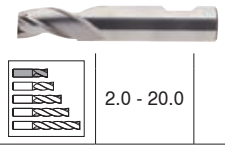
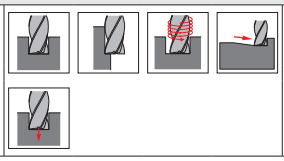
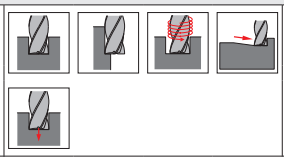
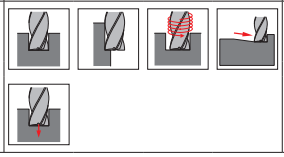
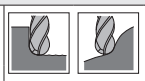
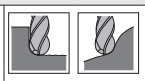
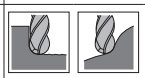
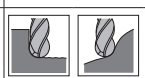
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **AL** | **SF** | Schaftfräser, beschichtet | | | | | | | | | |
| W0305 |  | 5.0 - 20.0 | Z3 | $\lambda_s = 5°$ | $\gamma_s = 15°$ |  |  |  |  |  | F164 |
| W0305 |  | 5.0 - 20.0 | Z3 | $\lambda_s = 5°$ | $\gamma_s = 15°$ |  |  |  |  |  | F166 |
| W0305 |  | 5.0 - 20.0 | Z3 | $\lambda_s = 5°$ | $\gamma_s = 15°$ |  |  |  |  |  | F168 |

# Übersicht

Vollhartmetallwerkzeuge Fräsen



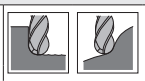
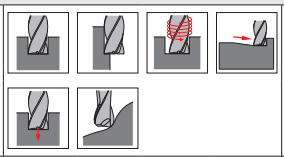
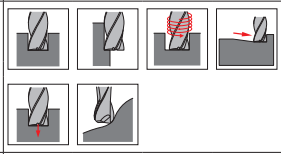
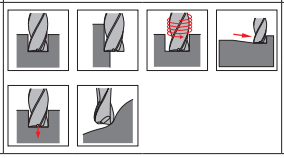
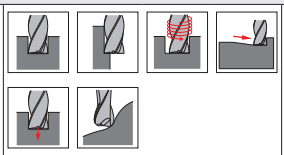
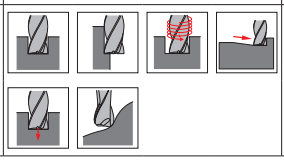
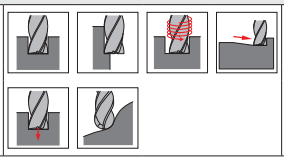
| Werkzeugtyp | Länge | Ø-Bereich [mm] | Zähnezahl | Drallwinkel | Spanwinkel | Innenkühlung | Schneidecke | Schaft | Bearbeitungs-richtung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **AL** | **PKD SF** | Schaftfräser, PKD bestückt | | | | | | | | | |
| WP200 | | 3.0 - 10.0 | Z2 | $\lambda_S = 0°$ | $\gamma_S = 0°$ | | F 45° | HA | | | F170 |
| WP200 | | 3.0 - 10.0 | Z2 | $\lambda_S = 0°$ | $\gamma_S = 0°$ | | F 45° | HA | | | F172 |
| WP201 | | 3.0 - 10.0 | Z2 | $\lambda_S = 0°$ | $\gamma_S = 0°$ | | F 45° | HA | | | F174 |
| WP201 | | 3.0 - 10.0 | Z2 | $\lambda_S = 0°$ | $\gamma_S = 0°$ | | F 45° | HA | | | F176 |
| WP202 | | 2.0 - 12.0 | Z1 Z2 | $\lambda_S = 0°$ | $\gamma_S = 0°$ | | S | HA | | | F178 |
| WP400 | | 6.0 - 20.0 | Z4 | $\lambda_S = 0°$ | $\gamma_S = 0°$ | | S | HA | | | F180 |
| WP400 | | 6.0 - 20.0 | Z4 | $\lambda_S = 0°$ | $\gamma_S = 0°$ | | S | HA | | | F182 |
| WP401 | | 6.0 - 20.0 | Z4 | $\lambda_S = 0°$ | $\gamma_S = 0°$ | | S | HA | | | F184 |
| WP401 | | 6.0 - 20.0 | Z4 | $\lambda_S = 0°$ | $\gamma_S = 0°$ | | S | HA | | | F186 |

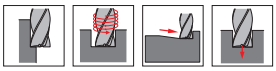
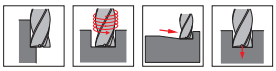
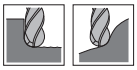
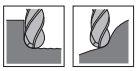
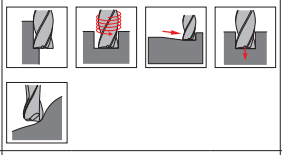
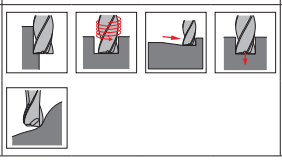
| Werkzeugtyp | Länge | Ø-Bereich [mm] | Zähnezahl | Drallwinkel | Spanwinkel | Innenkühlung | Schneidecke | Schaft | Bearbeitungs-richtung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **AL** | **SFM** | Mini-Schaftfräser, unbeschichtet | | | | | | | | | |
| W0318 |  | 2.0 - 20.0 | Z3 | $\lambda_S = 30°$ | $\gamma_S = 5°$ |  | S |  |  |  | F188 |
| **AL** | **HPC SR** | HPC-Schruppfräser, beschichtet | | | | | | | | | |
| W0363 |  | 6.0 - 20.0 | Z3 | $\lambda_S = 37,5° / 40° / 42,5°$ | $\gamma_S = 10°$ |  | F 45° |  |  |  | F190 |
| W0369 |  | 6.0 - 20.0 | Z3 | $\lambda_S = 37,5° / 40° / 42,5°$ | $\gamma_S = 10°$ |  | F 45° |  |  |  | F192 |
| **AL** | **VR** | Vollradiusfräser, unbeschichtet | | | | | | | | | |
| W0216 |  | 3.0 - 20.0 | Z2 | $\lambda_S = 30°$ | $\gamma_S = 13°$ |  | R |  |  |  | F194 |
| **AL** | **VR** | Vollradiusfräser, beschichtet | | | | | | | | | |
| W0238 |  | 3.0 - 20.0 | Z2 | $\lambda_S = 45°$ | $\gamma_S = 13°$ |  | R |  |  |  | F196 |
| W0238 |  | 3.0 - 20.0 | Z2 | $\lambda_S = 45°$ | $\gamma_S = 13°$ |  | R |  |  |  | F196 |
| W0238 |  | 3.0 - 16.0 | Z2 | $\lambda_S = 45°$ | $\gamma_S = 13°$ |  | R |  |  |  | F198 |

# Übersicht

Vollhartmetallwerkzeuge Fräsen



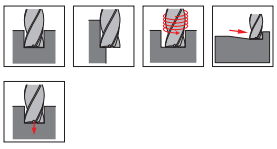
| Werkzeugtyp | Länge | Ø-Bereich [mm] | Zähnezahl | Drallwinkel | Spanwinkel | Innenkühlung | Schneidecke | Schaft | Bearbeitungs-richtung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **AL** | **PKD VR** | Vollradiusfräser, PKD bestückt | | | | | | | | | |
| WP488 |  | 2.0 - 20.0 | Z1<br>Z2 | $\lambda_S = 0°$ | $\gamma_S = 0°$ | | R | HA | |  | F200 |
| **AL** | **HPC TF** | HPC-Torusfräser, beschichtet | | | | | | | | | |
| W0362 |  | 3.0 - 20.0 | Z3 | $\lambda_S = 42,5°$<br>$45°$<br>$47,5°$ | $\gamma_S = 12°$ | | R | HA | |  | F202 |
| W0362 |  | 6.0 - 20.0 | Z3 | $\lambda_S = 42,5°$<br>$45°$<br>$47,5°$ | $\gamma_S = 12°$ | | R | HA | |  | F204 |
| W0362 |  | 6.0 - 20.0 | Z3 | $\lambda_S = 42,5°$<br>$45°$<br>$47,5°$ | $\gamma_S = 12°$ | | R | HA | |  | F204 |
| **AL** | **TF** | Torusfräser, unbeschichtet | | | | | | | | | |
| W0321 |  | 5.0 - 20.0 | Z3 | $\lambda_S = 45°$ | $\gamma_S = 8°$ | | R | HA<br>HB | |  | F206 |
| W0321 |  | 6.0 - 20.0 | Z3 | $\lambda_S = 45°$ | $\gamma_S = 8°$ | | R | HA<br>HB | |  | F208 |
| **AL** | **PKD TF** | Torusfräser, PKD bestückt | | | | | | | | | |
| WP288 |  | 2.0 - 20.0 | Z1<br>Z2 | $\lambda_S = 0°$ | $\gamma_S = 0°$ | | R | HA | |  | F210 |

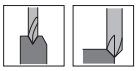
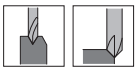
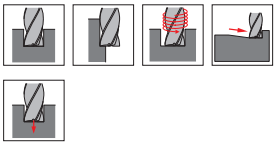
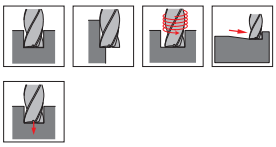
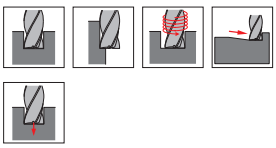
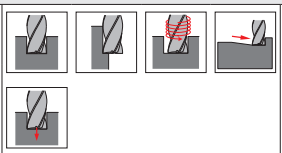
| Werkzeugtyp | Länge | Ø-Bereich [mm] | Zähnezahl | Drallwinkel | Spanwinkel | Innenkühlung | Schneidecke | Schaft | Bearbeitungs-richtung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **AL** | **MSF** | Micro-Schaftfräser, beschichtet | | | | | | | | | |
| W0242 |  | 0.5 - 2.0 | Z2 | $\lambda_s = 45°$ | $\gamma_s = 13°$ |  |  |  |  |  | F214 |
| W0242 |  | 0.5 - 2.0 | Z2 | $\lambda_s = 45°$ | $\gamma_s = 13°$ |  |  |  |  |  | F214 |
| **AL** | **MVR** | Micro-Vollradiusfräser, beschichtet | | | | | | | | | |
| W0239 |  | 0.5 - 2.0 | Z2 | $\lambda_s = 45°$ | $\gamma_s = 13°$ |  |  |  |  |  | F216 |
| W0239 |  | 0.5 - 2.0 | Z2 | $\lambda_s = 45°$ | $\gamma_s = 13°$ |  |  |  |  |  | F216 |
| **AL** | **MTF** | Micro-Torusfräser, beschichtet | | | | | | | | | |
| W0249 |  | 0.5 - 2.0 | Z2 | $\lambda_s = 45°$ | $\gamma_s = 13°$ |  |  |  |  |  | F218 |
| W0249 |  | 0.5 - 2.0 | Z2 | $\lambda_s = 45°$ | $\gamma_s = 13°$ |  |  |  |  |  | F218 |

# Übersicht

Vollhartmetallwerkzeuge Fräsen



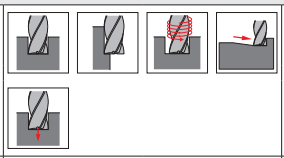
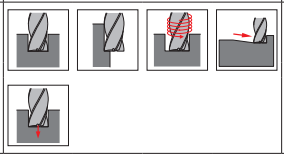
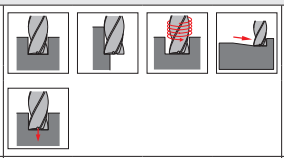
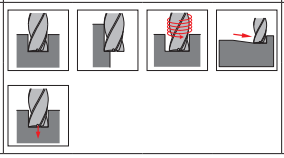
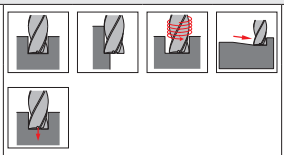
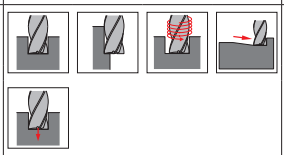
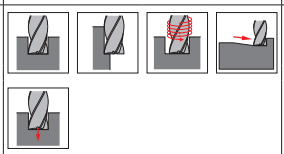
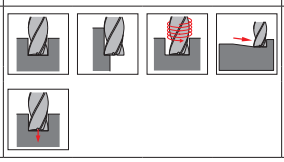
| Werkzeugtyp | Länge | Ø-Bereich [mm] | Zähnezahl | Drallwinkel | Spanwinkel | Innenkühlung | Schneidecke | Schaft | Bearbeitungs-richtung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **AL** | **HG SC** | Hochgenauigkeits-Schlichtfräser, beschichtet | | | | | | | | | |
| W0376 |  | 6.0 - 20.0 | Z6 | $\lambda_S$ = 43,5° 46,5° | $\gamma_S$ = 20° | | S | HA | |  | F220 |
| W0376 |  | 6.0 - 20.0 | Z6 | $\lambda_S$ = 43,5° 46,5° | $\gamma_S$ = 20° | | S | HA | |  | F222 |
| W0376 |  | 6.0 - 20.0 | Z6 | $\lambda_S$ = 43,5° 46,5° | $\gamma_S$ = 20° | | S | HA | |  | F222 |
| **AL** | **EZ** | Einzahnfräser, unbeschichtet | | | | | | | | | |
| W0228 |  | 3.0 - 12.0 | Z1 | $\lambda_S$ = 30° | $\gamma_S$ = 13° | | S | HA | |  | F224 |
| **AL** | **E** | Entgrater, unbeschichtet | | | | | | | | | |
| W0740 |  | 4.0 - 12.0 | Z4 | $\lambda_S$ = 0° | $\gamma_S$ = 0° | | σ 90° | HA HB | |  | F226 |
| W0741 |  | 4.0 - 12.0 | Z4 | $\lambda_S$ = 0° | $\gamma_S$ = 0° | | σ 60° | HA HB | |  | F228 |
| W0742 |  | 4.0 - 12.0 | Z4 | $\lambda_S$ = 0° | $\gamma_S$ = 0° | | σ 120° | HA HB | |  | F230 |

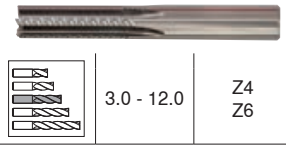
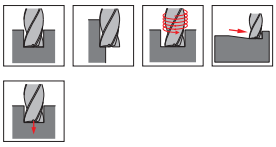
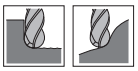
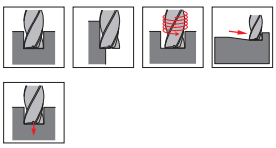
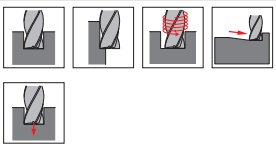
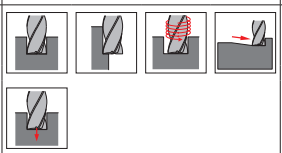
| Werkzeugtyp | Länge | Ø-Bereich [mm] | Zähnezahl | Drallwinkel | Spanwinkel | Innenkühlung | Schneidecke | Schaft | Bearbeitungs-richtung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **AL** | **FF** | Fasenfräser, unbeschichtet | | | | | | | | | |
| W0750 |  | 3.0 - 20.0 | Z2 | $\lambda_s = 30°$ | $\gamma_s = 15°$ | | σ 120° | HA | |  | F232 |
| W0751 |  | 3.0 - 20.0 | Z2 | $\lambda_s = 30°$ | $\gamma_s = 15°$ | | σ 90° | HA | |  | F234 |
| **V** | **HPC SF** | HPC-Schaftfräser, beschichtet | | | | | | | | | |
| W0451 |  | 3.0 - 20.0 | Z4 | $\lambda_s = 35°/38°$ | $\gamma_s = 8°$ | | F 45° | HA | |  | F236 |
| WD451 |  | 3.0 - 20.0 | Z4 | $\lambda_s = 35°/38°$ | $\gamma_s = 8°$ | | F 45° | HA | |  | F238 |
| **V** | **SRS** | Schrupp-Schlichtfräser, unbeschichtet | | | | | | | | | |
| W0860 |  | 4.0 - 20.0 | Z6 | $\lambda_s = 0°$ | $\gamma_s = 15°$ | | F 45° | HA | |  | F240 |
| **V** | **SRS** | Schrupp-Schlichtfräser, beschichtet | | | | | | | | | |
| WD860 |  | 4.0 - 20.0 | Z6 | $\lambda_s = 0°$ | $\gamma_s = 15°$ | | F 45° | HA | |  | F242 |

# Übersicht

Vollhartmetallwerkzeuge Fräsen



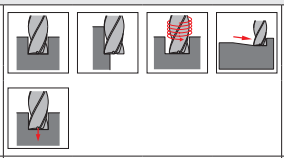
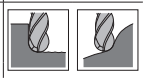
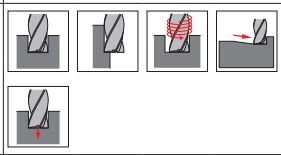
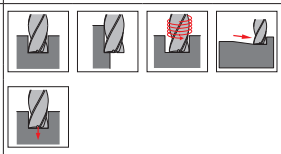
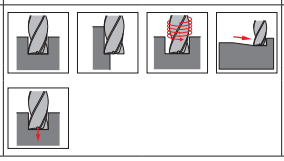
| Werkzeugtyp | Länge | Ø-Bereich [mm] | Zähnezahl | Drallwinkel | Spanwinkel | Innenkühlung | Schneidecke | Schaft | Bearbeitungs-richtung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **V** | **EZ** | Einzahnfräser, unbeschichtet | | | | | | | | | |
| W0810 |  | 3.0 - 10.0 | Z1 | $\lambda_S = 30°$ | $\gamma_S = 22°$ | | F 45° | HA | |  | F244 |
| W0815 |  | 3.0 - 10.0 | Z1 | $\lambda_S = 0°$ | $\gamma_S = 22°$ | | F 45° | HA | |  | F246 |
| **V** | **R** | Router, unbeschichtet | | | | | | | | | |
| W0828 |  | 4.0 - 20.0 | | $\lambda_S = 25°$ | $\gamma_S = 8°$ | | S | HA | |  | F248 |
| W0830 |  | 4.0 - 20.0 | | $\lambda_S = 25°$ | $\gamma_S = 8°$ | | σ 135° | HA | |  | F250 |
| **V** | **R** | Router, beschichtet | | | | | | | | | |
| W0828 |  | 4.0 - 20.0 | | $\lambda_S = 25°$ | $\gamma_S = 8°$ | | S | HA | |  | F252 |
| WD828 |  | 4.0 - 20.0 | | $\lambda_S = 25°$ | $\gamma_S = 8°$ | | S | HA | |  | F254 |
| W0830 |  | 4.0 - 20.0 | | $\lambda_S = 25°$ | $\gamma_S = 8°$ | | σ 135° | HA | |  | F256 |
| WD830 |  | 4.0 - 20.0 | | $\lambda_S = 25°$ | $\gamma_S = 8°$ | | σ 135° | HA | |  | F258 |

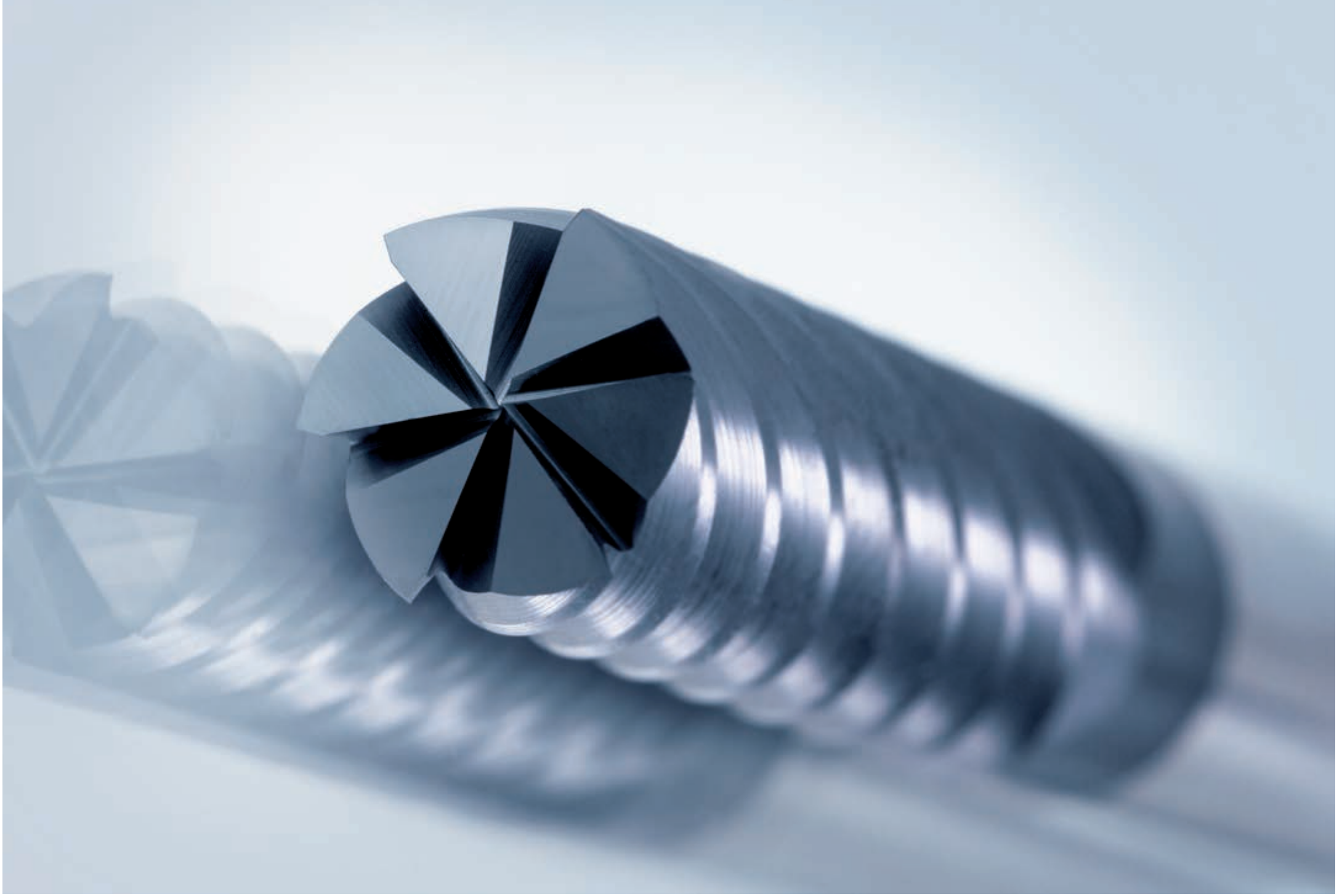
| Werkzeugtyp | Länge | Ø-Bereich [mm] | Zähnezahl | Dralwinkel | Spanwinkel | Innenkühlung | Schneidecke | Schaft | Bearbeitungs-richtung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|---|
| V | MRO | Multirouter, unbeschichtet | | | | | | | | | |
| W0835 |  | 3.0 - 12.0 | Z4<br>Z6 | $\lambda_S = 0°$ | $\gamma_S = 15°$ |  | F 45° | HA |  |  | F260 |
| W0837 |  | 3.0 - 12.0 | Z4<br>Z6 | $\lambda_S = 0°$ | $\gamma_S = 15°$ |  | R | HA |  |  | F262 |
| W0839 |  | 6.0 - 12.0 | Z6 | $\lambda_S = 10°$ | $\gamma_S = 15°$ |  | F 45° | HA |  |  | F264 |
| W0841 |  | 6.0 - 12.0 | Z6 | $\lambda_S = 10°$ | $\gamma_S = 15°$ |  | F 45° | HA |  |  | F266 |
| W0843 |  | 6.0 - 12.0 | Z6 | $\lambda_S = 10°$ | $\gamma_S = 15°$ |  | σ 135° | HA |  |  | F268 |

# Übersicht

Vollhartmetallwerkzeuge Fräsen



| Werkzeugtyp | Länge | Ø-Bereich [mm] | Zähnezahl | Drallwinkel | Spanwinkel | Innenkühlung | Schneidecke | Schaft | Bearbeitungs-richtung | Bearbeitungsverfahren | Seite |
|---|---|---|---|---|---|---|---|---|---|---|---|
| V | MRO | Multirouter, beschichtet | | | | | | | | | |
| W0835 |  | 3.0 - 12.0 | Z4<br>Z6 | $\lambda_s = 0°$ | $\gamma_s = 15°$ |  | F 45° | HA |  |  | F270 |
| W0837 |  | 3.0 - 12.0 | Z4<br>Z6 | $\lambda_s = 0°$ | $\gamma_s = 15°$ |  | R | HA |  |  | F272 |
| W0839 |  | 6.0 - 12.0 | Z6 | $\lambda_s = 10°$ | $\gamma_s = 15°$ |  | F 45° | HA |  |  | F274 |
| W0841 |  | 6.0 - 12.0 | Z6 | $\lambda_s = 10°$ | $\gamma_s = 15°$ |  | F 45° | HA |  |  | F276 |
| W0843 |  | 6.0 - 12.0 | Z6 | $\lambda_s = 10°$ | $\gamma_s = 15°$ |  | σ 135° | HA |  |  | F278 |

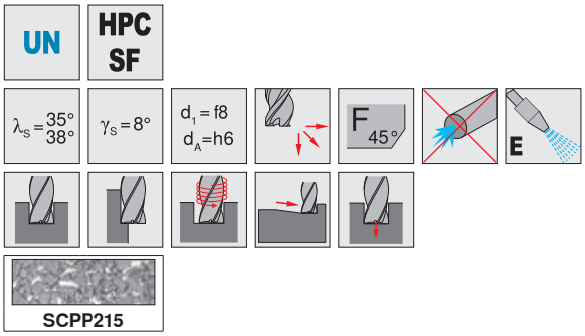


# W0451-S, beschichtet

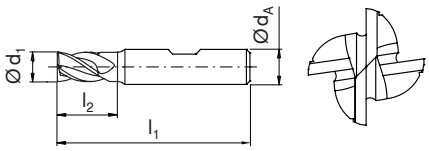
Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 260 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.1.2 | | | 240 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.1 | Baustahl | | 250 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.2.2 | | | 230 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.3 | | | 220 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.3.1 | Federstahl | | | | | | | | | |
| 1.3.2 | | | | | | | | | | |
| 1.3.3 | | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 210 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.2 | | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.3 | | | 190 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.2.1 | Nitrierstahl | | 190 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.2.2 | | | 170 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.1 | Vergütungsstahl | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.2 | | | 190 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.3 | | | 190 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.4 | | | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.5 | | | 170 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.6 | | | 150 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.1.1 | Werkzeugstahl unlegiert | | 185 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.2 | | | 170 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.3 | | | 150 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.2.4 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.5 | | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.2 | | | 180 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.3.3 | | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.4 | | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.5 | | | 130 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 100 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.2 | | | 80 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.3 | | | 100 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.4 | | | 100 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.5 | | | 110 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.2.1 | hochwarmfeste Legierungen | | 30 | 1xø | 0,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.2 | | | 30 | 1xø | 0,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.3 | | | 30 | 1xø | 0,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.4 | | | 30 | 1xø | 0,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.1.1 | konventioneller Stahlguss | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.2 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.3 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.2.1 | rostfreier Stahlguss | | 100 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 5.2.2 | | | 100 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 6.1.1 | GG mit lamellarem Graphit | | 200 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.2 | | | 180 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.3 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.1.4 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.1 | GGG mit Kugelgraphit | | 190 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.2 | | | 170 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.3 | | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.1 | GTW weisser Temperguss | | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.2 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.1 | GTS schwarzer Temperguss | | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.2 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.1.1 | Aluminium | | | | | | | | | |
| 7.1.2 | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | | 280 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.2 | | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.3 | | | 200 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.4 | | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.5 | | | 200 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.6 | | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.1 | CuZn (Messing) | | 300 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.2 | | | 350 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.1 | CuSn (Bronze) | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.2 | | | 280 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | | 140 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.2 | | | 160 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.8.1 | Titan | | 90 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.8.2 | | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 7.8.3 | | | 50 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |






| d1 [mm] | Type, Bezeichnung | dA [mm] | l1 [mm] | l2 [mm] | F [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|
| 3,0 | HPC-SF.UN.0451.0300.S.Z4.F0010A.HB | 6 | 50 | 5 | 0,1 | 4 | W0451030241 |
| 3,5 | HPC-SF.UN.0451.0350.S.Z4.F0010A.HB | 6 | 54 | 8 | 0,1 | 4 | W0451035241 |
| 4,0 | HPC-SF.UN.0451.0400.S.Z4.F0010A.HB | 6 | 54 | 8 | 0,1 | 4 | W0451040241 |
| 4,5 | HPC-SF.UN.0451.0450.S.Z4.F0010A.HB | 6 | 54 | 9 | 0,1 | 4 | W0451045241 |
| 5,0 | HPC-SF.UN.0451.0500.S.Z4.F0010A.HB | 6 | 54 | 9 | 0,1 | 4 | W0451050241 |
| 5,5 | HPC-SF.UN.0451.0550.S.Z4.F0010A.HB | 6 | 54 | 10 | 0,1 | 4 | W0451055241 |
| 6,0 | HPC-SF.UN.0451.0600.S.Z4.F0010A.HB | 6 | 54 | 10 | 0,1 | 4 | W0451060241 |
| 7,0 | HPC-SF.UN.0451.0700.S.Z4.F0020A.HB | 8 | 58 | 12 | 0,2 | 4 | W0451070241 |
| 8,0 | HPC-SF.UN.0451.0800.S.Z4.F0020A.HB | 8 | 58 | 12 | 0,2 | 4 | W0451080241 |
| 9,0 | HPC-SF.UN.0451.0900.S.Z4.F0020A.HB | 10 | 66 | 14 | 0,2 | 4 | W0451090241 |
| 10,0 | HPC-SF.UN.0451.1000.S.Z4.F0020A.HB | 10 | 66 | 14 | 0,2 | 4 | W0451100241 |
| 11,0 | HPC-SF.UN.0451.1100.S.Z4.F0030A.HB | 12 | 73 | 16 | 0,3 | 4 | W0451110241 |
| 12,0 | HPC-SF.UN.0451.1200.S.Z4.F0030A.HB | 12 | 73 | 16 | 0,3 | 4 | W0451120241 |
| 14,0 | HPC-SF.UN.0451.1400.S.Z4.F0030A.HB | 14 | 73 | 16 | 0,3 | 4 | W0451140241 |
| 15,0 | HPC-SF.UN.0451.1500.S.Z4.F0030A.HB | 16 | 82 | 22 | 0,3 | 4 | W0451150241 |
| 16,0 | HPC-SF.UN.0451.1600.S.Z4.F0030A.HB | 16 | 82 | 22 | 0,3 | 4 | W0451160241 |
| 17,0 | HPC-SF.UN.0451.1700.S.Z4.F0030A.HB | 18 | 82 | 22 | 0,3 | 4 | W0451170241 |
| 18,0 | HPC-SF.UN.0451.1800.S.Z4.F0030A.HB | 18 | 82 | 22 | 0,3 | 4 | W0451180241 |
| 19,0 | HPC-SF.UN.0451.1900.S.Z4.F0030A.HB | 20 | 92 | 26 | 0,3 | 4 | W0451190241 |
| 20,0 | HPC-SF.UN.0451.2000.S.Z4.F0030A.HB | 20 | 92 | 26 | 0,3 | 4 | W0451200241 |

# W0451-L und W0451-LS, beschichtet

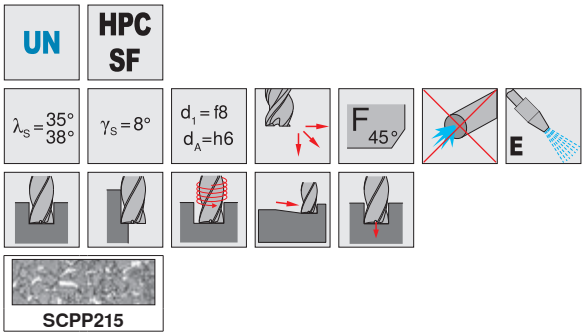
Schnittdatenempfehlung



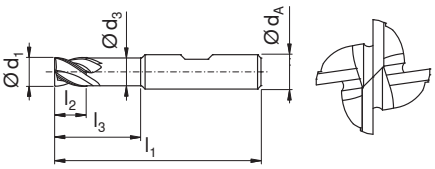
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 260 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.1.2 | | | 240 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.1 | Baustahl | | 250 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.2.2 | | | 230 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.3 | | | 220 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.3.1 | Federstahl | | | | | | | | | |
| 1.3.2 | | | | | | | | | | |
| 1.3.3 | | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 210 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.2 | | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.3 | | | 190 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.2.1 | Nitrierstahl | | 190 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.2.2 | | | 170 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.1 | Vergütungsstahl | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.2 | | | 190 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.3 | | | 190 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.4 | | | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.5 | | | 170 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.6 | | | 150 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.1.1 | Werkzeugstahl unlegiert | | 185 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.2 | | | 170 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.3 | | | 150 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.2.4 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.5 | | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.2 | | | 180 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.3.3 | | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.4 | | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.5 | | | 130 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 100 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.2 | | | 80 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.3 | | | 100 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.4 | | | 100 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.5 | | | 110 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.2.1 | hochwarmfeste Legierungen | | 30 | 1xø | 0,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.2 | | | 30 | 1xø | 0,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.3 | | | 30 | 1xø | 0,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.4 | | | 30 | 1xø | 0,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.1.1 | konventioneller Stahlguss | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.2 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.3 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.2.1 | rostfreier Stahlguss | | 100 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 5.2.2 | | | 100 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 6.1.1 | GG mit lamellarem Graphit | | 200 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.2 | | | 180 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.3 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.1.4 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.1 | GGG mit Kugelgraphit | | 190 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.2 | | | 170 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.3 | | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.1 | GTW weisser Temperguss | | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.2 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.1 | GTS schwarzer Temperguss | | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.2 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.1.1 | Aluminium | | | | | | | | | |
| 7.1.2 | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | | 280 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.2 | | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.3 | | | 200 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.4 | | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.5 | | | 200 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.6 | | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.1 | CuZn (Messing) | | 300 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.2 | | | 350 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.1 | CuSn (Bronze) | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.2 | | | 280 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | | 140 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.2 | | | 160 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.8.1 | Titan | | 90 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.8.2 | | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 7.8.3 | | | 50 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |

# W0451-L und W0451-LS, beschichtet

HPC-Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | HB Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 3,0 | HPC-SF.UN.0451.0300.LS.Z4.F0010A.HB | 6 | 2,8 | 57 | 4 | 13 | 0,1 | 4 | | W0451030R41 |
| 3,0 | HPC-SF.UN.0451.0300.L.Z4.F0010A.HB | 6 | | 57 | 8 | | 0,1 | 4 | W0451030341 | |
| 3,5 | HPC-SF.UN.0451.0350.L.Z4.F0010A.HB | 6 | | 57 | 11 | | 0,1 | 4 | W0451035341 | |
| 4,0 | HPC-SF.UN.0451.0400.LS.Z4.F0010A.HB | 6 | 3,8 | 57 | 5 | 17 | 0,1 | 4 | | W0451040R41 |
| 4,0 | HPC-SF.UN.0451.0400.L.Z4.F0010A.HB | 6 | | 57 | 11 | | 0,1 | 4 | W0451040341 | |
| 4,5 | HPC-SF.UN.0451.0450.L.Z4.F0010A.HB | 6 | | 57 | 13 | | 0,1 | 4 | W0451045341 | |
| 5,0 | HPC-SF.UN.0451.0500.LS.Z4.F0010A.HB | 6 | 4,8 | 57 | 6 | 19 | 0,1 | 4 | | W0451050R41 |
| 5,0 | HPC-SF.UN.0451.0500.L.Z4.F0010A.HB | 6 | | 57 | 13 | | 0,1 | 4 | W0451050341 | |
| 5,5 | HPC-SF.UN.0451.0550.L.Z4.F0010A.HB | 6 | | 57 | 13 | | 0,1 | 4 | W0451055341 | |
| 6,0 | HPC-SF.UN.0451.0600.LS.Z4.F0010A.HB | 6 | 5,8 | 57 | 7 | 19 | 0,1 | 4 | | W0451060R41 |
| 6,0 | HPC-SF.UN.0451.0600.L.Z4.F0010A.HB | 6 | | 57 | 13 | | 0,1 | 4 | W0451060341 | |
| 7,0 | HPC-SF.UN.0451.0700.L.Z4.F0020A.HB | 8 | | 63 | 21 | | 0,2 | 4 | W0451070341 | |
| 8,0 | HPC-SF.UN.0451.0800.LS.Z4.F0020A.HB | 8 | 7,7 | 63 | 9 | 25 | 0,2 | 4 | | W0451080R41 |
| 8,0 | HPC-SF.UN.0451.0800.L.Z4.F0020A.HB | 8 | | 63 | 21 | | 0,2 | 4 | W0451080341 | |
| 9,0 | HPC-SF.UN.0451.0900.L.Z4.F0020A.HB | 10 | | 72 | 22 | | 0,2 | 4 | W0451090341 | |
| 10,0 | HPC-SF.UN.0451.1000.LS.Z4.F0020A.HB | 10 | 9,7 | 72 | 11 | 30 | 0,2 | 4 | | W0451100R41 |
| 10,0 | HPC-SF.UN.0451.1000.L.Z4.F0020A.HB | 10 | | 72 | 22 | | 0,2 | 4 | W0451100341 | |
| 11,0 | HPC-SF.UN.0451.1100.L.Z4.F0030A.HB | 12 | | 83 | 26 | | 0,3 | 4 | W0451110341 | |
| 12,0 | HPC-SF.UN.0451.1200.LS.Z4.F0030A.HB | 12 | 11,6 | 83 | 13 | 36 | 0,3 | 4 | | W0451120R41 |
| 12,0 | HPC-SF.UN.0451.1200.L.Z4.F0030A.HB | 12 | | 83 | 26 | | 0,3 | 4 | W0451120341 | |
| 14,0 | HPC-SF.UN.0451.1400.L.Z4.F0030A.HB | 14 | | 83 | 26 | | 0,3 | 4 | W0451140341 | |
| 15,0 | HPC-SF.UN.0451.1500.L.Z4.F0030A.HB | 16 | | 92 | 36 | | 0,3 | 4 | W0451150341 | |
| 16,0 | HPC-SF.UN.0451.1600.LS.Z4.F0030A.HB | 16 | 15,5 | 92 | 17 | 42 | 0,3 | 4 | | W0451160R41 |
| 16,0 | HPC-SF.UN.0451.1600.L.Z4.F0030A.HB | 16 | | 92 | 36 | | 0,3 | 4 | W0451160341 | |
| 17,0 | HPC-SF.UN.0451.1700.L.Z4.F0030A.HB | 18 | | 92 | 36 | | 0,3 | 4 | W0451170341 | |
| 18,0 | HPC-SF.UN.0451.1800.L.Z4.F0030A.HB | 18 | | 92 | 36 | | 0,3 | 4 | W0451180341 | |
| 19,0 | HPC-SF.UN.0451.1900.L.Z4.F0030A.HB | 20 | | 104 | 41 | | 0,3 | 4 | W0451190341 | |
| 20,0 | HPC-SF.UN.0451.2000.LS.Z4.F0030A.HB | 20 | 19,5 | 104 | 21 | 52 | 0,3 | 4 | | W0451200R41 |
| 20,0 | HPC-SF.UN.0451.2000.L.Z4.F0030A.HB | 20 | | 104 | 41 | | 0,3 | 4 | W0451200341 | |

# W0451-OL, beschichtet

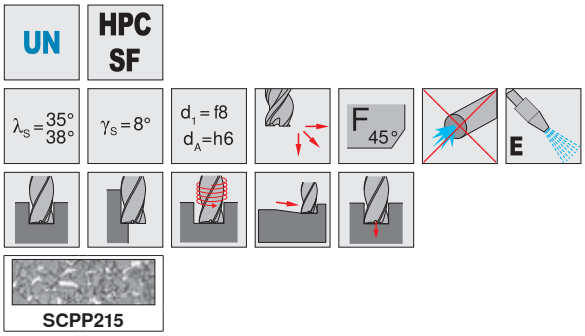
Schnittdatenempfehlung



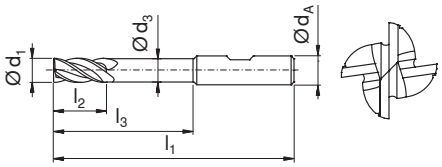
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 1xø | 0,7xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.1.2 | | | 90 | 1xø | 0,7xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.2.1 | Baustahl | | 100 | 1xø | 0,7xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.2 | | | 90 | 1xø | 0,7xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.3 | | | 90 | 1xø | 0,7xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.3.1 | Federstahl | | | | | | | | |
| 1.3.2 | | | | | | | | | |
| 1.3.3 | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 100 | 1xø | 0,7xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 2.1.2 | | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.1.3 | | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.1 | Nitrierstahl | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.2 | | | 80 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.1 | Vergütungsstahl | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.2 | | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.3 | | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.4 | | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.5 | | | 80 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.6 | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 80 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.2 | | | 80 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.3 | | | | | | | | | |
| 3.2.4 | | | 80 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.5 | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | |
| 3.3.2 | | | | | | | | | |
| 3.3.3 | | | 80 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.3.4 | | | | | | | | | |
| 3.3.5 | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 95 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 4.1.2 | | | 85 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 4.1.3 | | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 4.1.4 | | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 4.1.5 | | | 95 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | |
| 4.2.2 | | | | | | | | | |
| 4.2.3 | | | | | | | | | |
| 4.2.4 | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 100 | 1xø | 0,7xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 5.1.2 | | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 5.1.3 | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | 80 | 1xø | 0,7xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.2.2 | | | 80 | 1xø | 0,7xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.1.1 | GG mit lamellarem Graphit | | 110 | 1xø | 0,7xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.2 | | | 100 | 1xø | 0,7xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.3 | | | 100 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.1.4 | | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.2.1 | GGG mit Kugelgraphit | | 110 | 1xø | 0,7xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.2 | | | 100 | 1xø | 0,7xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.3 | | | 100 | 1xø | 0,7xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.3.1 | GTW weisser Temperguss | | 110 | 1xø | 0,7xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.3.2 | | | 100 | 1xø | 0,7xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.1 | GTS schwarzer Temperguss | | 110 | 1xø | 0,7xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.2 | | | 100 | 1xø | 0,7xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |

# W0451-OL, beschichtet

HPC-Schaftfräser





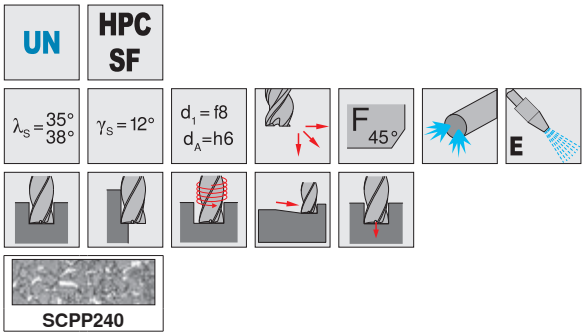

| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | Material |
|---|---|---|---|---|---|---|---|---|---|
| 6,0 | HPC-SF.UN.0451.0600.OL.Z4.F0010A.HB | 6 | 5,8 | 80 | 13 | 42 | 0,1 | 4 | W0451060441 |
| 8,0 | HPC-SF.UN.0451.0800.OL.Z4.F0020A.HB | 8 | 7,7 | 100 | 21 | 62 | 0,2 | 4 | W0451080441 |
| 10,0 | HPC-SF.UN.0451.1000.OL.Z4.F0020A.HB | 10 | 9,7 | 100 | 22 | 58 | 0,2 | 4 | W0451100441 |
| 12,0 | HPC-SF.UN.0451.1200.OL.Z4.F0030A.HB | 12 | 11,6 | 120 | 26 | 73 | 0,3 | 4 | W0451120441 |
| 16,0 | HPC-SF.UN.0451.1600.OL.Z4.F0030A.HB | 16 | 15,5 | 150 | 36 | 100 | 0,3 | 4 | W0451160441 |
| 20,0 | HPC-SF.UN.0451.2000.OL.Z4.F0030A.HB | 20 | 19,5 | 150 | 41 | 98 | 0,3 | 4 | W0451200441 |

# W0459-L, beschichtet

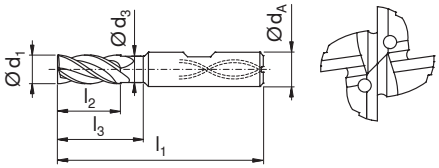
Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 260 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.1.2 | | | 240 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.1 | Baustahl | | 250 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.2.2 | | | 230 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.3 | | | 220 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.3.1 | Federstahl | | | | | | | | |
| 1.3.2 | | | | | | | | | |
| 1.3.3 | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 210 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.2 | | | 200 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.3 | | | 190 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.2.1 | Nitrierstahl | | 190 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.2.2 | | | 170 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.1 | Vergütungsstahl | | 200 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.2 | | | 190 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.3 | | | 190 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.4 | | | 180 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.5 | | | 170 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.6 | | | 150 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.1.1 | Werkzeugstahl unlegiert | | 185 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 180 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.2 | | | 170 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.3 | | | 150 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.2.4 | | | 160 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.5 | | | 140 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 200 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.2 | | | 180 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.3.3 | | | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.4 | | | 140 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.5 | | | 130 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 120 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.2 | | | 100 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.3 | | | 120 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.4 | | | 120 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.5 | | | 130 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.2.1 | hochwarmfeste Legierungen | | 35 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.2 | | | 35 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.3 | | | 35 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.4 | | | 35 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.1.1 | konventioneller Stahlguss | | 200 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.2 | | | 160 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.3 | | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.2.1 | rostfreier Stahlguss | | 140 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 5.2.2 | | | 140 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 6.1.1 | GG mit lamellarem Graphit | | 200 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.2 | | | 180 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.3 | | | 160 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.1.4 | | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.1 | GGG mit Kugelgraphit | | 190 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.2 | | | 170 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.3 | | | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.1 | GTW weisser Temperguss | | 180 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.2 | | | 160 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.1 | GTS schwarzer Temperguss | | 180 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.2 | | | 160 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | 280 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.2 | | | 240 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.3 | | | 200 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.4 | | | 240 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.5 | | | 200 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.6 | | | 240 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.1 | CuZn (Messing) | | 300 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.2 | | | 350 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.1 | CuSn (Bronze) | | 240 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.2 | | | 280 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | | 140 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.2 | | | 160 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.8.1 | Titan | | 90 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.8.2 | | | 80 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 7.8.3 | | | 50 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|---|---|
| 6,0 | HPC-SF.UN.0459.0600.L.Z4.F0010A.HB | 6 | 5,8 | 57 | 13 | 19 | 0,1 | 4 | W0459060341 |
| 8,0 | HPC-SF.UN.0459.0800.L.Z4.F0020A.HB | 8 | 7,7 | 63 | 21 | 25 | 0,2 | 4 | W0459080341 |
| 10,0 | HPC-SF.UN.0459.1000.L.Z4.F0020A.HB | 10 | 9,7 | 72 | 22 | 30 | 0,2 | 4 | W0459100341 |
| 12,0 | HPC-SF.UN.0459.1200.L.Z4.F0030A.HB | 12 | 11,6 | 83 | 26 | 36 | 0,3 | 4 | W0459120341 |
| 16,0 | HPC-SF.UN.0459.1600.L.Z4.F0030A.HB | 16 | 15,5 | 92 | 36 | 42 | 0,3 | 4 | W0459160341 |
| 20,0 | HPC-SF.UN.0459.2000.L.Z4.F0030A.HB | 20 | 19,5 | 104 | 41 | 52 | 0,3 | 4 | W0459200341 |

# W0264-L, beschichtet

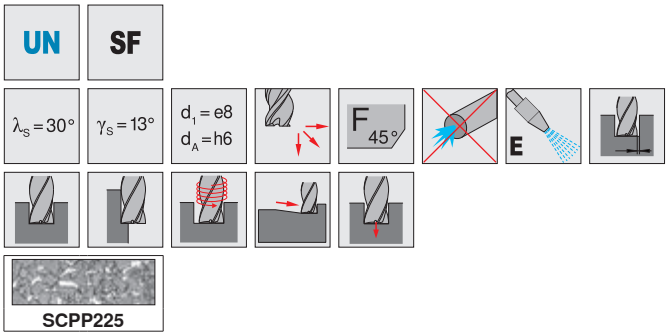
Schnittdatenempfehlung



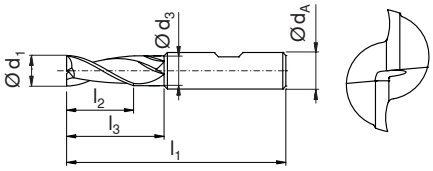
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 2,8 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.1.2 | | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.2.1 | Baustahl | | 140 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.2 | | | 100 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.3 | | | 80 | 1xø | 1xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.3.1 | Federstahl | | | | | | | | | |
| 1.3.2 | | | | | | | | | | |
| 1.3.3 | | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 110 | 1xø | 1xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 2.1.2 | | | 90 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.1.3 | | | 70 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.1 | Nitrierstahl | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.2 | | | 55 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.1 | Vergütungsstahl | | 90 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.2 | | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.3 | | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.4 | | | 70 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.5 | | | 55 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.6 | | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | | | | |
| 3.2.2 | | | | | | | | | | |
| 3.2.3 | | | | | | | | | | |
| 3.2.4 | | | | | | | | | | |
| 3.2.5 | | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | | |
| 3.3.2 | | | | | | | | | | |
| 3.3.3 | | | | | | | | | | |
| 3.3.4 | | | | | | | | | | |
| 3.3.5 | | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 50 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.2 | | | 40 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.3 | | | 50 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.4 | | | 40 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.5 | | | 60 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.1 | hochwarmfeste Legierungen | | 30 | 0,3xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.2 | | | 30 | 0,3xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.3 | | | 30 | 0,3xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.4 | | | 30 | 0,3xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.1.1 | konventioneller Stahlguss | | 120 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 5.1.2 | | | 90 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 5.1.3 | | | 70 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 5.2.1 | rostfreier Stahlguss | | 60 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.2.2 | | | 60 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.1.1 | GG mit lamellarem Graphit | | 130 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.2 | | | 120 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.3 | | | 90 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.1.4 | | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.2.1 | GGG mit Kugelgraphit | | 130 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.2 | | | 120 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.3 | | | 90 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.3.1 | GTW weisser Temperguss | | 130 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.3.2 | | | 120 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.1 | GTS schwarzer Temperguss | | 130 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.2 | | | 120 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.1 | Aluminium | | | | | | | | | |
| 7.1.2 | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | CuZn (Messing) | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | CuSn (Bronze) | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | Titan | | 50 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.2 | | | 35 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.3 | | | 20 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |

# W0264-L, beschichtet

Schaftfräser





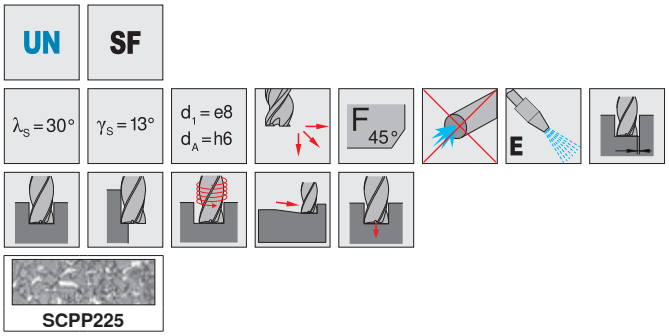

| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|---|---|
| 2,8 | SF.UN.0264.0280.L.Z2.F0005A.HB | 6 | 2,6 | 57 | 8 | 15 | 0,05 | 2 | W0264028391 |
| 3,0 | SF.UN.0264.0300.L.Z2.F0010A.HB | 6 | 2,8 | 57 | 8 | 15 | 0,1 | 2 | W0264030391 |
| 3,5 | SF.UN.0264.0350.L.Z2.F0010A.HB | 6 | 3,3 | 57 | 11 | 15 | 0,1 | 2 | W0264035391 |
| 3,8 | SF.UN.0264.0380.L.Z2.F0010A.HB | 6 | 3,6 | 57 | 11 | 15 | 0,1 | 2 | W0264038391 |
| 4,0 | SF.UN.0264.0400.L.Z2.F0010A.HB | 6 | 3,8 | 57 | 11 | 15 | 0,1 | 2 | W0264040391 |
| 4,8 | SF.UN.0264.0480.L.Z2.F0010A.HB | 6 | 4,6 | 57 | 13 | 21 | 0,1 | 2 | W0264048391 |
| 5,0 | SF.UN.0264.0500.L.Z2.F0010A.HB | 6 | 4,8 | 57 | 13 | 21 | 0,1 | 2 | W0264050391 |
| 5,75 | SF.UN.0264.0575.L.Z2.F0010A.HB | 6 | 5,6 | 57 | 13 | 21 | 0,1 | 2 | W0264057591 |
| 6,0 | SF.UN.0264.0600.L.Z2.F0010A.HB | 6 | 5,8 | 57 | 13 | 21 | 0,1 | 2 | W0264060391 |
| 6,75 | SF.UN.0264.0675.L.Z2.F0010A.HB | 8 | 6,6 | 63 | 16 | 27 | 0,1 | 2 | W0264067591 |
| 7,0 | SF.UN.0264.0700.L.Z2.F0010A.HB | 8 | 6,8 | 63 | 16 | 27 | 0,1 | 2 | W0264070391 |
| 7,75 | SF.UN.0264.0775.L.Z2.F0010A.HB | 8 | 7,6 | 63 | 19 | 27 | 0,1 | 2 | W0264077591 |
| 8,0 | SF.UN.0264.0800.L.Z2.F0010A.HB | 8 | 7,8 | 63 | 19 | 27 | 0,1 | 2 | W0264080391 |
| 8,7 | SF.UN.0264.0870.L.Z2.F0010A.HB | 10 | 8,5 | 72 | 19 | 32 | 0,1 | 2 | W0264087391 |
| 9,0 | SF.UN.0264.0900.L.Z2.F0010A.HB | 10 | 8,8 | 72 | 19 | 32 | 0,1 | 2 | W0264090391 |
| 9,7 | SF.UN.0264.0970.L.Z2.F0010A.HB | 10 | 9,5 | 72 | 22 | 32 | 0,1 | 2 | W0264097391 |
| 10,0 | SF.UN.0264.1000.L.Z2.F0010A.HB | 10 | 9,8 | 72 | 22 | 32 | 0,1 | 2 | W0264100391 |
| 10,7 | SF.UN.0264.1070.L.Z2.F0010A.HB | 12 | 10,5 | 83 | 26 | 38 | 0,1 | 2 | W0264107391 |
| 11,0 | SF.UN.0264.1100.L.Z2.F0010A.HB | 12 | 10,8 | 83 | 26 | 38 | 0,1 | 2 | W0264110391 |
| 11,7 | SF.UN.0264.1170.L.Z2.F0010A.HB | 12 | 11,5 | 83 | 26 | 38 | 0,1 | 2 | W0264117391 |
| 12,0 | SF.UN.0264.1200.L.Z2.F0010A.HB | 12 | 11,8 | 83 | 26 | 38 | 0,1 | 2 | W0264120391 |
| 13,7 | SF.UN.0264.1370.L.Z2.F0010A.HB | 14 | 13,5 | 83 | 26 | 38 | 0,1 | 2 | W0264137391 |
| 14,0 | SF.UN.0264.1400.L.Z2.F0010A.HB | 14 | 13,8 | 83 | 26 | 38 | 0,1 | 2 | W0264140391 |
| 15,7 | SF.UN.0264.1570.L.Z2.F0010A.HB | 16 | 15,4 | 92 | 32 | 44 | 0,1 | 2 | W0264157391 |
| 16,0 | SF.UN.0264.1600.L.Z2.F0010A.HB | 16 | 15,7 | 92 | 32 | 44 | 0,1 | 2 | W0264160391 |
| 17,7 | SF.UN.0264.1770.L.Z2.F0010A.HB | 18 | 17,4 | 92 | 32 | 44 | 0,1 | 2 | W0264177391 |
| 18,0 | SF.UN.0264.1800.L.Z2.F0010A.HB | 18 | 17,7 | 92 | 32 | 44 | 0,1 | 2 | W0264180391 |
| 19,7 | SF.UN.0264.1970.L.Z2.F0010A.HB | 20 | 19,4 | 104 | 38 | 54 | 0,1 | 2 | W0264197391 |
| 20,0 | SF.UN.0264.2000.L.Z2.F0010A.HB | 20 | 19,7 | 104 | 38 | 54 | 0,1 | 2 | W0264200391 |

# W0306-L, beschichtet

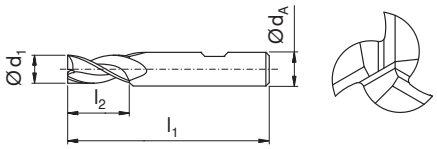
Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 2,8 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.1.2 | | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.2.1 | Baustahl | | 140 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.2 | | | 100 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.3 | | | 80 | 1xø | 1xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.3.1 | Federstahl | | | | | | | | | |
| 1.3.2 | | | | | | | | | | |
| 1.3.3 | | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 110 | 1xø | 1xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 2.1.2 | | | 90 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.1.3 | | | 70 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.1 | Nitrierstahl | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.2 | | | 55 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.1 | Vergütungsstahl | | 90 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.2 | | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.3 | | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.4 | | | 70 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.5 | | | 55 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.6 | | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | | | | |
| 3.2.2 | | | | | | | | | | |
| 3.2.3 | | | | | | | | | | |
| 3.2.4 | | | | | | | | | | |
| 3.2.5 | | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | | |
| 3.3.2 | | | | | | | | | | |
| 3.3.3 | | | | | | | | | | |
| 3.3.4 | | | | | | | | | | |
| 3.3.5 | | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 50 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.2 | | | 40 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.3 | | | 50 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.4 | | | 40 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.5 | | | 60 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.1 | hochwarmfeste Legierungen | | 30 | 0,3xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.2 | | | 30 | 0,3xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.3 | | | 30 | 0,3xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.4 | | | 30 | 0,3xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.1.1 | konventioneller Stahlguss | | 120 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 5.1.2 | | | 90 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 5.1.3 | | | 70 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 5.2.1 | rostfreier Stahlguss | | 60 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.2.2 | | | 60 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.1.1 | GG mit lamellarem Graphit | | 130 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.2 | | | 120 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.3 | | | 90 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.1.4 | | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.2.1 | GGG mit Kugelgraphit | | 130 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.2 | | | 120 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.3 | | | 90 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.3.1 | GTW weisser Temperguss | | 130 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.3.2 | | | 120 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.1 | GTS schwarzer Temperguss | | 130 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.2 | | | 120 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.1 | Aluminium | | | | | | | | | |
| 7.1.2 | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | CuZn (Messing) | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | CuSn (Bronze) | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | Titan | | 50 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.2 | | | 35 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.3 | | | 20 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | F [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|
| 2,8 | SF.AL.0306.0280.L.Z3.F0005A.HB | 6 | 57 | 8 | 0,05 | 3 | W0306028341 |
| 3,0 | SF.UN.0306.0300.L.Z3.F0010A.HB | 6 | 57 | 8 | 0,1 | 3 | W0306030341 |
| 3,8 | SF.UN.0306.0380.L.Z3.F0010A.HB | 6 | 57 | 11 | 0,1 | 3 | W0306038341 |
| 4,0 | SF.UN.0306.0400.L.Z3.F0010A.HB | 6 | 57 | 11 | 0,1 | 3 | W0306040341 |
| 4,8 | SF.UN.0306.0480.L.Z3.F0010A.HB | 6 | 57 | 13 | 0,1 | 3 | W0306048341 |
| 5,0 | SF.UN.0306.0500.L.Z3.F0010A.HB | 6 | 57 | 13 | 0,1 | 3 | W0306050341 |
| 5,8 | SF.UN.0306.0580.L.Z3.F0010A.HB | 6 | 57 | 13 | 0,1 | 3 | W0306058341 |
| 6,0 | SF.UN.0306.0600.L.Z3.F0010A.HB | 6 | 57 | 13 | 0,1 | 3 | W0306060341 |
| 6,8 | SF.UN.0306.0680.L.Z3.F0010A.HB | 8 | 63 | 16 | 0,1 | 3 | W0306068341 |
| 7,0 | SF.UN.0306.0700.L.Z3.F0010A.HB | 8 | 63 | 16 | 0,1 | 3 | W0306070341 |
| 7,8 | SF.UN.0306.0780.L.Z3.F0010A.HB | 8 | 63 | 19 | 0,1 | 3 | W0306078341 |
| 8,0 | SF.UN.0306.0800.L.Z3.F0010A.HB | 8 | 63 | 19 | 0,1 | 3 | W0306080341 |
| 8,7 | SF.UN.0306.0870.L.Z3.F0010A.HB | 10 | 72 | 19 | 0,1 | 3 | W0306087341 |
| 9,0 | SF.UN.0306.0900.L.Z3.F0010A.HB | 10 | 72 | 19 | 0,1 | 3 | W0306090341 |
| 9,7 | SF.UN.0306.0970.L.Z3.F0010A.HB | 10 | 72 | 22 | 0,1 | 3 | W0306097341 |
| 10,0 | SF.UN.0306.1000.L.Z3.F0010A.HB | 10 | 72 | 22 | 0,1 | 3 | W0306100341 |
| 10,7 | SF.UN.0306.1070.L.Z3.F0010A.HB | 12 | 83 | 26 | 0,1 | 3 | W0306107341 |
| 11,0 | SF.UN.0306.1100.L.Z3.F0010A.HB | 12 | 83 | 26 | 0,1 | 3 | W0306110341 |
| 11,7 | SF.UN.0306.1170.L.Z3.F0010A.HB | 12 | 83 | 26 | 0,1 | 3 | W0306117341 |
| 12,0 | SF.UN.0306.1200.L.Z3.F0010A.HB | 12 | 83 | 26 | 0,1 | 3 | W0306120341 |
| 12,7 | SF.UN.0306.1270.L.Z3.F0010A.HB | 14 | 83 | 26 | 0,1 | 3 | W0306127341 |
| 13,7 | SF.UN.0306.1370.L.Z3.F0010A.HB | 14 | 83 | 26 | 0,1 | 3 | W0306137341 |
| 14,0 | SF.UN.0306.1400.L.Z3.F0010A.HB | 14 | 83 | 26 | 0,1 | 3 | W0306140341 |
| 15,7 | SF.UN.0306.1570.L.Z3.F0010A.HB | 16 | 92 | 32 | 0,1 | 3 | W0306157341 |
| 16,0 | SF.UN.0306.1600.L.Z3.F0010A.HB | 16 | 92 | 32 | 0,1 | 3 | W0306160341 |
| 17,7 | SF.UN.0306.1770.L.Z3.F0010A.HB | 18 | 92 | 32 | 0,1 | 3 | W0306177341 |
| 18,0 | SF.UN.0306.1800.L.Z3.F0010A.HB | 18 | 92 | 32 | 0,1 | 3 | W0306180341 |
| 19,7 | SF.UN.0306.1970.L.Z3.F0010A.HB | 20 | 104 | 38 | 0,1 | 3 | W0306197341 |
| 20,0 | SF.UN.0306.2000.L.Z3.F0010A.HB | 20 | 104 | 38 | 0,1 | 3 | W0306200341 |

# W0314-L, beschichtet

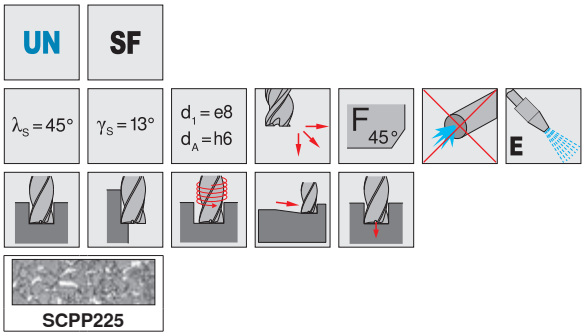
Schnittdatenempfehlung



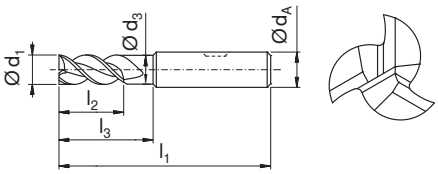
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.1.2 | | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.2.1 | Baustahl | | 140 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.2 | | | 100 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.3 | | | 80 | 1xø | 1xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.3.1 | Federstahl | | | | | | | | | |
| 1.3.2 | | | | | | | | | | |
| 1.3.3 | | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 110 | 1xø | 1xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 2.1.2 | | | 90 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.1.3 | | | 70 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.1 | Nitrierstahl | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.2 | | | 55 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.1 | Vergütungsstahl | | 90 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.2 | | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.3 | | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.4 | | | 70 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.5 | | | 55 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.6 | | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | | | | |
| 3.2.2 | | | | | | | | | | |
| 3.2.3 | | | | | | | | | | |
| 3.2.4 | | | | | | | | | | |
| 3.2.5 | | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | | |
| 3.3.2 | | | | | | | | | | |
| 3.3.3 | | | | | | | | | | |
| 3.3.4 | | | | | | | | | | |
| 3.3.5 | | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 50 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.2 | | | 40 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.3 | | | 50 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.4 | | | 40 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.5 | | | 60 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.1 | hochwarmfeste Legierungen | | 30 | 0,3xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.2 | | | 30 | 0,3xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.3 | | | 30 | 0,3xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.4 | | | 30 | 0,3xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.1.1 | konventioneller Stahlguss | | 120 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 5.1.2 | | | 90 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 5.1.3 | | | 70 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 5.2.1 | rostfreier Stahlguss | | 60 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.2.2 | | | 60 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.1.1 | GG mit lamellarem Graphit | | 130 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.2 | | | 120 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.3 | | | 90 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.1.4 | | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.2.1 | GGG mit Kugelgraphit | | 130 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.2 | | | 120 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.3 | | | 90 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.3.1 | GTW weisser Temperguss | | 130 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.3.2 | | | 120 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.1 | GTS schwarzer Temperguss | | 130 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.2 | | | 120 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.1 | Aluminium | | | | | | | | | |
| 7.1.2 | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | CuZn (Messing) | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | CuSn (Bronze) | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | Titan | | 50 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.2 | | | 35 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.3 | | | 20 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |

# W0314-L, beschichtet

Schaftfräser






| d1 [mm] | Type, Bezeichnung | dA [mm] | d3 [mm] | l1 [mm] | l2 [mm] | l3 [mm] | F [mm] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 3,0 | SF.UN.0314.0300.L.Z3.F0010A.HA | 6 | 2,8 | 57 | 8 | 15 | 0,1 | 3 | W0314030390 | |
| 3,0 | SF.UN.0314.0300.L.Z3.F0010A.HB | 6 | 2,8 | 57 | 8 | 15 | 0,1 | 3 | | W0314030391 |
| 3,5 | SF.UN.0314.0350.L.Z3.F0010A.HA | 6 | 3,3 | 57 | 11 | 15 | 0,1 | 3 | W0314035390 | |
| 3,5 | SF.UN.0314.0350.L.Z3.F0010A.HB | 6 | 3,3 | 57 | 11 | 15 | 0,1 | 3 | | W0314035391 |
| 4,0 | SF.UN.0314.0400.L.Z3.F0010A.HA | 6 | 3,8 | 57 | 11 | 15 | 0,1 | 3 | W0314040390 | |
| 4,0 | SF.UN.0314.0400.L.Z3.F0010A.HB | 6 | 3,8 | 57 | 11 | 15 | 0,1 | 3 | | W0314040391 |
| 4,5 | SF.UN.0314.0450.L.Z3.F0010A.HA | 6 | 4,3 | 57 | 13 | 21 | 0,1 | 3 | W0314045390 | |
| 4,5 | SF.UN.0314.0450.L.Z3.F0010A.HB | 6 | 4,3 | 57 | 13 | 21 | 0,1 | 3 | | W0314045391 |
| 5,0 | SF.UN.0314.0500.L.Z3.F0010A.HA | 6 | 4,8 | 57 | 13 | 21 | 0,1 | 3 | W0314050390 | |
| 5,0 | SF.UN.0314.0500.L.Z3.F0010A.HB | 6 | 4,8 | 57 | 13 | 21 | 0,1 | 3 | | W0314050391 |
| 5,5 | SF.UN.0314.0550.L.Z3.F0010A.HA | 6 | 5,3 | 57 | 13 | 21 | 0,1 | 3 | W0314055390 | |
| 5,5 | SF.UN.0314.0550.L.Z3.F0010A.HB | 6 | 5,3 | 57 | 13 | 21 | 0,1 | 3 | | W0314055391 |
| 6,0 | SF.UN.0314.0600.L.Z3.F0010A.HA | 6 | 5,8 | 57 | 13 | 21 | 0,1 | 3 | W0314060390 | |
| 6,0 | SF.UN.0314.0600.L.Z3.F0010A.HB | 6 | 5,8 | 57 | 13 | 21 | 0,1 | 3 | | W0314060391 |
| 6,5 | SF.UN.0314.0650.L.Z3.F0010A.HA | 8 | 6,3 | 63 | 16 | 27 | 0,1 | 3 | W0314065390 | |
| 6,5 | SF.UN.0314.0650.L.Z3.F0010A.HB | 8 | 6,3 | 63 | 16 | 27 | 0,1 | 3 | | W0314065391 |
| 7,0 | SF.UN.0314.0700.L.Z3.F0010A.HA | 8 | 6,8 | 63 | 16 | 27 | 0,1 | 3 | W0314070390 | |
| 7,0 | SF.UN.0314.0700.L.Z3.F0010A.HB | 8 | 6,8 | 63 | 16 | 27 | 0,1 | 3 | | W0314070391 |
| 7,5 | SF.UN.0314.0750.L.Z3.F0010A.HA | 8 | 7,3 | 63 | 19 | 27 | 0,1 | 3 | W0314075390 | |
| 7,5 | SF.UN.0314.0750.L.Z3.F0010A.HB | 8 | 7,3 | 63 | 19 | 27 | 0,1 | 3 | | W0314075391 |
| 8,0 | SF.UN.0314.0800.L.Z3.F0010A.HA | 8 | 7,8 | 63 | 21 | 27 | 0,1 | 3 | W0314080390 | |
| 8,0 | SF.UN.0314.0800.L.Z3.F0010A.HB | 8 | 7,8 | 63 | 21 | 27 | 0,1 | 3 | | W0314080391 |
| 8,5 | SF.UN.0314.0850.L.Z3.F0010A.HA | 10 | 8,3 | 72 | 21 | 32 | 0,1 | 3 | W0314085390 | |
| 8,5 | SF.UN.0314.0850.L.Z3.F0010A.HB | 10 | 8,3 | 72 | 21 | 32 | 0,1 | 3 | | W0314085391 |
| 9,0 | SF.UN.0314.0900.L.Z3.F0010A.HA | 10 | 8,8 | 72 | 21 | 32 | 0,1 | 3 | W0314090390 | |
| 9,0 | SF.UN.0314.0900.L.Z3.F0010A.HB | 10 | 8,8 | 72 | 21 | 32 | 0,1 | 3 | | W0314090391 |
| 9,5 | SF.UN.0314.0950.L.Z3.F0010A.HA | 10 | 9,3 | 72 | 22 | 32 | 0,1 | 3 | W0314095390 | |
| 9,5 | SF.UN.0314.0950.L.Z3.F0010A.HB | 10 | 9,3 | 72 | 22 | 32 | 0,1 | 3 | | W0314095391 |
| 10,0 | SF.UN.0314.1000.L.Z3.F0010A.HA | 10 | 9,8 | 72 | 22 | 32 | 0,1 | 3 | W0314100390 | |
| 10,0 | SF.UN.0314.1000.L.Z3.F0010A.HB | 10 | 9,8 | 72 | 22 | 32 | 0,1 | 3 | | W0314100391 |
| 11,0 | SF.UN.0314.1100.L.Z3.F0010A.HB | 12 | 10,8 | 83 | 26 | 38 | 0,1 | 3 | | W0314110391 |
| 12,0 | SF.UN.0314.1200.L.Z3.F0010A.HA | 12 | 11,8 | 83 | 26 | 38 | 0,1 | 3 | W0314120390 | |
| 12,0 | SF.UN.0314.1200.L.Z3.F0010A.HB | 12 | 11,8 | 83 | 26 | 38 | 0,1 | 3 | | W0314120391 |
| 14,0 | SF.UN.0314.1400.L.Z3.F0010A.HA | 14 | 13,8 | 83 | 26 | 38 | 0,1 | 3 | W0314140390 | |
| 14,0 | SF.UN.0314.1400.L.Z3.F0010A.HB | 14 | 13,8 | 83 | 26 | 38 | 0,1 | 3 | | W0314140391 |
| 16,0 | SF.UN.0314.1600.L.Z3.F0010A.HA | 16 | 15,7 | 92 | 36 | 44 | 0,1 | 3 | W0314160390 | |
| 16,0 | SF.UN.0314.1600.L.Z3.F0010A.HB | 16 | 15,7 | 92 | 36 | 44 | 0,1 | 3 | | W0314160391 |
| 18,0 | SF.UN.0314.1800.L.Z3.F0010A.HA | 18 | 17,7 | 92 | 36 | 44 | 0,1 | 3 | W0314180390 | |
| 18,0 | SF.UN.0314.1800.L.Z3.F0010A.HB | 18 | 17,7 | 92 | 36 | 44 | 0,1 | 3 | | W0314180391 |
| 20,0 | SF.UN.0314.2000.L.Z3.F0010A.HA | 20 | 19,7 | 104 | 41 | 54 | 0,1 | 3 | W0314200390 | |
| 20,0 | SF.UN.0314.2000.L.Z3.F0010A.HB | 20 | 19,7 | 104 | 41 | 54 | 0,1 | 3 | | W0314200391 |

# W0314-OL, beschichtet

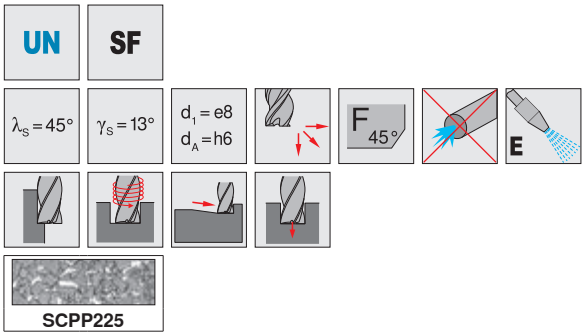
Schnittdatenempfehlung



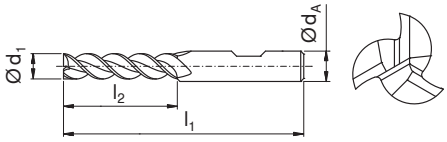
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,5 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 85 | 0,1xø | 1,5xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.1.2 | | | 60 | 0,1xø | 1,5xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.2.1 | Baustahl | | 85 | 0,1xø | 1,5xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.2 | | | 60 | 0,1xø | 1,5xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.3 | | | 50 | 0,1xø | 1,5xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.3.1 | Federstahl | | | | | | | | | |
| 1.3.2 | | | | | | | | | | |
| 1.3.3 | | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 65 | 0,1xø | 1,5xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 2.1.2 | | | 55 | 0,1xø | 1,5xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.1.3 | | | 40 | 0,1xø | 1,5xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.1 | Nitrierstahl | | 50 | 0,1xø | 1,5xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.2 | | | 35 | 0,1xø | 1,5xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.1 | Vergütungsstahl | | 55 | 0,1xø | 1,5xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.2 | | | 50 | 0,1xø | 1,5xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.3 | | | 50 | 0,1xø | 1,5xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.4 | | | 40 | 0,1xø | 1,5xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.5 | | | 35 | 0,1xø | 1,5xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.6 | | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | | | | |
| 3.2.2 | | | | | | | | | | |
| 3.2.3 | | | | | | | | | | |
| 3.2.4 | | | | | | | | | | |
| 3.2.5 | | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | | |
| 3.3.2 | | | | | | | | | | |
| 3.3.3 | | | | | | | | | | |
| 3.3.4 | | | | | | | | | | |
| 3.3.5 | | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 30 | 0,1xø | 1,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.2 | | | 25 | 0,1xø | 1,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.3 | | | 30 | 0,1xø | 1,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.4 | | | 25 | 0,1xø | 1,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.5 | | | 35 | 0,1xø | 1,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | |
| 4.2.2 | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 75 | 0,1xø | 1,5xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 5.1.2 | | | 55 | 0,1xø | 1,5xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 5.1.3 | | | 45 | 0,1xø | 1,5xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 5.2.1 | rostfreier Stahlguss | | 35 | 0,1xø | 1,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.2.2 | | | 45 | 0,1xø | 1,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.1.1 | GG mit lamellarem Graphit | | 80 | 0,1xø | 1,5xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.2 | | | 70 | 0,1xø | 1,5xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.3 | | | 55 | 0,1xø | 1,5xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.1.4 | | | 50 | 0,1xø | 1,5xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.2.1 | GGG mit Kugelgraphit | | 80 | 0,1xø | 1,5xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.2 | | | 70 | 0,1xø | 1,5xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.3 | | | 55 | 0,1xø | 1,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.3.1 | GTW weisser Temperguss | | 80 | 0,1xø | 1,5xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.3.2 | | | 70 | 0,1xø | 1,5xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.1 | GTS schwarzer Temperguss | | 80 | 0,1xø | 1,5xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.2 | | | 70 | 0,1xø | 1,5xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.1 | Aluminium | | | | | | | | | |
| 7.1.2 | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | | 85 | 0,1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | | 70 | 0,1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | | 60 | 0,1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | | 70 | 0,1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | | 60 | 0,1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | | 70 | 0,1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | CuZn (Messing) | | 90 | 0,1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | | 120 | 0,1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | CuSn (Bronze) | | 70 | 0,1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | | 85 | 0,1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | | 70 | 0,1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | | 85 | 0,1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | Titan | | | | | | | | | |
| 7.8.2 | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | |

# W0314-OL, beschichtet

Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | F [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|
| 3,5 | SF.UN.0314.0350.OL.Z3.F0010A.HB | 6 | 59 | 15 | 0,1 | 3 | W0314035441 |
| 4,0 | SF.UN.0314.0400.OL.Z3.F0010A.HB | 6 | 63 | 19 | 0,1 | 3 | W0314040441 |
| 4,5 | SF.UN.0314.0450.OL.Z3.F0010A.HB | 6 | 63 | 19 | 0,1 | 3 | W0314045441 |
| 5,0 | SF.UN.0314.0500.OL.Z3.F0010A.HB | 6 | 68 | 24 | 0,1 | 3 | W0314050441 |
| 5,5 | SF.UN.0314.0550.OL.Z3.F0010A.HB | 6 | 68 | 24 | 0,1 | 3 | W0314055441 |
| 6,0 | SF.UN.0314.0600.OL.Z3.F0010A.HB | 6 | 68 | 24 | 0,1 | 3 | W0314060441 |
| 6,5 | SF.UN.0314.0650.OL.Z3.F0010A.HB | 8 | 80 | 30 | 0,1 | 3 | W0314065441 |
| 7,0 | SF.UN.0314.0700.OL.Z3.F0010A.HB | 8 | 80 | 30 | 0,1 | 3 | W0314070441 |
| 7,5 | SF.UN.0314.0750.OL.Z3.F0010A.HB | 8 | 80 | 30 | 0,1 | 3 | W0314075441 |
| 8,0 | SF.UN.0314.0800.OL.Z3.F0010A.HB | 8 | 88 | 38 | 0,1 | 3 | W0314080441 |
| 10,0 | SF.UN.0314.1000.OL.Z3.F0010A.HB | 10 | 95 | 45 | 0,1 | 3 | W0314100441 |
| 12,0 | SF.UN.0314.1200.OL.Z3.F0010A.HB | 12 | 110 | 53 | 0,1 | 3 | W0314120441 |
| 14,0 | SF.UN.0314.1400.OL.Z3.F0010A.HB | 14 | 110 | 53 | 0,1 | 3 | W0314140441 |
| 16,0 | SF.UN.0314.1600.OL.Z3.F0010A.HB | 16 | 123 | 63 | 0,1 | 3 | W0314160441 |
| 20,0 | SF.UN.0314.2000.OL.Z3.F0010A.HB | 20 | 141 | 75 | 0,1 | 3 | W0314200441 |

# W0316-S, beschichtet

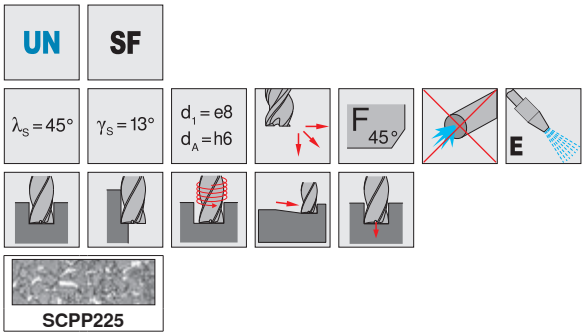
Schnittdatenempfehlung



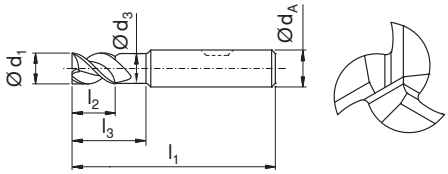
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.1.2 | | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.2.1 | Baustahl | | 140 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.2 | | | 100 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.3 | | | 80 | 1xø | 1xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.3.1 | Federstahl | | | | | | | | | |
| 1.3.2 | | | | | | | | | | |
| 1.3.3 | | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 110 | 1xø | 1xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 2.1.2 | | | 90 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.1.3 | | | 70 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.1 | Nitrierstahl | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.2 | | | 55 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.1 | Vergütungsstahl | | 90 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.2 | | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.3 | | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.4 | | | 70 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.5 | | | 55 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.6 | | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | | | | |
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| 3.2.4 | | | | | | | | | | |
| 3.2.5 | | | | | | | | | | |
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| 3.3.2 | | | | | | | | | | |
| 3.3.3 | | | | | | | | | | |
| 3.3.4 | | | | | | | | | | |
| 3.3.5 | | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 50 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.2 | | | 40 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.3 | | | 50 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.4 | | | 40 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.5 | | | 60 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.1 | hochwarmfeste Legierungen | | 30 | 0,3xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.2 | | | 30 | 0,3xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.3 | | | 30 | 0,3xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.4 | | | 30 | 0,3xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.1.1 | konventioneller Stahlguss | | 120 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 5.1.2 | | | 90 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 5.1.3 | | | 70 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 5.2.1 | rostfreier Stahlguss | | 60 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.2.2 | | | 60 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.1.1 | GG mit lamellarem Graphit | | 130 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.2 | | | 120 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.3 | | | 90 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.1.4 | | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.2.1 | GGG mit Kugelgraphit | | 130 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.2 | | | 120 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.3 | | | 90 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.3.1 | GTW weisser Temperguss | | 130 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.3.2 | | | 120 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.1 | GTS schwarzer Temperguss | | 130 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.2 | | | 120 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.1 | Aluminium | | | | | | | | | |
| 7.1.2 | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | CuZn (Messing) | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | CuSn (Bronze) | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | Titan | | 50 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.2 | | | 35 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.3 | | | 20 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |

# W0316-S, beschichtet

Schaftfräser





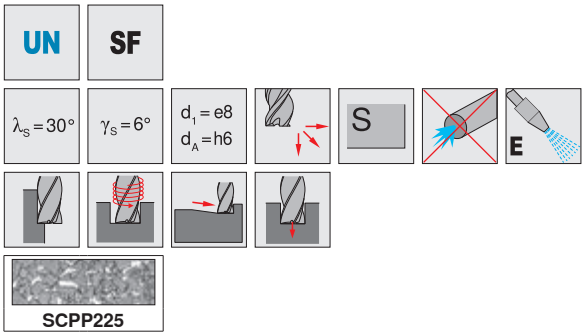

| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 3,0 | SF.UN.0316.0300.S.Z3.F0010A.HA | 6 | 2,9 | 50 | 5 | 12 | 0,1 | 3 | W0316030180 | |
| 3,0 | SF.UN.0316.0300.S.Z3.F0010A.HB | 6 | 2,9 | 50 | 5 | 12 | 0,1 | 3 | | W0316030181 |
| 3,5 | SF.UN.0316.0350.S.Z3.F0010A.HA | 6 | 3,4 | 50 | 6 | 13 | 0,1 | 3 | W0316035180 | |
| 3,5 | SF.UN.0316.0350.S.Z3.F0010A.HB | 6 | 3,4 | 50 | 6 | 13 | 0,1 | 3 | | W0316035181 |
| 4,0 | SF.UN.0316.0400.S.Z3.F0010A.HA | 6 | 3,9 | 54 | 8 | 15 | 0,1 | 3 | W0316040180 | |
| 4,0 | SF.UN.0316.0400.S.Z3.F0010A.HB | 6 | 3,9 | 54 | 8 | 15 | 0,1 | 3 | | W0316040181 |
| 4,5 | SF.UN.0316.0450.S.Z3.F0010A.HA | 6 | 4,4 | 54 | 8 | 15 | 0,1 | 3 | W0316045180 | |
| 4,5 | SF.UN.0316.0450.S.Z3.F0010A.HB | 6 | 4,4 | 54 | 8 | 15 | 0,1 | 3 | | W0316045181 |
| 5,0 | SF.UN.0316.0500.S.Z3.F0010A.HA | 6 | 4,9 | 54 | 9 | 16 | 0,1 | 3 | W0316050180 | |
| 5,0 | SF.UN.0316.0500.S.Z3.F0010A.HB | 6 | 4,9 | 54 | 9 | 16 | 0,1 | 3 | | W0316050181 |
| 5,5 | SF.UN.0316.0550.S.Z3.F0010A.HA | 6 | 5,4 | 54 | 10 | 17 | 0,1 | 3 | W0316055180 | |
| 5,5 | SF.UN.0316.0550.S.Z3.F0010A.HB | 6 | 5,4 | 54 | 10 | 17 | 0,1 | 3 | | W0316055181 |
| 6,0 | SF.UN.0316.0600.S.Z3.F0010A.HA | 6 | 5,9 | 54 | 10 | 17 | 0,1 | 3 | W0316060180 | |
| 6,0 | SF.UN.0316.0600.S.Z3.F0010A.HB | 6 | 5,9 | 54 | 10 | 17 | 0,1 | 3 | | W0316060181 |
| 6,5 | SF.UN.0316.0650.S.Z3.F0010A.HA | 8 | 6,3 | 58 | 11 | 19 | 0,1 | 3 | W0316065180 | |
| 6,5 | SF.UN.0316.0650.S.Z3.F0010A.HB | 8 | 6,3 | 58 | 11 | 19 | 0,1 | 3 | | W0316065181 |
| 7,0 | SF.UN.0316.0700.S.Z3.F0010A.HA | 8 | 6,8 | 58 | 11 | 19 | 0,1 | 3 | W0316070180 | |
| 7,0 | SF.UN.0316.0700.S.Z3.F0010A.HB | 8 | 6,8 | 58 | 11 | 19 | 0,1 | 3 | | W0316070181 |
| 7,5 | SF.UN.0316.0750.S.Z3.F0010A.HA | 8 | 7,3 | 58 | 12 | 20 | 0,1 | 3 | W0316075180 | |
| 7,5 | SF.UN.0316.0750.S.Z3.F0010A.HB | 8 | 7,3 | 58 | 12 | 20 | 0,1 | 3 | | W0316075181 |
| 8,0 | SF.UN.0316.0800.S.Z3.F0010A.HA | 8 | 7,8 | 58 | 12 | 20 | 0,1 | 3 | W0316080180 | |
| 8,0 | SF.UN.0316.0800.S.Z3.F0010A.HB | 8 | 7,8 | 58 | 12 | 20 | 0,1 | 3 | | W0316080181 |
| 8,5 | SF.UN.0316.0850.S.Z3.F0010A.HA | 10 | 8,3 | 66 | 13 | 23 | 0,1 | 3 | W0316085180 | |
| 8,5 | SF.UN.0316.0850.S.Z3.F0010A.HB | 10 | 8,3 | 66 | 13 | 23 | 0,1 | 3 | | W0316085181 |
| 9,0 | SF.UN.0316.0900.S.Z3.F0010A.HA | 10 | 8,8 | 66 | 13 | 23 | 0,1 | 3 | W0316090180 | |
| 9,0 | SF.UN.0316.0900.S.Z3.F0010A.HB | 10 | 8,8 | 66 | 13 | 23 | 0,1 | 3 | | W0316090181 |
| 9,5 | SF.UN.0316.0950.S.Z3.F0010A.HA | 10 | 9,3 | 66 | 14 | 24 | 0,1 | 3 | W0316095180 | |
| 9,5 | SF.UN.0316.0950.S.Z3.F0010A.HB | 10 | 9,3 | 66 | 14 | 24 | 0,1 | 3 | | W0316095181 |
| 10,0 | SF.UN.0316.1000.S.Z3.F0010A.HA | 10 | 9,7 | 66 | 14 | 24 | 0,1 | 3 | W0316100180 | |
| 10,0 | SF.UN.0316.1000.S.Z3.F0010A.HB | 10 | 9,7 | 66 | 14 | 24 | 0,1 | 3 | | W0316100181 |
| 12,0 | SF.UN.0316.1200.S.Z3.F0010A.HA | 12 | 11,7 | 73 | 16 | 26 | 0,1 | 3 | W0316120180 | |
| 12,0 | SF.UN.0316.1200.S.Z3.F0010A.HB | 12 | 11,7 | 73 | 16 | 26 | 0,1 | 3 | | W0316120181 |
| 16,0 | SF.UN.0316.1600.S.Z3.F0010A.HA | 16 | 15,5 | 82 | 22 | 32 | 0,1 | 3 | W0316160180 | |
| 16,0 | SF.UN.0316.1600.S.Z3.F0010A.HB | 16 | 15,5 | 82 | 22 | 32 | 0,1 | 3 | | W0316160181 |
| 20,0 | SF.UN.0316.2000.S.Z3.F0010A.HA | 20 | 19,5 | 92 | 26 | 40 | 0,1 | 3 | W0316200180 | |
| 20,0 | SF.UN.0316.2000.S.Z3.F0010A.HB | 20 | 19,5 | 92 | 26 | 40 | 0,1 | 3 | | W0316200181 |

# W0406-S, beschichtet

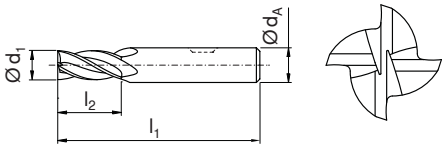
Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 2,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | | | | | | | | |
| 1.1.2 | | | | | | | | | | |
| 1.2.1 | Baustahl | | | | | | | | | |
| 1.2.2 | | | | | | | | | | |
| 1.2.3 | | | | | | | | | | |
| 1.3.1 | Federstahl | | | | | | | | | |
| 1.3.2 | | | | | | | | | | |
| 1.3.3 | | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | | | | | | | | |
| 2.1.2 | | | | | | | | | | |
| 2.1.3 | | | | | | | | | | |
| 2.2.1 | Nitrierstahl | | 60 | 0,5xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.2 | | | 45 | 0,5xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.1 | Vergütungsstahl | | 70 | 0,5xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.2 | | | 60 | 0,5xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.3 | | | 60 | 0,5xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.4 | | | 50 | 0,5xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.5 | | | 45 | 0,5xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.6 | | | 40 | 0,5xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | | | | |
| 3.2.2 | | | | | | | | | | |
| 3.2.3 | | | | | | | | | | |
| 3.2.4 | | | | | | | | | | |
| 3.2.5 | | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | | |
| 3.3.2 | | | | | | | | | | |
| 3.3.3 | | | | | | | | | | |
| 3.3.4 | | | | | | | | | | |
| 3.3.5 | | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 50 | 0,5xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.2 | | | 40 | 0,5xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.3 | | | 35 | 0,5xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.4 | | | 50 | 0,5xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.5 | | | 60 | 0,5xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | |
| 4.2.2 | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | | | | | | | | |
| 5.1.2 | | | | | | | | | | |
| 5.1.3 | | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | | | |
| 5.2.2 | | | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | | | | | | | | |
| 6.1.2 | | | | | | | | | | |
| 6.1.3 | | | | | | | | | | |
| 6.1.4 | | | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | | | | | | | | |
| 6.2.2 | | | | | | | | | | |
| 6.2.3 | | | | | | | | | | |
| 6.3.1 | GTW weisser Temperguss | | | | | | | | | |
| 6.3.2 | | | | | | | | | | |
| 6.4.1 | GTS schwarzer Temperguss | | | | | | | | | |
| 6.4.2 | | | | | | | | | | |
| 7.1.1 | Aluminium | | | | | | | | | |
| 7.1.2 | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | |
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| 7.1.5 | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | | |
| 7.3.2 | | | | | | | | | | |
| 7.3.3 | | | | | | | | | | |
| 7.3.4 | | | | | | | | | | |
| 7.3.5 | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | |
| 7.4.2 | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | |
| 7.5.2 | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | |
| 7.6.2 | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | |
| 7.8.2 | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | |






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|
| 2,0 | SF.UN.0406.0200.S.Z4.S.HA | 2 | 32 | 8 | 4 | W0406020240 | |
| 3,0 | SF.UN.0406.0300.S.Z4.S.HA | 3 | 32 | 12 | 4 | W0406030240 | |
| 4,0 | SF.UN.0406.0400.S.Z4.S.HA | 4 | 40 | 12 | 4 | W0406040240 | |
| 5,0 | SF.UN.0406.0500.S.Z4.S.HA | 5 | 50 | 14 | 4 | W0406050240 | |
| 6,0 | SF.UN.0406.0600.S.Z4.S.HB | 6 | 50 | 16 | 4 | | W0406060241 |
| 8,0 | SF.UN.0406.0800.S.Z4.S.HB | 8 | 60 | 20 | 4 | | W0406080241 |
| 10,0 | SF.UN.0406.1000.S.Z4.S.HB | 10 | 70 | 22 | 4 | | W0406100241 |
| 12,0 | SF.UN.0406.1200.S.Z4.S.HB | 12 | 70 | 22 | 4 | | W0406120241 |
| 16,0 | SF.UN.0406.1600.S.Z4.S.HB | 16 | 75 | 25 | 4 | | W0406160241 |
| 20,0 | SF.UN.0406.2000.S.Z4.S.HB | 20 | 100 | 32 | 4 | | W0406200241 |

# W0406-OL, beschichtet

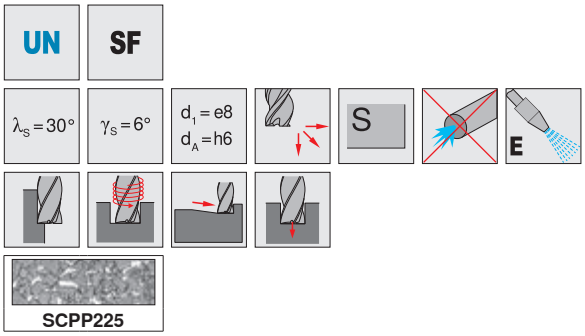
Schnittdatenempfehlung



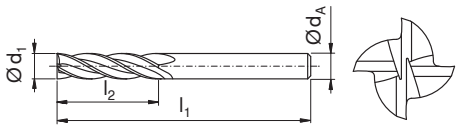
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | | | | | | |
| 1.1.2 | | | | | | | | |
| 1.2.1 | Baustahl | | | | | | | |
| 1.2.2 | | | | | | | | |
| 1.2.3 | | | | | | | | |
| 1.3.1 | Federstahl | | | | | | | |
| 1.3.2 | | | | | | | | |
| 1.3.3 | | | | | | | | |
| 2.1.1 | Einsatzstahl | | | | | | | |
| 2.1.2 | | | | | | | | |
| 2.1.3 | | | | | | | | |
| 2.2.1 | Nitrierstahl | | 35 | 0,05xø | 1,5xø | 0,04 | 0,05 | 0,06 |
| 2.2.2 | | | 28 | 0,05xø | 1,5xø | 0,04 | 0,05 | 0,06 |
| 2.3.1 | Vergütungsstahl | | 40 | 0,05xø | 1,5xø | 0,04 | 0,05 | 0,06 |
| 2.3.2 | | | 35 | 0,05xø | 1,5xø | 0,04 | 0,05 | 0,06 |
| 2.3.3 | | | 35 | 0,05xø | 1,5xø | 0,04 | 0,05 | 0,06 |
| 2.3.4 | | | 30 | 0,05xø | 1,5xø | 0,04 | 0,05 | 0,06 |
| 2.3.5 | | | 28 | 0,05xø | 1,5xø | 0,04 | 0,05 | 0,06 |
| 2.3.6 | | | 25 | 0,05xø | 1,5xø | 0,04 | 0,05 | 0,06 |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | | |
| 3.2.2 | | | | | | | | |
| 3.2.3 | | | | | | | | |
| 3.2.4 | | | | | | | | |
| 3.2.5 | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | |
| 3.3.2 | | | | | | | | |
| 3.3.3 | | | | | | | | |
| 3.3.4 | | | | | | | | |
| 3.3.5 | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | |
| 4.1.1 | rostfreier Stahl | | 30 | 0,05xø | 1,5xø | 0,03 | 0,04 | 0,05 |
| 4.1.2 | | | 25 | 0,05xø | 1,5xø | 0,03 | 0,04 | 0,05 |
| 4.1.3 | | | 30 | 0,05xø | 1,5xø | 0,03 | 0,04 | 0,05 |
| 4.1.4 | | | 30 | 0,05xø | 1,5xø | 0,03 | 0,04 | 0,05 |
| 4.1.5 | | | 35 | 0,05xø | 1,5xø | 0,03 | 0,04 | 0,05 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | |
| 4.2.2 | | | | | | | | |
| 4.2.3 | | | | | | | | |
| 4.2.4 | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | | | | | | |
| 5.1.2 | | | | | | | | |
| 5.1.3 | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | |
| 5.2.2 | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | | | | | | |
| 6.1.2 | | | | | | | | |
| 6.1.3 | | | | | | | | |
| 6.1.4 | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | | | | | | |
| 6.2.2 | | | | | | | | |
| 6.2.3 | | | | | | | | |
| 6.3.1 | GTW weisser Temperguss | | | | | | | |
| 6.3.2 | | | | | | | | |
| 6.4.1 | GTS schwarzer Temperguss | | | | | | | |
| 6.4.2 | | | | | | | | |
| 7.1.1 | Aluminium | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |

# W0406-OL, beschichtet

Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | z | Material |
|---|---|---|---|---|---|---|
| 8,0 | SF.UN.0406.0800.OL.Z4.S.HA | 8 | 100 | 40 | 4 | W0406080440 |
| 10,0 | SF.UN.0406.1000.OL.Z4.S.HA | 10 | 100 | 40 | 4 | W0406100440 |
| 12,0 | SF.UN.0406.1200.OL.Z4.S.HA | 12 | 100 | 45 | 4 | W0406120440 |
| 16,0 | SF.UN.0406.1600.OL.Z4.S.HA | 16 | 150 | 75 | 4 | W0406160440 |
| 20,0 | SF.UN.0406.2000.OL.Z4.S.HA | 20 | 150 | 75 | 4 | W0406200440 |

# W0318-XS, beschichtet

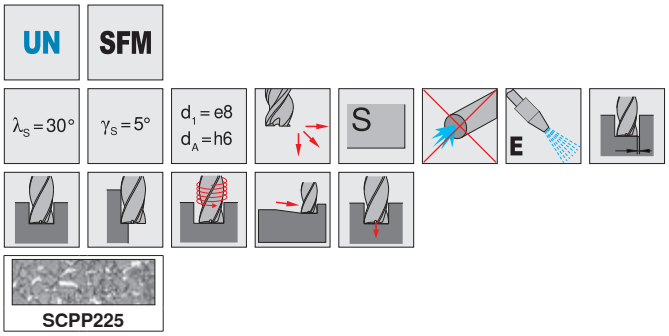
Schnittdatenempfehlung



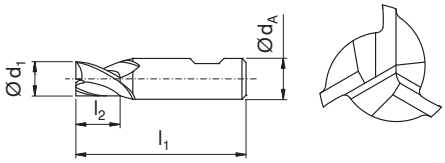
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 2,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.1.2 | | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.2.1 | Baustahl | | 140 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.2 | | | 100 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.3 | | | 80 | 1xø | 1xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.3.1 | Federstahl | | | | | | | | | |
| 1.3.2 | | | | | | | | | | |
| 1.3.3 | | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 110 | 1xø | 1xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 2.1.2 | | | 90 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.1.3 | | | 70 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.1 | Nitrierstahl | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.2 | | | 55 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.1 | Vergütungsstahl | | 90 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.2 | | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.3 | | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.4 | | | 70 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.5 | | | 55 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.6 | | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | | | | |
| 3.2.2 | | | | | | | | | | |
| 3.2.3 | | | | | | | | | | |
| 3.2.4 | | | | | | | | | | |
| 3.2.5 | | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | | |
| 3.3.2 | | | | | | | | | | |
| 3.3.3 | | | | | | | | | | |
| 3.3.4 | | | | | | | | | | |
| 3.3.5 | | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 50 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.2 | | | 40 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.3 | | | 50 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.4 | | | 40 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.5 | | | 60 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.1 | hochwarmfeste Legierungen | | 30 | 0,3xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.2 | | | 30 | 0,3xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.3 | | | 30 | 0,3xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.4 | | | 30 | 0,3xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.1.1 | konventioneller Stahlguss | | 120 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 5.1.2 | | | 90 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 5.1.3 | | | 70 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 5.2.1 | rostfreier Stahlguss | | 60 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.2.2 | | | 60 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.1.1 | GG mit lamellarem Graphit | | 130 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.2 | | | 120 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.3 | | | 90 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.1.4 | | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.2.1 | GGG mit Kugelgraphit | | 130 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.2 | | | 120 | 1xø | 1xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.3 | | | 90 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.3.1 | GTW weisser Temperguss | | 130 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.3.2 | | | 120 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.1 | GTS schwarzer Temperguss | | 130 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.2 | | | 120 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.1 | Aluminium | | | | | | | | | |
| 7.1.2 | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | CuZn (Messing) | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | CuSn (Bronze) | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | Titan | | 50 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.2 | | | 35 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.3 | | | 20 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |

# W0318-XS, beschichtet

Mini-Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | z | HB Material |
|---|---|---|---|---|---|---|
| 2,0 | SFM.UN.0318.0200.XS.Z3.S.HB | 6 | 35 | 4 | 3 | W0318020041 |
| 2,5 | SFM.UN.0318.0250.XS.Z3.S.HB | 6 | 35 | 4 | 3 | W0318025041 |
| 3,0 | SFM.UN.0318.0300.XS.Z3.S.HB | 6 | 36 | 5 | 3 | W0318030041 |
| 3,5 | SFM.UN.0318.0350.XS.Z3.S.HB | 6 | 36 | 5 | 3 | W0318035041 |
| 4,0 | SFM.UN.0318.0400.XS.Z3.S.HB | 6 | 38 | 7 | 3 | W0318040041 |
| 4,5 | SFM.UN.0318.0450.XS.Z3.S.HB | 6 | 38 | 7 | 3 | W0318045041 |
| 5,0 | SFM.UN.0318.0500.XS.Z3.S.HB | 6 | 39 | 8 | 3 | W0318050041 |
| 5,5 | SFM.UN.0318.0550.XS.Z3.S.HB | 6 | 39 | 8 | 3 | W0318055041 |
| 5,75 | SFM.UN.0318.0575.XS.Z3.S.HB | 6 | 39 | 8 | 3 | W0318057041 |
| 6,0 | SFM.UN.0318.0600.XS.Z3.S.HB | 6 | 39 | 8 | 3 | W0318060041 |
| 6,75 | SFM.UN.0318.0675.XS.Z3.S.HB | 8 | 43 | 11 | 3 | W0318067041 |
| 7,0 | SFM.UN.0318.0700.XS.Z3.S.HB | 8 | 43 | 11 | 3 | W0318070041 |
| 7,75 | SFM.UN.0318.0775.XS.Z3.S.HB | 8 | 43 | 11 | 3 | W0318077041 |
| 8,0 | SFM.UN.0318.0800.XS.Z3.S.HB | 8 | 43 | 11 | 3 | W0318080041 |
| 8,7 | SFM.UN.0318.0870.XS.Z3.S.HB | 10 | 50 | 13 | 3 | W0318087041 |
| 9,0 | SFM.UN.0318.0900.XS.Z3.S.HB | 10 | 50 | 13 | 3 | W0318090041 |
| 9,7 | SFM.UN.0318.0970.XS.Z3.S.HB | 10 | 50 | 13 | 3 | W0318097041 |
| 10,0 | SFM.UN.0318.1000.XS.Z3.S.HB | 10 | 50 | 13 | 3 | W0318100041 |
| 12,0 | SFM.UN.0318.1200.XS.Z3.S.HB | 12 | 55 | 15 | 3 | W0318120041 |
| 14,0 | SFM.UN.0318.1400.XS.Z3.S.HB | 14 | 58 | 15 | 3 | W0318140041 |
| 16,0 | SFM.UN.0318.1600.XS.Z3.S.HB | 16 | 62 | 18 | 3 | W0318160041 |
| 18,0 | SFM.UN.0318.1800.XS.Z3.S.HB | 18 | 70 | 20 | 3 | W0318180041 |
| 20,0 | SFM.UN.0318.2000.XS.Z3.S.HB | 20 | 75 | 22 | 3 | W0318200041 |

# W0444-L, beschichtet

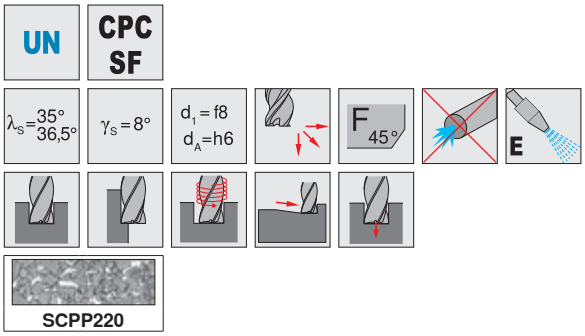
Schnittdatenempfehlung



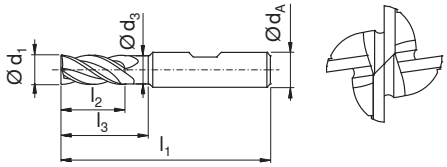
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 260 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.1.2 | | | 240 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.1 | Baustahl | | 250 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.2.2 | | | 230 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.3 | | | 220 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.3.1 | Federstahl | | | | | | | | | |
| 1.3.2 | | | | | | | | | | |
| 1.3.3 | | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 210 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.2 | | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.3 | | | 190 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.2.1 | Nitrierstahl | | 190 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.2.2 | | | 170 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.1 | Vergütungsstahl | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.2 | | | 190 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.3 | | | 190 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.4 | | | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.5 | | | 170 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.6 | | | 150 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.1.1 | Werkzeugstahl unlegiert | | 185 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.2 | | | 170 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.3 | | | 150 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.2.4 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.5 | | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.2 | | | 180 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.3.3 | | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.4 | | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.5 | | | 130 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 100 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.2 | | | 80 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.3 | | | 100 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.4 | | | 100 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.5 | | | 110 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.2.1 | hochwarmfeste Legierungen | | 30 | 1xø | 0,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.2 | | | 30 | 1xø | 0,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.3 | | | 30 | 1xø | 0,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.4 | | | 30 | 1xø | 0,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.1.1 | konventioneller Stahlguss | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.2 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.3 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.2.1 | rostfreier Stahlguss | | 100 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 5.2.2 | | | 100 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 6.1.1 | GG mit lamellarem Graphit | | 200 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.2 | | | 180 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.3 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.1.4 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.1 | GGG mit Kugelgraphit | | 190 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.2 | | | 170 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.3 | | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.1 | GTW weisser Temperguss | | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.2 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.1 | GTS schwarzer Temperguss | | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.2 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.1.1 | Aluminium | | | | | | | | | |
| 7.1.2 | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | | 280 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.2 | | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.3 | | | 200 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.4 | | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.5 | | | 200 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.6 | | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.1 | CuZn (Messing) | | 300 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.2 | | | 350 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.1 | CuSn (Bronze) | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.2 | | | 280 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | | 140 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.2 | | | 160 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.8.1 | Titan | | 90 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.8.2 | | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 7.8.3 | | | 50 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |

# W0444-L, beschichtet

CPC-Schaftfräser (Circle Power Cutting)






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | Material |
|---|---|---|---|---|---|---|---|---|---|
| 3,0 | CPC-SF.UN.0444.0300.L.Z4.F0010A.HB | 6 | 2,8 | 57 | 8 | 13 | 0,1 | 4 | W0444030341 |
| 4,0 | CPC-SF.UN.0444.0400.L.Z4.F0010A.HB | 6 | 3,8 | 57 | 11 | 17 | 0,1 | 4 | W0444040341 |
| 5,0 | CPC-SF.UN.0444.0500.L.Z4.F0010A.HB | 6 | 4,8 | 57 | 13 | 19 | 0,1 | 4 | W0444050341 |
| 6,0 | CPC-SF.UN.0444.0600.L.Z4.F0010A.HB | 6 | 5,8 | 57 | 13 | 19 | 0,1 | 4 | W0444060341 |
| 8,0 | CPC-SF.UN.0444.0800.L.Z4.F0020A.HB | 8 | 7,7 | 63 | 21 | 25 | 0,2 | 4 | W0444080341 |
| 10,0 | CPC-SF.UN.0444.1000.L.Z4.F0020A.HB | 10 | 9,7 | 72 | 22 | 30 | 0,2 | 4 | W0444100341 |
| 12,0 | CPC-SF.UN.0444.1200.L.Z4.F0030A.HB | 12 | 11,6 | 83 | 26 | 36 | 0,3 | 4 | W0444120341 |
| 16,0 | CPC-SF.UN.0444.1600.L.Z4.F0030A.HB | 16 | 15,5 | 92 | 36 | 42 | 0,3 | 4 | W0444160341 |
| 20,0 | CPC-SF.UN.0444.2000.L.Z4.F0030A.HB | 20 | 19,5 | 104 | 41 | 52 | 0,3 | 4 | W0444200341 |

# W0444-OL, beschichtet

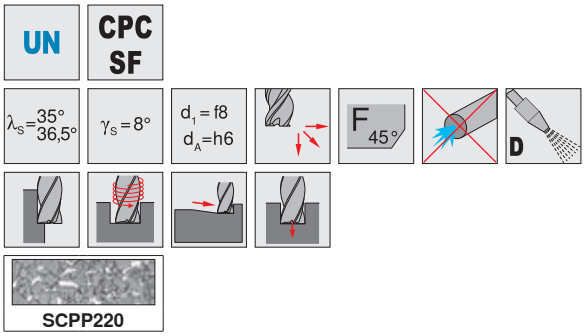
Schnittdatenempfehlung



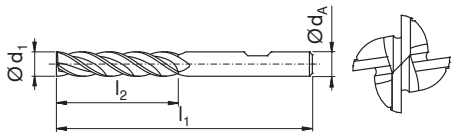
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,1xø | 4,5xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.1.2 | | | 90 | 0,1xø | 4,5xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.2.1 | Baustahl | | 100 | 0,1xø | 4,5xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.2 | | | 90 | 0,1xø | 4,5xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.3 | | | 90 | 0,1xø | 4,5xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.3.1 | Federstahl | | | | | | | | |
| 1.3.2 | | | | | | | | | |
| 1.3.3 | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 100 | 0,1xø | 4,5xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 2.1.2 | | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.1.3 | | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.1 | Nitrierstahl | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.2 | | | 80 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.1 | Vergütungsstahl | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.2 | | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.3 | | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.4 | | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.5 | | | 80 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.6 | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 80 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.2 | | | 80 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.3 | | | | | | | | | |
| 3.2.4 | | | 80 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.5 | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | |
| 3.3.2 | | | | | | | | | |
| 3.3.3 | | | 80 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.3.4 | | | | | | | | | |
| 3.3.5 | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 95 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 4.1.2 | | | 85 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 4.1.3 | | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 4.1.4 | | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 4.1.5 | | | 95 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | |
| 4.2.2 | | | | | | | | | |
| 4.2.3 | | | | | | | | | |
| 4.2.4 | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 100 | 0,1xø | 4,5xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 5.1.2 | | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 5.1.3 | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | 80 | 0,1xø | 4,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.2.2 | | | 80 | 0,1xø | 4,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.1.1 | GG mit lamellarem Graphit | | 110 | 0,1xø | 4,5xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.2 | | | 100 | 0,1xø | 4,5xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.3 | | | 100 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.1.4 | | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.2.1 | GGG mit Kugelgraphit | | 110 | 0,1xø | 4,5xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.2 | | | 100 | 0,1xø | 4,5xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.3 | | | 100 | 0,1xø | 4,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.3.1 | GTW weisser Temperguss | | 110 | 0,1xø | 4,5xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.3.2 | | | 100 | 0,1xø | 4,5xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.1 | GTS schwarzer Temperguss | | 110 | 0,1xø | 4,5xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.2 | | | 100 | 0,1xø | 4,5xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |

# W0444-OL, beschichtet

CPC-Schaftfräser (Circle Power Cutting)






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | F [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|
| 6,0 | CPC-SF.UN.0444.0600.OL.Z4.F0010A.HB | 6 | 80 | 33 | 0,1 | 4 | W0444060541 |
| 8,0 | CPC-SF.UN.0444.0800.OL.Z4.F0020A.HB | 8 | 100 | 40 | 0,2 | 4 | W0444080541 |
| 10,0 | CPC-SF.UN.0444.1000.OL.Z4.F0020A.HB | 10 | 105 | 50 | 0,2 | 4 | W0444100541 |
| 12,0 | CPC-SF.UN.0444.1200.OL.Z4.F0030A.HB | 12 | 125 | 60 | 0,3 | 4 | W0444120541 |
| 16,0 | CPC-SF.UN.0444.1600.OL.Z4.F0030A.HB | 16 | 150 | 80 | 0,3 | 4 | W0444160541 |
| 20,0 | CPC-SF.UN.0444.2000.OL.Z4.F0030A.HB | 20 | 160 | 90 | 0,3 | 4 | W0444200541 |

# W0444-OLS, beschichtet

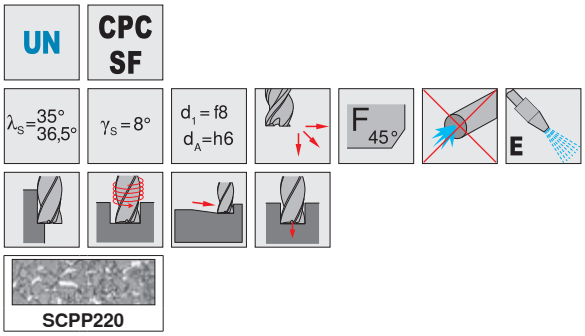
Schnittdatenempfehlung



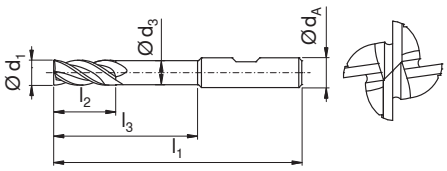
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,1xø | 2xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.1.2 | | | 90 | 0,1xø | 2xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.2.1 | Baustahl | | 100 | 0,1xø | 2xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.2 | | | 90 | 0,1xø | 2xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.3 | | | 90 | 0,1xø | 2xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.3.1 | Federstahl | | | | | | | | |
| 1.3.2 | | | | | | | | | |
| 1.3.3 | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 100 | 0,1xø | 2xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 2.1.2 | | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.1.3 | | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.1 | Nitrierstahl | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.2 | | | 80 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.1 | Vergütungsstahl | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.2 | | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.3 | | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.4 | | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.5 | | | 80 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.6 | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 80 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.2 | | | 80 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.3 | | | | | | | | | |
| 3.2.4 | | | 80 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.5 | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | |
| 3.3.2 | | | | | | | | | |
| 3.3.3 | | | 80 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.3.4 | | | | | | | | | |
| 3.3.5 | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 95 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 4.1.2 | | | 85 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 4.1.3 | | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 4.1.4 | | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 4.1.5 | | | 95 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | |
| 4.2.2 | | | | | | | | | |
| 4.2.3 | | | | | | | | | |
| 4.2.4 | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 100 | 0,1xø | 2xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 5.1.2 | | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 5.1.3 | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | 80 | 0,1xø | 2xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.2.2 | | | 80 | 0,1xø | 2xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.1.1 | GG mit lamellarem Graphit | | 110 | 0,1xø | 2xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.2 | | | 100 | 0,1xø | 2xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.3 | | | 100 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.1.4 | | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.2.1 | GGG mit Kugelgraphit | | 110 | 0,1xø | 2xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.2 | | | 100 | 0,1xø | 2xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.3 | | | 100 | 0,1xø | 2xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.3.1 | GTW weisser Temperguss | | 110 | 0,1xø | 2xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.3.2 | | | 100 | 0,1xø | 2xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.1 | GTS schwarzer Temperguss | | 110 | 0,1xø | 2xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.2 | | | 100 | 0,1xø | 2xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |

# W0444-OLS, beschichtet

CPC-Schaftfräser (Circle Power Cutting)






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|---|---|
| 6,0 | CPC-SF.UN.0444.0600.OLS.Z4.F0010A.HB | 6 | 5,8 | 80 | 15 | 42 | 0,1 | 4 | W0444060441 |
| 8,0 | CPC-SF.UN.0444.0800.OLS.Z4.F0020A.HB | 8 | 7,7 | 100 | 20 | 62 | 0,2 | 4 | W0444080441 |
| 10,0 | CPC-SF.UN.0444.1000.OLS.Z4.F0020A.HB | 10 | 9,7 | 100 | 25 | 58 | 0,2 | 4 | W0444100441 |
| 12,0 | CPC-SF.UN.0444.1200.OLS.Z4.F0030A.HB | 12 | 11,6 | 120 | 30 | 73 | 0,3 | 4 | W0444120441 |
| 16,0 | CPC-SF.UN.0444.1600.OLS.Z4.F0030A.HB | 16 | 15,5 | 150 | 40 | 100 | 0,3 | 4 | W0444160441 |
| 20,0 | CPC-SF.UN.0444.2000.OLS.Z4.F0030A.HB | 20 | 19,5 | 150 | 50 | 98 | 0,3 | 4 | W0444200441 |

# W0422-L und W0422-LS, beschichtet

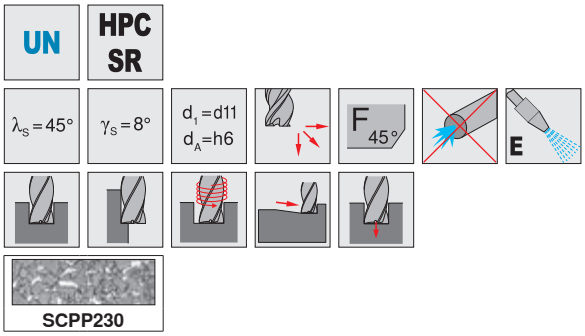
Schnittdatenempfehlung



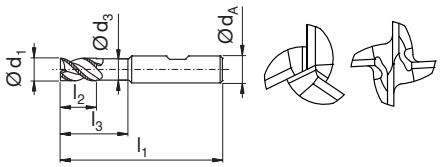
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 180 | 1xø | 1xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.1.2 | | | 130 | 1xø | 1xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.2.1 | Baustahl | | 180 | 1xø | 1xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.2 | | | 130 | 1xø | 1xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.3 | | | 110 | 1xø | 1xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.3.1 | Federstahl | | 110 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 1.3.2 | | | | | | | | | |
| 1.3.3 | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 170 | 1xø | 1xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 2.1.2 | | | 140 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.1.3 | | | 110 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.1 | Nitrierstahl | | 130 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.2 | | | 100 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.1 | Vergütungsstahl | | 140 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.2 | | | 130 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.3 | | | 130 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.4 | | | 110 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.5 | | | 90 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.6 | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 110 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 100 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.2 | | | 80 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.3 | | | | | | | | | |
| 3.2.4 | | | 80 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.5 | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | |
| 3.3.2 | | | | | | | | | |
| 3.3.3 | | | 80 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.3.4 | | | | | | | | | |
| 3.3.5 | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 100 | 1xø | 1xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.2 | | | 80 | 1xø | 1xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.3 | | | 100 | 1xø | 1xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.4 | | | 100 | 1xø | 1xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.5 | | | 110 | 1xø | 1xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | |
| 4.2.2 | | | | | | | | | |
| 4.2.3 | | | | | | | | | |
| 4.2.4 | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 180 | 1xø | 1xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 5.1.2 | | | 130 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 5.1.3 | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | 80 | 1xø | 1xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.2.2 | | | 100 | 1xø | 1xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.1.1 | GG mit lamellarem Graphit | | 220 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.2 | | | 190 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.3 | | | 160 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.1.4 | | | 130 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.2.1 | GGG mit Kugelgraphit | | 220 | 1xø | 1xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.2 | | | 190 | 1xø | 1xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.3 | | | 160 | 1xø | 1xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.3.1 | GTW weisser Temperguss | | 220 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.3.2 | | | 190 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.1 | GTS schwarzer Temperguss | | 220 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.2 | | | 190 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |

# W0422-L und W0422-LS, beschichtet

HPC-Schruppfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | HB Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 4,0 | HPC-SR.UN.0422.0400.LS.Z3.F0010A.HB | 6 | 3,8 | 57 | 8 | 18 | 0,1 | 3 | | W0422040351 |
| 4,0 | HPC-SR.UN.0422.0400.L.Z3.F0010A.HB | 6 | 3,8 | 57 | 11 | 18 | 0,1 | 3 | W0422040451 | |
| 5,0 | HPC-SR.UN.0422.0500.LS.Z3.F0010A.HB | 6 | 4,8 | 57 | 9 | 20 | 0,1 | 3 | | W0422050351 |
| 5,0 | HPC-SR.UN.0422.0500.L.Z3.F0010A.HB | 6 | 4,8 | 57 | 13 | 20 | 0,1 | 3 | W0422050451 | |
| 6,0 | HPC-SR.UN.0422.0600.LS.Z4.F0010A.HB | 6 | 5,8 | 57 | 10 | 20 | 0,1 | 4 | | W0422060351 |
| 6,0 | HPC-SR.UN.0422.0600.L.Z4.F0010A.HB | 6 | 5,8 | 57 | 13 | 20 | 0,1 | 4 | W0422060451 | |
| 8,0 | HPC-SR.UN.0422.0800.LS.Z4.F0020A.HB | 8 | 7,7 | 63 | 12 | 25 | 0,2 | 4 | | W0422080351 |
| 8,0 | HPC-SR.UN.0422.0800.L.Z4.F0020A.HB | 8 | 7,7 | 63 | 19 | 25 | 0,2 | 4 | W0422080451 | |
| 10,0 | HPC-SR.UN.0422.1000.LS.Z4.F0020A.HB | 10 | 9,5 | 72 | 15 | 30 | 0,2 | 4 | | W0422100351 |
| 10,0 | HPC-SR.UN.0422.1000.L.Z4.F0020A.HB | 10 | 9,5 | 72 | 22 | 30 | 0,2 | 4 | W0422100451 | |
| 12,0 | HPC-SR.UN.0422.1200.LS.Z4.F0030A.HB | 12 | 11,5 | 83 | 18 | 35 | 0,3 | 4 | | W0422120351 |
| 12,0 | HPC-SR.UN.0422.1200.L.Z4.F0030A.HB | 12 | 11,5 | 83 | 26 | 35 | 0,3 | 4 | W0422120451 | |
| 16,0 | HPC-SR.UN.0422.1600.LS.Z4.F0030A.HB | 16 | 15,5 | 92 | 24 | 40 | 0,3 | 4 | | W0422160351 |
| 16,0 | HPC-SR.UN.0422.1600.L.Z4.F0030A.HB | 16 | 15,5 | 92 | 32 | 40 | 0,3 | 4 | W0422160451 | |
| 20,0 | HPC-SR.UN.0422.2000.LS.Z4.F0030A.HB | 20 | 19,5 | 104 | 30 | 50 | 0,3 | 4 | | W0422200351 |
| 20,0 | HPC-SR.UN.0422.2000.L.Z4.F0030A.HB | 20 | 19,5 | 104 | 38 | 50 | 0,3 | 4 | W0422200451 | |

# W0216-S, beschichtet

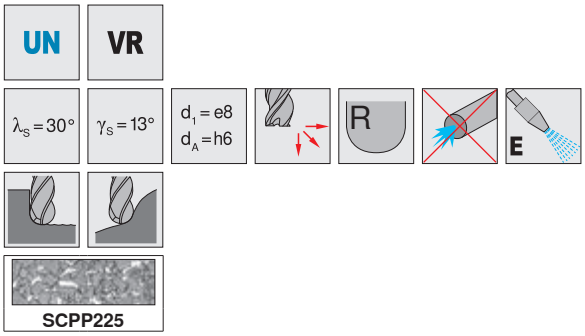
Schnittdatenempfehlung



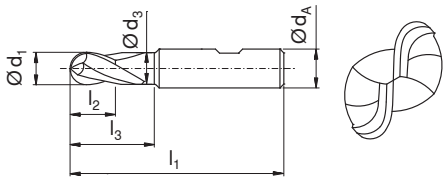
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 200 | 0,05xø | 0,08xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.1.2 | | | 180 | 0,05xø | 0,08xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.2.1 | Baustahl | | 200 | 0,05xø | 0,08xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.2 | | | 180 | 0,05xø | 0,08xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.3 | | | 150 | 0,05xø | 0,08xø | 0,02 | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.3.1 | Federstahl | | | | | | | | | |
| 1.3.2 | | | | | | | | | | |
| 1.3.3 | | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 180 | 0,05xø | 0,08xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.1.2 | | | 170 | 0,05xø | 0,08xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.1.3 | | | 140 | 0,05xø | 0,08xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.1 | Nitrierstahl | | 150 | 0,05xø | 0,08xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.2 | | | 130 | 0,05xø | 0,08xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.1 | Vergütungsstahl | | 160 | 0,05xø | 0,08xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.2 | | | 150 | 0,05xø | 0,08xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.3 | | | 150 | 0,05xø | 0,08xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.4 | | | 140 | 0,05xø | 0,08xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.5 | | | 130 | 0,05xø | 0,08xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.6 | | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | | | | |
| 3.2.2 | | | | | | | | | | |
| 3.2.3 | | | | | | | | | | |
| 3.2.4 | | | | | | | | | | |
| 3.2.5 | | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | | |
| 3.3.2 | | | | | | | | | | |
| 3.3.3 | | | | | | | | | | |
| 3.3.4 | | | | | | | | | | |
| 3.3.5 | | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 100 | 0,05xø | 0,08xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.2 | | | 40 | 0,05xø | 0,08xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.3 | | | 50 | 0,05xø | 0,08xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.4 | | | 50 | 0,05xø | 0,08xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.5 | | | 60 | 0,05xø | 0,08xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.1 | hochwarmfeste Legierungen | | 30 | 0,05xø | 0,08xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.2 | | | 30 | 0,05xø | 0,08xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.3 | | | 30 | 0,05xø | 0,08xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.4 | | | 30 | 0,05xø | 0,08xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.1.1 | konventioneller Stahlguss | | 100 | 0,05xø | 0,08xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 5.1.2 | | | 80 | 0,05xø | 0,08xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 5.1.3 | | | 60 | 0,05xø | 0,08xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 5.2.1 | rostfreier Stahlguss | | 50 | 0,05xø | 0,08xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.2.2 | | | 50 | 0,05xø | 0,08xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.1.1 | GG mit lamellarem Graphit | | 120 | 0,05xø | 0,08xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.2 | | | 80 | 0,05xø | 0,08xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.3 | | | 80 | 0,05xø | 0,08xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.1.4 | | | 70 | 0,05xø | 0,08xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.2.1 | GGG mit Kugelgraphit | | 120 | 0,05xø | 0,08xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.2 | | | 200 | 0,05xø | 0,08xø | 0,03 | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.3 | | | 80 | 0,05xø | 0,08xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.3.1 | GTW weisser Temperguss | | 120 | 0,05xø | 0,08xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.3.2 | | | 100 | 0,05xø | 0,08xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.1 | GTS schwarzer Temperguss | | 120 | 0,05xø | 0,08xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.2 | | | 100 | 0,05xø | 0,08xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.1 | Aluminium | | | | | | | | | |
| 7.1.2 | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | | 140 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | | 120 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | | 100 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | | 120 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | | 100 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | | 120 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | CuZn (Messing) | | 150 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | | 200 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | CuSn (Bronze) | | 120 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | | 140 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | | 120 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | | 140 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | Titan | | 50 | 1xø | 0,03xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.2 | | | 60 | 1xø | 0,03xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.3 | | | 20 | 1xø | 0,03xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |

# W0216-S, beschichtet

Vollradiusfräser





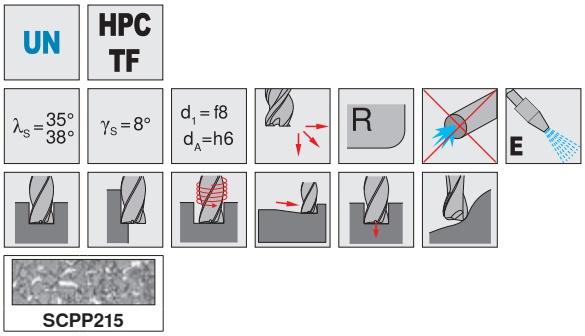

| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | R [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|---|---|
| 3,0 | VR.UN.0216.0300.S.Z2.R0150.HB | 6 | 2,9 | 50 | 5 | 9 | 1,5 | 2 | W0216030141 |
| 4,0 | VR.UN.0216.0400.S.Z2.R0200.HB | 6 | 3,9 | 54 | 8 | 12 | 2 | 2 | W0216040141 |
| 5,0 | VR.UN.0216.0500.S.Z2.R0250.HB | 6 | 4,9 | 54 | 9 | 15 | 2,5 | 2 | W0216050141 |
| 6,0 | VR.UN.0216.0600.S.Z2.R0300.HB | 6 | 5,9 | 54 | 10 | 17 | 3 | 2 | W0216060141 |
| 7,0 | VR.UN.0216.0700.S.Z2.R0350.HB | 8 | 6,8 | 58 | 11 | 19 | 3,5 | 2 | W0216070141 |
| 8,0 | VR.UN.0216.0800.S.Z2.R0400.HB | 8 | 7,8 | 58 | 12 | 20 | 4 | 2 | W0216080141 |
| 9,0 | VR.UN.0216.0900.S.Z2.R0450.HB | 10 | 8,8 | 66 | 13 | 23 | 4,5 | 2 | W0216090141 |
| 10,0 | VR.UN.0216.1000.S.Z2.R0500.HB | 10 | 9,8 | 66 | 14 | 26 | 5 | 2 | W0216100141 |
| 12,0 | VR.UN.0216.1200.S.Z2.R0600.HB | 12 | 11,8 | 73 | 16 | 28 | 6 | 2 | W0216120141 |
| 14,0 | VR.UN.0216.1400.S.Z2.R0700.HB | 14 | 13,8 | 75 | 18 | 30 | 7 | 2 | W0216140141 |
| 16,0 | VR.UN.0216.1600.S.Z2.R0800.HB | 16 | 15,7 | 82 | 22 | 32 | 8 | 2 | W0216160141 |
| 18,0 | VR.UN.0216.1800.S.Z2.R0900.HB | 18 | 17,7 | 84 | 24 | 35 | 9 | 2 | W0216180141 |
| 20,0 | VR.UN.0216.2000.S.Z2.R1000.HB | 20 | 19,7 | 92 | 26 | 40 | 10 | 2 | W0216200141 |

# W0448-L, beschichtet

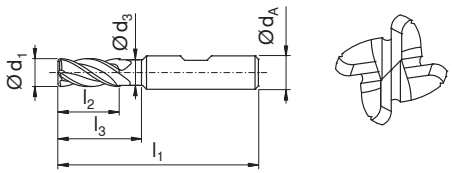
Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 260 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.1.2 | | | 240 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.1 | Baustahl | | 250 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.2.2 | | | 230 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.3 | | | 220 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.3.1 | Federstahl | | | | | | | | | |
| 1.3.2 | | | | | | | | | | |
| 1.3.3 | | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 210 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.2 | | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.3 | | | 190 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.2.1 | Nitrierstahl | | 190 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.2.2 | | | 170 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.1 | Vergütungsstahl | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.2 | | | 190 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.3 | | | 190 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.4 | | | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.5 | | | 170 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.6 | | | 150 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.1.1 | Werkzeugstahl unlegiert | | 185 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.2 | | | 170 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.3 | | | 150 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.2.4 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.5 | | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.2 | | | 180 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.3.3 | | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.4 | | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.5 | | | 130 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 100 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.2 | | | 80 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.3 | | | 100 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.4 | | | 100 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.5 | | | 110 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.2.1 | hochwarmfeste Legierungen | | 30 | 1xø | 0,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.2 | | | 30 | 1xø | 0,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.3 | | | 30 | 1xø | 0,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.4 | | | 30 | 1xø | 0,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.1.1 | konventioneller Stahlguss | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.2 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.3 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.2.1 | rostfreier Stahlguss | | 100 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 5.2.2 | | | 100 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 6.1.1 | GG mit lamellarem Graphit | | 200 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.2 | | | 180 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.3 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.1.4 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.1 | GGG mit Kugelgraphit | | 190 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.2 | | | 170 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.3 | | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.1 | GTW weisser Temperguss | | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.2 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.1 | GTS schwarzer Temperguss | | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.2 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.1.1 | Aluminium | | | | | | | | | |
| 7.1.2 | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | | 280 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.2 | | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.3 | | | 200 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.4 | | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.5 | | | 200 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.6 | | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.1 | CuZn (Messing) | | 300 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.2 | | | 350 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.1 | CuSn (Bronze) | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.2 | | | 280 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | | 140 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.2 | | | 160 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.8.1 | Titan | | 90 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.8.2 | | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 7.8.3 | | | 50 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | R [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|---|---|
| 3,0 | HPC-TF.UN.0448.0300.L.Z4.R0010.HB | 6 | 2,8 | 57 | 8 | 13 | 0,1 | 4 | W0448030641 |
| 3,0 | HPC-TF.UN.0448.0300.L.Z4.R0040.HB | 6 | 2,8 | 57 | 8 | 13 | 0,4 | 4 | W0448030741 |
| 3,0 | HPC-TF.UN.0448.0300.L.Z4.R0050.HB | 6 | 2,8 | 57 | 8 | 13 | 0,5 | 4 | W0448030841 |
| 3,0 | HPC-TF.UN.0448.0300.L.Z4.R0100.HB | 6 | 2,8 | 57 | 8 | 13 | 1 | 4 | W0448030941 |
| 4,0 | HPC-TF.UN.0448.0400.L.Z4.R0010.HB | 6 | 3,8 | 57 | 11 | 17 | 0,1 | 4 | W0448040641 |
| 4,0 | HPC-TF.UN.0448.0400.L.Z4.R0040.HB | 6 | 3,8 | 57 | 11 | 17 | 0,4 | 4 | W0448040741 |
| 4,0 | HPC-TF.UN.0448.0400.L.Z4.R0050.HB | 6 | 3,8 | 57 | 11 | 17 | 0,5 | 4 | W0448040841 |
| 4,0 | HPC-TF.UN.0448.0400.L.Z4.R0100.HB | 6 | 3,8 | 57 | 11 | 17 | 1 | 4 | W0448040941 |
| 5,0 | HPC-TF.UN.0448.0500.L.Z4.R0010.HB | 6 | 4,8 | 57 | 13 | 19 | 0,1 | 4 | W0448050641 |
| 5,0 | HPC-TF.UN.0448.0500.L.Z4.R0040.HB | 6 | 4,8 | 57 | 13 | 19 | 0,4 | 4 | W0448050741 |
| 5,0 | HPC-TF.UN.0448.0500.L.Z4.R0050.HB | 6 | 4,8 | 57 | 13 | 19 | 0,5 | 4 | W0448050841 |
| 5,0 | HPC-TF.UN.0448.0500.L.Z4.R0100.HB | 6 | 4,8 | 57 | 13 | 19 | 1 | 4 | W0448050941 |
| 6,0 | HPC-TF.UN.0448.0600.L.Z4.R0010.HB | 6 | 5,8 | 57 | 13 | 19 | 0,1 | 4 | W0448060641 |
| 6,0 | HPC-TF.UN.0448.0600.L.Z4.R0050.HB | 6 | 5,8 | 57 | 13 | 19 | 0,5 | 4 | W0448060741 |
| 6,0 | HPC-TF.UN.0448.0600.L.Z4.R0100.HB | 6 | 5,8 | 57 | 13 | 19 | 1 | 4 | W0448060841 |
| 6,0 | HPC-TF.UN.0448.0600.L.Z4.R0150.HB | 6 | 5,8 | 57 | 13 | 19 | 1,5 | 4 | W0448060941 |
| 8,0 | HPC-TF.UN.0448.0800.L.Z4.R0015.HB | 8 | 7,7 | 63 | 21 | 25 | 0,15 | 4 | W0448080541 |
| 8,0 | HPC-TF.UN.0448.0800.L.Z4.R0050.HB | 8 | 7,7 | 63 | 21 | 25 | 0,5 | 4 | W0448080641 |
| 8,0 | HPC-TF.UN.0448.0800.L.Z4.R0100.HB | 8 | 7,7 | 63 | 21 | 25 | 1 | 4 | W0448080741 |
| 8,0 | HPC-TF.UN.0448.0800.L.Z4.R0150.HB | 8 | 7,7 | 63 | 21 | 25 | 1,5 | 4 | W0448080841 |
| 8,0 | HPC-TF.UN.0448.0800.L.Z4.R0200.HB | 8 | 7,7 | 63 | 21 | 25 | 2 | 4 | W0448080941 |
| 10,0 | HPC-TF.UN.0448.1000.L.Z4.R0015.HB | 10 | 9,7 | 72 | 22 | 30 | 0,15 | 4 | W0448100541 |
| 10,0 | HPC-TF.UN.0448.1000.L.Z4.R0050.HB | 10 | 9,7 | 72 | 22 | 30 | 0,5 | 4 | W0448100641 |
| 10,0 | HPC-TF.UN.0448.1000.L.Z4.R0100.HB | 10 | 9,7 | 72 | 22 | 30 | 1 | 4 | W0448100741 |
| 10,0 | HPC-TF.UN.0448.1000.L.Z4.R0150.HB | 10 | 9,7 | 72 | 22 | 30 | 1,5 | 4 | W0448100841 |
| 10,0 | HPC-TF.UN.0448.1000.L.Z4.R0200.HB | 10 | 9,7 | 72 | 22 | 30 | 2 | 4 | W0448100941 |
| 12,0 | HPC-TF.UN.0448.1200.L.Z4.R0020.HB | 12 | 11,6 | 83 | 26 | 36 | 0,2 | 4 | W0448120641 |
| 12,0 | HPC-TF.UN.0448.1200.L.Z4.R0050.HB | 12 | 11,6 | 83 | 26 | 36 | 0,5 | 4 | W0448120741 |
| 12,0 | HPC-TF.UN.0448.1200.L.Z4.R0100.HB | 12 | 11,6 | 83 | 26 | 36 | 1 | 4 | W0448120841 |
| 12,0 | HPC-TF.UN.0448.1200.L.Z4.R0150.HB | 12 | 11,6 | 83 | 26 | 36 | 1,5 | 4 | W0448120941 |
| 12,0 | HPC-TF.UN.0448.1200.L.Z4.R0200.HB | 12 | 11,6 | 83 | 26 | 36 | 2 | 4 | W0448120A41 |
| 12,0 | HPC-TF.UN.0448.1200.L.Z4.R0400.HB | 12 | 11,6 | 83 | 26 | 36 | 4 | 4 | W0448120C41 |
| 14,0 | HPC-TF.UN.0448.1400.L.Z4.R0030.HB | 14 | 13,6 | 83 | 26 | 36 | 0,3 | 4 | W0448140641 |
| 14,0 | HPC-TF.UN.0448.1400.L.Z4.R0100.HB | 14 | 13,6 | 83 | 26 | 36 | 1 | 4 | W0448140741 |
| 14,0 | HPC-TF.UN.0448.1400.L.Z4.R0200.HB | 14 | 13,6 | 83 | 26 | 36 | 2 | 4 | W0448140841 |
| 14,0 | HPC-TF.UN.0448.1400.L.Z4.R0400.HB | 14 | 13,6 | 83 | 26 | 36 | 4 | 4 | W0448140941 |
| 16,0 | HPC-TF.UN.0448.1600.L.Z4.R0030.HB | 16 | 15,5 | 92 | 36 | 42 | 0,3 | 4 | W0448160641 |
| 16,0 | HPC-TF.UN.0448.1600.L.Z4.R0100.HB | 16 | 15,5 | 92 | 36 | 42 | 1 | 4 | W0448160741 |
| 16,0 | HPC-TF.UN.0448.1600.L.Z4.R0200.HB | 16 | 15,5 | 92 | 36 | 42 | 2 | 4 | W0448160841 |
| 16,0 | HPC-TF.UN.0448.1600.L.Z4.R0400.HB | 16 | 15,5 | 92 | 36 | 42 | 4 | 4 | W0448160941 |
| 18,0 | HPC-TF.UN.0448.1800.L.Z4.R0100.HB | 18 | 17,5 | 92 | 36 | 42 | 1 | 4 | W0448180641 |
| 18,0 | HPC-TF.UN.0448.1800.L.Z4.R0200.HB | 18 | 17,5 | 92 | 36 | 42 | 2 | 4 | W0448180741 |
| 18,0 | HPC-TF.UN.0448.1800.L.Z4.R0400.HB | 18 | 17,5 | 92 | 36 | 42 | 4 | 4 | W0448180841 |
| 20,0 | HPC-TF.UN.0448.2000.L.Z4.R0030.HB | 20 | 19,5 | 104 | 41 | 52 | 0,3 | 4 | W0448200641 |
| 20,0 | HPC-TF.UN.0448.2000.L.Z4.R0100.HB | 20 | 19,5 | 104 | 41 | 52 | 1 | 4 | W0448200741 |
| 20,0 | HPC-TF.UN.0448.2000.L.Z4.R0200.HB | 20 | 19,5 | 104 | 41 | 52 | 2 | 4 | W0448200841 |
| 20,0 | HPC-TF.UN.0448.2000.L.Z4.R0400.HB | 20 | 19,5 | 104 | 41 | 52 | 4 | 4 | W0448200941 |

# W0740-S, beschichtet

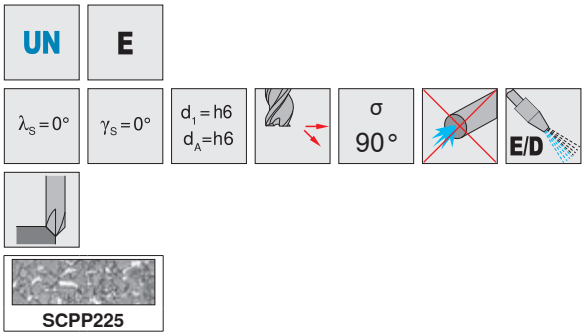
Schnittdatenempfehlung



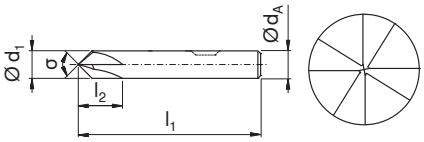
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,2xø | 0,2xø | 0,04 | 0,05 |
| 1.1.2 | | | 70 | 0,2xø | 0,2xø | 0,04 | 0,05 |
| 1.2.1 | Baustahl | | 100 | 0,2xø | 0,2xø | 0,045 | 0,05 |
| 1.2.2 | | | 70 | 0,2xø | 0,2xø | 0,045 | 0,05 |
| 1.2.3 | | | 60 | 0,2xø | 0,2xø | 0,04 | 0,05 |
| 1.3.1 | Federstahl | | | | | | |
| 1.3.2 | | | | | | | |
| 1.3.3 | | | | | | | |
| 2.1.1 | Einsatzstahl | | 95 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.1.2 | | | 75 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.1.3 | | | 60 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.2.1 | Nitrierstahl | | 70 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.2.2 | | | 55 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.3.1 | Vergütungsstahl | | 80 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.3.2 | | | 70 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.3.3 | | | 70 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.3.4 | | | 60 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.3.5 | | | 55 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.3.6 | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | |
| 3.2.2 | | | | | | | |
| 3.2.3 | | | | | | | |
| 3.2.4 | | | | | | | |
| 3.2.5 | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | |
| 3.3.2 | | | | | | | |
| 3.3.3 | | | | | | | |
| 3.3.4 | | | | | | | |
| 3.3.5 | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | |
| 4.1.2 | | | | | | | |
| 4.1.3 | | | | | | | |
| 4.1.4 | | | | | | | |
| 4.1.5 | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | |
| 4.2.2 | | | | | | | |
| 4.2.3 | | | | | | | |
| 4.2.4 | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 100 | 0,2xø | 0,2xø | 0,045 | 0,05 |
| 5.1.2 | | | 80 | 0,2xø | 0,2xø | 0,045 | 0,05 |
| 5.1.3 | | | 60 | 0,2xø | 0,2xø | 0,045 | 0,05 |
| 5.2.1 | rostfreier Stahlguss | | | | | | |
| 5.2.2 | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 120 | 0,2xø | 0,2xø | 0,06 | 0,07 |
| 6.1.2 | | | 100 | 0,2xø | 0,2xø | 0,06 | 0,07 |
| 6.1.3 | | | 80 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 6.1.4 | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 120 | 0,2xø | 0,2xø | 0,045 | 0,05 |
| 6.2.2 | | | 100 | 0,2xø | 0,2xø | 0,045 | 0,05 |
| 6.2.3 | | | 80 | 0,2xø | 0,2xø | 0,02 | 0,03 |
| 6.3.1 | GTW weisser Temperguss | | 120 | 0,2xø | 0,2xø | 0,06 | 0,07 |
| 6.3.2 | | | 100 | 0,2xø | 0,2xø | 0,06 | 0,07 |
| 6.4.1 | GTS schwarzer Temperguss | | 120 | 0,2xø | 0,2xø | 0,06 | 0,07 |
| 6.4.2 | | | 100 | 0,2xø | 0,2xø | 0,06 | 0,07 |
| 7.1.1 | Aluminium | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |

# W0740-S, beschichtet

Entgrater






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | σ [°] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|
| 4,0 | E.UN.0740.0400.S.Z4.HA | 4 | 54 | 9 | 90 | 4 | W0740040340 | |
| 6,0 | E.UN.0740.0600.S.Z4.HA | 6 | 54 | 12 | 90 | 4 | W0740060340 | |
| 6,0 | E.UN.0740.0600.S.Z4.HB | 6 | 54 | 12 | 90 | 4 | | W0740060341 |
| 8,0 | E.UN.0740.0800.S.Z4.HA | 8 | 58 | 15 | 90 | 4 | W0740080340 | |
| 8,0 | E.UN.0740.0800.S.Z4.HB | 8 | 58 | 15 | 90 | 4 | | W0740080341 |
| 10,0 | E.UN.0740.1000.S.Z4.HA | 10 | 66 | 16 | 90 | 4 | W0740100340 | |
| 10,0 | E.UN.0740.1000.S.Z4.HB | 10 | 66 | 16 | 90 | 4 | | W0740100341 |
| 12,0 | E.UN.0740.1200.S.Z4.HA | 12 | 73 | 18 | 90 | 4 | W0740120340 | |
| 12,0 | E.UN.0740.1200.S.Z4.HB | 12 | 73 | 18 | 90 | 4 | | W0740120341 |

# W0741-S, beschichtet

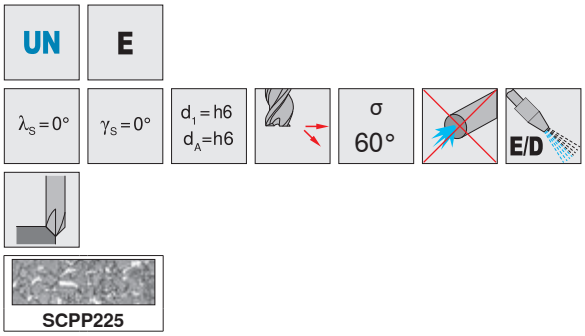
Schnittdatenempfehlung



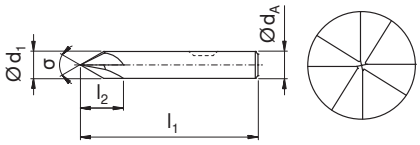
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,2xø | 0,2xø | 0,04 | 0,05 |
| 1.1.2 | | | 70 | 0,2xø | 0,2xø | 0,04 | 0,05 |
| 1.2.1 | Baustahl | | 100 | 0,2xø | 0,2xø | 0,045 | 0,05 |
| 1.2.2 | | | 70 | 0,2xø | 0,2xø | 0,045 | 0,05 |
| 1.2.3 | | | 60 | 0,2xø | 0,2xø | 0,04 | 0,05 |
| 1.3.1 | Federstahl | | | | | | |
| 1.3.2 | | | | | | | |
| 1.3.3 | | | | | | | |
| 2.1.1 | Einsatzstahl | | 95 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.1.2 | | | 75 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.1.3 | | | 60 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.2.1 | Nitrierstahl | | 70 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.2.2 | | | 55 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.3.1 | Vergütungsstahl | | 80 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.3.2 | | | 70 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.3.3 | | | 70 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.3.4 | | | 60 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.3.5 | | | 55 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.3.6 | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | |
| 3.2.2 | | | | | | | |
| 3.2.3 | | | | | | | |
| 3.2.4 | | | | | | | |
| 3.2.5 | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | |
| 3.3.2 | | | | | | | |
| 3.3.3 | | | | | | | |
| 3.3.4 | | | | | | | |
| 3.3.5 | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | |
| 4.1.2 | | | | | | | |
| 4.1.3 | | | | | | | |
| 4.1.4 | | | | | | | |
| 4.1.5 | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | |
| 4.2.2 | | | | | | | |
| 4.2.3 | | | | | | | |
| 4.2.4 | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 100 | 0,2xø | 0,2xø | 0,045 | 0,05 |
| 5.1.2 | | | 80 | 0,2xø | 0,2xø | 0,045 | 0,05 |
| 5.1.3 | | | 60 | 0,2xø | 0,2xø | 0,045 | 0,05 |
| 5.2.1 | rostfreier Stahlguss | | | | | | |
| 5.2.2 | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 120 | 0,2xø | 0,2xø | 0,06 | 0,07 |
| 6.1.2 | | | 100 | 0,2xø | 0,2xø | 0,06 | 0,07 |
| 6.1.3 | | | 80 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 6.1.4 | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 120 | 0,2xø | 0,2xø | 0,045 | 0,05 |
| 6.2.2 | | | 100 | 0,2xø | 0,2xø | 0,045 | 0,05 |
| 6.2.3 | | | 80 | 0,2xø | 0,2xø | 0,02 | 0,03 |
| 6.3.1 | GTW weisser Temperguss | | 120 | 0,2xø | 0,2xø | 0,06 | 0,07 |
| 6.3.2 | | | 100 | 0,2xø | 0,2xø | 0,06 | 0,07 |
| 6.4.1 | GTS schwarzer Temperguss | | 120 | 0,2xø | 0,2xø | 0,06 | 0,07 |
| 6.4.2 | | | 100 | 0,2xø | 0,2xø | 0,06 | 0,07 |
| 7.1.1 | Aluminium | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |

# W0741-S, beschichtet

Entgrater






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | σ [°] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|
| 4,0 | E.UN.0741.0400.S.Z4.HA | 4 | 54 | 9 | 60 | 4 | W0741040340 | |
| 6,0 | E.UN.0741.0600.S.Z4.HB | 6 | 54 | 12 | 60 | 4 | | W0741060341 |
| 8,0 | E.UN.0741.0800.S.Z4.HB | 8 | 58 | 15 | 60 | 4 | | W0741080341 |
| 10,0 | E.UN.0741.1000.S.Z4.HB | 10 | 66 | 16 | 60 | 4 | | W0741100341 |
| 12,0 | E.UN.0741.1200.S.Z4.HB | 12 | 73 | 18 | 60 | 4 | | W0741120341 |

# W0742-S, beschichtet

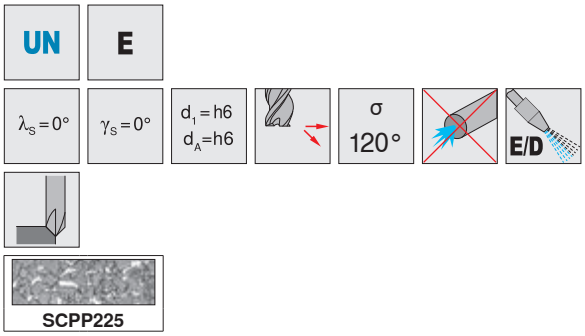
Schnittdatenempfehlung



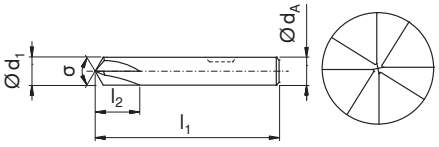
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,2xø | 0,2xø | 0,04 | 0,05 |
| 1.1.2 | | | 70 | 0,2xø | 0,2xø | 0,04 | 0,05 |
| 1.2.1 | Baustahl | | 100 | 0,2xø | 0,2xø | 0,045 | 0,05 |
| 1.2.2 | | | 70 | 0,2xø | 0,2xø | 0,045 | 0,05 |
| 1.2.3 | | | 60 | 0,2xø | 0,2xø | 0,04 | 0,05 |
| 1.3.1 | Federstahl | | | | | | |
| 1.3.2 | | | | | | | |
| 1.3.3 | | | | | | | |
| 2.1.1 | Einsatzstahl | | 95 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.1.2 | | | 75 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.1.3 | | | 60 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.2.1 | Nitrierstahl | | 70 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.2.2 | | | 55 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.3.1 | Vergütungsstahl | | 80 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.3.2 | | | 70 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.3.3 | | | 70 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.3.4 | | | 60 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.3.5 | | | 55 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 2.3.6 | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | |
| 3.2.2 | | | | | | | |
| 3.2.3 | | | | | | | |
| 3.2.4 | | | | | | | |
| 3.2.5 | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | |
| 3.3.2 | | | | | | | |
| 3.3.3 | | | | | | | |
| 3.3.4 | | | | | | | |
| 3.3.5 | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | |
| 4.1.2 | | | | | | | |
| 4.1.3 | | | | | | | |
| 4.1.4 | | | | | | | |
| 4.1.5 | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | |
| 4.2.2 | | | | | | | |
| 4.2.3 | | | | | | | |
| 4.2.4 | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 100 | 0,2xø | 0,2xø | 0,045 | 0,05 |
| 5.1.2 | | | 80 | 0,2xø | 0,2xø | 0,045 | 0,05 |
| 5.1.3 | | | 60 | 0,2xø | 0,2xø | 0,045 | 0,05 |
| 5.2.1 | rostfreier Stahlguss | | | | | | |
| 5.2.2 | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 120 | 0,2xø | 0,2xø | 0,06 | 0,07 |
| 6.1.2 | | | 100 | 0,2xø | 0,2xø | 0,06 | 0,07 |
| 6.1.3 | | | 80 | 0,2xø | 0,2xø | 0,03 | 0,04 |
| 6.1.4 | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 120 | 0,2xø | 0,2xø | 0,045 | 0,05 |
| 6.2.2 | | | 100 | 0,2xø | 0,2xø | 0,045 | 0,05 |
| 6.2.3 | | | 80 | 0,2xø | 0,2xø | 0,02 | 0,03 |
| 6.3.1 | GTW weisser Temperguss | | 120 | 0,2xø | 0,2xø | 0,06 | 0,07 |
| 6.3.2 | | | 100 | 0,2xø | 0,2xø | 0,06 | 0,07 |
| 6.4.1 | GTS schwarzer Temperguss | | 120 | 0,2xø | 0,2xø | 0,06 | 0,07 |
| 6.4.2 | | | 100 | 0,2xø | 0,2xø | 0,06 | 0,07 |
| 7.1.1 | Aluminium | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |

# W0742-S, beschichtet

Entgrater






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | σ [°] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|
| 4,0 | E.UN.0742.0400.S.Z4.HA | 4 | 54 | 9 | 120 | 4 | W0742040340 | |
| 6,0 | E.UN.0742.0600.S.Z4.HB | 6 | 54 | 12 | 120 | 4 | | W0742060341 |
| 8,0 | E.UN.0742.0800.S.Z4.HB | 8 | 58 | 15 | 120 | 4 | | W0742080341 |
| 10,0 | E.UN.0742.1000.S.Z4.HB | 10 | 66 | 16 | 120 | 4 | | W0742100341 |
| 12,0 | E.UN.0742.1200.S.Z4.HB | 12 | 73 | 18 | 120 | 4 | | W0742120341 |

# W0450-S und W0450-L, beschichtet

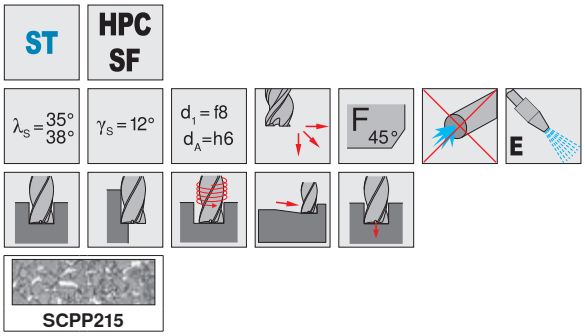
Schnittdatenempfehlung

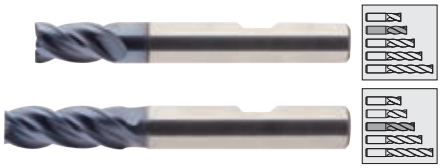


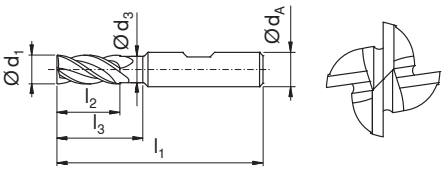
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | | | | | | | | |
| 1.1.2 | | | 240 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.1 | Baustahl | | 250 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.2.2 | | | 230 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.3 | | | 220 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.3.1 | Federstahl | | 130 | 1xø | 1,5xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 1.3.2 | | | 120 | 1xø | 1,5xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 1.3.3 | | | 110 | 1xø | 1,5xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 2.1.1 | Einsatzstahl | | 210 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.2 | | | 200 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.3 | | | 190 | 1xø | 1,5xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.2.1 | Nitrierstahl | | 190 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.2.2 | | | 170 | 1xø | 1,5xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.1 | Vergütungsstahl | | 200 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.2 | | | 190 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.3 | | | 190 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.4 | | | 180 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.5 | | | 170 | 1xø | 1,5xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.6 | | | 150 | 1xø | 1,5xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.1.1 | Werkzeugstahl unlegiert | | 185 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 180 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.2 | | | 170 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.3 | | | 150 | 1xø | 1,5xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.2.4 | | | 160 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.5 | | | 140 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 200 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.2 | | | 180 | 1xø | 1,5xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.3.3 | | | 150 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.4 | | | 140 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.5 | | | 130 | 1xø | 1,5xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | | |
| 4.1.2 | | | | | | | | | | |
| 4.1.3 | | | | | | | | | | |
| 4.1.4 | | | | | | | | | | |
| 4.1.5 | | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | |
| 4.2.2 | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 200 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.2 | | | 160 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.3 | | | 120 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.2.1 | rostfreier Stahlguss | | 120 | 1xø | 1,5xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 5.2.2 | | | 120 | 1xø | 1,5xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 6.1.1 | GG mit lamellarem Graphit | | 200 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.2 | | | 180 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.3 | | | 160 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.1.4 | | | 120 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.1 | GGG mit Kugelgraphit | | 190 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.2 | | | 170 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.3 | | | 150 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.1 | GTW weisser Temperguss | | 180 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.2 | | | 160 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.1 | GTS schwarzer Temperguss | | 180 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.2 | | | 160 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.1.1 | Aluminium | | | | | | | | | |
| 7.1.2 | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | | |
| 7.3.2 | | | | | | | | | | |
| 7.3.3 | | | | | | | | | | |
| 7.3.4 | | | | | | | | | | |
| 7.3.5 | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | |
| 7.4.2 | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | |
| 7.5.2 | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | |
| 7.6.2 | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | |
| 7.8.2 | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | |

# W0450-S und W0450-L, beschichtet

HPC-Schaftfräser





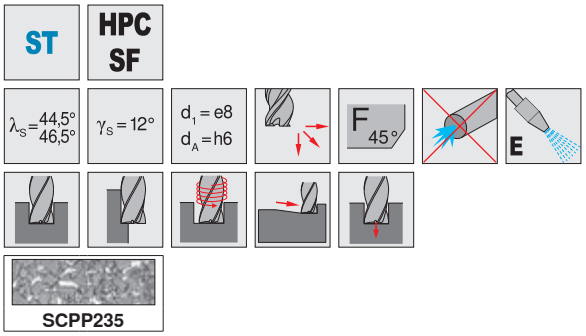

| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | HB Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 3,0 | HPC-SF.ST.0450.0300.L.Z4.F0010A.HB | 6 | 2,8 | 57 | 8 | 13 | 0,1 | 4 | | W0450030341 |
| 3,0 | HPC-SF.ST.0450.0300.S.Z4.F0010A.HB | 6 | | 50 | 5 | | 0,1 | 4 | W0450030241 | |
| 4,0 | HPC-SF.ST.0450.0400.L.Z4.F0010A.HB | 6 | 3,8 | 57 | 11 | 17 | 0,1 | 4 | | W0450040341 |
| 4,0 | HPC-SF.ST.0450.0400.S.Z4.F0010A.HB | 6 | | 54 | 8 | | 0,1 | 4 | W0450040241 | |
| 5,0 | HPC-SF.ST.0450.0500.L.Z4.F0010A.HB | 6 | 4,8 | 57 | 13 | 19 | 0,1 | 4 | | W0450050341 |
| 5,0 | HPC-SF.ST.0450.0500.S.Z4.F0010A.HB | 6 | | 54 | 9 | | 0,1 | 4 | W0450050241 | |
| 6,0 | HPC-SF.ST.0450.0600.L.Z4.F0010A.HB | 6 | 5,8 | 57 | 13 | 19 | 0,1 | 4 | | W0450060341 |
| 6,0 | HPC-SF.ST.0450.0600.S.Z4.F0010A.HB | 6 | | 54 | 10 | | 0,1 | 4 | W0450060241 | |
| 8,0 | HPC-SF.ST.0450.0800.L.Z4.F0020A.HB | 8 | 7,7 | 63 | 21 | 25 | 0,2 | 4 | | W0450080341 |
| 8,0 | HPC-SF.ST.0450.0800.S.Z4.F0020A.HB | 8 | | 58 | 12 | | 0,2 | 4 | W0450080241 | |
| 10,0 | HPC-SF.ST.0450.1000.L.Z4.F0020A.HB | 10 | 9,7 | 72 | 22 | 30 | 0,2 | 4 | | W0450100341 |
| 10,0 | HPC-SF.ST.0450.1000.S.Z4.F0020A.HB | 10 | | 66 | 14 | | 0,2 | 4 | W0450100241 | |
| 12,0 | HPC-SF.ST.0450.1200.L.Z4.F0030A.HB | 12 | 11,6 | 83 | 26 | 36 | 0,3 | 4 | | W0450120341 |
| 12,0 | HPC-SF.ST.0450.1200.S.Z4.F0030A.HB | 12 | | 73 | 16 | | 0,3 | 4 | W0450120241 | |
| 14,0 | HPC-SF.ST.0450.1400.L.Z4.F0030A.HB | 14 | 13,6 | 83 | 26 | 36 | 0,3 | 4 | | W0450140341 |
| 14,0 | HPC-SF.ST.0450.1400.S.Z4.F0030A.HB | 14 | | 73 | 16 | | 0,3 | 4 | W0450140241 | |
| 16,0 | HPC-SF.ST.0450.1600.L.Z4.F0030A.HB | 16 | 15,5 | 92 | 36 | 42 | 0,3 | 4 | | W0450160341 |
| 16,0 | HPC-SF.ST.0450.1600.S.Z4.F0030A.HB | 16 | | 82 | 22 | | 0,3 | 4 | W0450160241 | |
| 18,0 | HPC-SF.ST.0450.1800.S.Z4.F0030A.HB | 18 | | 82 | 22 | | 0,3 | 4 | W0450180241 | |
| 20,0 | HPC-SF.ST.0450.2000.L.Z4.F0030A.HB | 20 | 19,5 | 104 | 41 | 52 | 0,3 | 4 | | W0450200341 |
| 20,0 | HPC-SF.ST.0450.2000.S.Z4.F0030A.HB | 20 | | 92 | 26 | | 0,3 | 4 | W0450200241 | |

# W0452-S und W0452-L, beschichtet

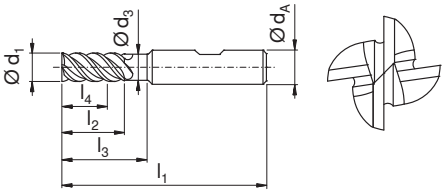
Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | | | | | | | | |
| 1.1.2 | | | 240 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.2.1 | Baustahl | | 250 | 1xø | 1,5xø | 0,028 | 0,05 | 0,08 | 0,12 | 0,14 |
| 1.2.2 | | | 230 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.2.3 | | | 220 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.3.1 | Federstahl | | 130 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.3.2 | | | 120 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.3.3 | | | 110 | 1xø | 1,5xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.1.1 | Einsatzstahl | | 210 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 2.1.2 | | | 200 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 2.1.3 | | | 190 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.2.1 | Nitrierstahl | | 190 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 2.2.2 | | | 170 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.1 | Vergütungsstahl | | 200 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 2.3.2 | | | 190 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 2.3.3 | | | 190 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 2.3.4 | | | 180 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 2.3.5 | | | 170 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.6 | | | 150 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.1.1 | Werkzeugstahl unlegiert | | 185 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 180 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 3.2.2 | | | 170 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 3.2.3 | | | 150 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.4 | | | 160 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 3.2.5 | | | 140 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 200 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 3.3.2 | | | 180 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.3 | | | 150 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 3.3.4 | | | 140 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 3.3.5 | | | 130 | 1xø | 1,5xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | | |
| 4.1.2 | | | | | | | | | | |
| 4.1.3 | | | | | | | | | | |
| 4.1.4 | | | | | | | | | | |
| 4.1.5 | | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | |
| 4.2.2 | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 200 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 5.1.2 | | | 160 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 5.1.3 | | | 120 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 5.2.1 | rostfreier Stahlguss | | 120 | 1xø | 1,5xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 5.2.2 | | | 120 | 1xø | 1,5xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 6.1.1 | GG mit lamellarem Graphit | | 200 | 1xø | 1,5xø | 0,028 | 0,05 | 0,08 | 0,12 | 0,14 |
| 6.1.2 | | | 180 | 1xø | 1,5xø | 0,028 | 0,05 | 0,08 | 0,12 | 0,14 |
| 6.1.3 | | | 160 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.4 | | | 120 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.2.1 | GGG mit Kugelgraphit | | 190 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.2.2 | | | 170 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.2.3 | | | 150 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.3.1 | GTW weisser Temperguss | | 180 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.3.2 | | | 160 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.4.1 | GTS schwarzer Temperguss | | 180 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.4.2 | | | 160 | 1xø | 1,5xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.1.1 | Aluminium | | | | | | | | | |
| 7.1.2 | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | | |
| 7.3.2 | | | | | | | | | | |
| 7.3.3 | | | | | | | | | | |
| 7.3.4 | | | | | | | | | | |
| 7.3.5 | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | |
| 7.4.2 | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | |
| 7.5.2 | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | |
| 7.6.2 | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | |
| 7.8.2 | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | |






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | $l_4$ [mm] | F [mm] | z | HB Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3,0 | HPC-SF.ST.0452.0300.L.Z4.F0010A.HB | 6 | 2,8 | 57 | 8 | 13 | 4,8 | 0,1 | 4 | | W0452030341 |
| 3,0 | HPC-SF.ST.0452.0300.S.Z4.F0010A.HB | 6 | 2,8 | 50 | 5 | 10 | 3,0 | 0,1 | 4 | W0452030241 | |
| 4,0 | HPC-SF.ST.0452.0400.L.Z4.F0010A.HB | 6 | 3,8 | 57 | 11 | 17 | 6,4 | 0,1 | 4 | | W0452040341 |
| 4,0 | HPC-SF.ST.0452.0400.S.Z4.F0010A.HB | 6 | 3,8 | 54 | 8 | 14 | 4,0 | 0,1 | 4 | W0452040241 | |
| 5,0 | HPC-SF.ST.0452.0500.L.Z4.F0010A.HB | 6 | 4,8 | 57 | 13 | 19 | 8,0 | 0,1 | 4 | | W0452050341 |
| 5,0 | HPC-SF.ST.0452.0500.S.Z4.F0010A.HB | 6 | 4,8 | 54 | 9 | 16 | 5,0 | 0,1 | 4 | W0452050241 | |
| 6,0 | HPC-SF.ST.0452.0600.L.Z4.F0010A.HB | 6 | 5,8 | 57 | 13 | 19 | 9,6 | 0,1 | 4 | | W0452060341 |
| 6,0 | HPC-SF.ST.0452.0600.S.Z4.F0010A.HB | 6 | 5,8 | 54 | 10 | 16 | 6,0 | 0,1 | 4 | W0452060241 | |
| 8,0 | HPC-SF.ST.0452.0800.L.Z4.F0020A.HB | 8 | 7,7 | 63 | 21 | 25 | 12,8 | 0,2 | 4 | | W0452080341 |
| 8,0 | HPC-SF.ST.0452.0800.S.Z4.F0020A.HB | 8 | 7,7 | 58 | 12 | 20 | 8,0 | 0,2 | 4 | W0452080241 | |
| 10,0 | HPC-SF.ST.0452.1000.L.Z4.F0020A.HB | 10 | 9,7 | 72 | 22 | 30 | 16,0 | 0,2 | 4 | | W0452100341 |
| 10,0 | HPC-SF.ST.0452.1000.S.Z4.F0020A.HB | 10 | 9,7 | 66 | 14 | 24 | 10,0 | 0,2 | 4 | W0452100241 | |
| 12,0 | HPC-SF.ST.0452.1200.L.Z4.F0030A.HB | 12 | 11,6 | 83 | 26 | 36 | 19,2 | 0,3 | 4 | | W0452120341 |
| 12,0 | HPC-SF.ST.0452.1200.S.Z4.F0030A.HB | 12 | 11,6 | 73 | 16 | 26 | 12,0 | 0,3 | 4 | W0452120241 | |
| 14,0 | HPC-SF.ST.0452.1400.L.Z4.F0030A.HB | 14 | 13,6 | 83 | 26 | 36 | 22,4 | 0,3 | 4 | | W0452140341 |
| 14,0 | HPC-SF.ST.0452.1400.S.Z4.F0030A.HB | 14 | 13,6 | 73 | 16 | 26 | 14,0 | 0,3 | 4 | W0452140241 | |
| 16,0 | HPC-SF.ST.0452.1600.L.Z4.F0030A.HB | 16 | 15,5 | 92 | 36 | 42 | 25,6 | 0,3 | 4 | | W0452160341 |
| 16,0 | HPC-SF.ST.0452.1600.S.Z4.F0030A.HB | 16 | 15,5 | 82 | 22 | 32 | 16,0 | 0,3 | 4 | W0452160241 | |
| 18,0 | HPC-SF.ST.0452.1800.L.Z4.F0030A.HB | 18 | 17,5 | 92 | 36 | 42 | 28,8 | 0,3 | 4 | | W0452180341 |
| 18,0 | HPC-SF.ST.0452.1800.S.Z4.F0030A.HB | 18 | 17,5 | 82 | 22 | 32 | 18,0 | 0,3 | 4 | W0452180241 | |
| 20,0 | HPC-SF.ST.0452.2000.L.Z4.F0030A.HB | 20 | 19,5 | 104 | 41 | 52 | 32,0 | 0,3 | 4 | | W0452200341 |
| 20,0 | HPC-SF.ST.0452.2000.S.Z4.F0030A.HB | 20 | 19,5 | 92 | 26 | 40 | 20,0 | 0,3 | 4 | W0452200241 | |

# W0452-OL, beschichtet

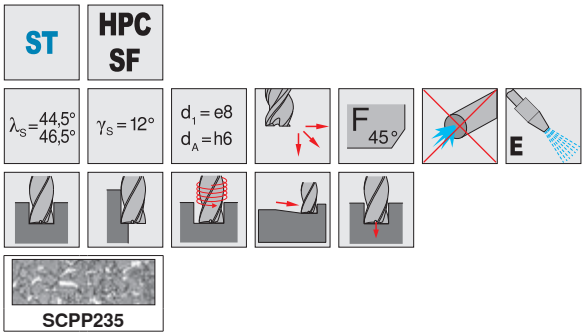
Schnittdatenempfehlung



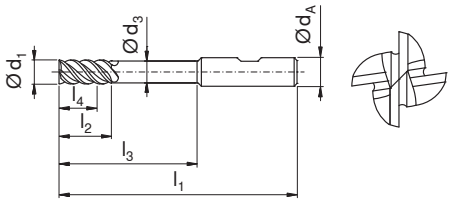
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 1xø | 0,7xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.1.2 | | | 90 | 1xø | 0,7xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.2.1 | Baustahl | | 100 | 1xø | 0,7xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.2 | | | 90 | 1xø | 0,7xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.3 | | | 90 | 1xø | 0,7xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.3.1 | Federstahl | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 1.3.2 | | | | | | | | | |
| 1.3.3 | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 100 | 1xø | 0,7xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 2.1.2 | | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.1.3 | | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.1 | Nitrierstahl | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.2 | | | 80 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.1 | Vergütungsstahl | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.2 | | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.3 | | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.4 | | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.5 | | | 80 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.6 | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 80 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.2 | | | 80 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.3 | | | | | | | | | |
| 3.2.4 | | | 80 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.5 | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | |
| 3.3.2 | | | | | | | | | |
| 3.3.3 | | | 80 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.3.4 | | | | | | | | | |
| 3.3.5 | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | |
| 4.1.2 | | | | | | | | | |
| 4.1.3 | | | | | | | | | |
| 4.1.4 | | | | | | | | | |
| 4.1.5 | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | |
| 4.2.2 | | | | | | | | | |
| 4.2.3 | | | | | | | | | |
| 4.2.4 | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 100 | 1xø | 0,7xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 5.1.2 | | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 5.1.3 | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | 80 | 1xø | 0,7xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.2.2 | | | 80 | 1xø | 0,7xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.1.1 | GG mit lamellarem Graphit | | 110 | 1xø | 0,7xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.2 | | | 100 | 1xø | 0,7xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.3 | | | 100 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.1.4 | | | 90 | 1xø | 0,7xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.2.1 | GGG mit Kugelgraphit | | 110 | 1xø | 0,7xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.2 | | | 100 | 1xø | 0,7xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.3 | | | 100 | 1xø | 0,7xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.3.1 | GTW weisser Temperguss | | 110 | 1xø | 0,7xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.3.2 | | | 100 | 1xø | 0,7xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.1 | GTS schwarzer Temperguss | | 110 | 1xø | 0,7xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.2 | | | 100 | 1xø | 0,7xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |

# W0452-OL, beschichtet

HPC-Schaftfräser





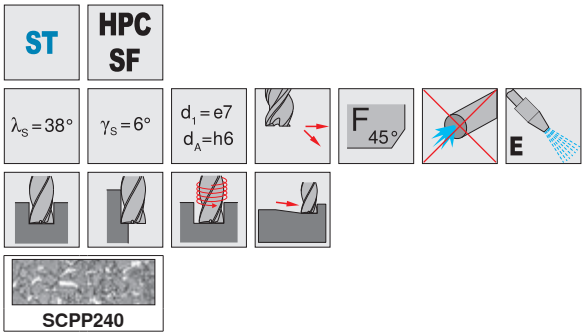

| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | $l_4$ [mm] | F [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 6,0 | HPC-SF.ST.0452.0600.OL.Z4.F0010A.HB | 6 | 5,8 | 80 | 13 | 42 | 9,6 | 0,1 | 4 | W0452060441 |
| 8,0 | HPC-SF.ST.0452.0800.OL.Z4.F0020A.HB | 8 | 7,7 | 100 | 21 | 62 | 12,8 | 0,2 | 4 | W0452080441 |
| 10,0 | HPC-SF.ST.0452.1000.OL.Z4.F0020A.HB | 10 | 9,7 | 100 | 22 | 58 | 16,0 | 0,2 | 4 | W0452100441 |
| 12,0 | HPC-SF.ST.0452.1200.OL.Z4.F0030A.HB | 12 | 11,6 | 120 | 26 | 73 | 19,2 | 0,3 | 4 | W0452120441 |
| 16,0 | HPC-SF.ST.0452.1600.OL.Z4.F0030A.HB | 16 | 15,5 | 150 | 36 | 100 | 25,6 | 0,3 | 4 | W0452160441 |
| 20,0 | HPC-SF.ST.0452.2000.OL.Z4.F0030A.HB | 20 | 19,5 | 150 | 41 | 98 | 32,0 | 0,3 | 4 | W0452200441 |

# W0550-L, beschichtet

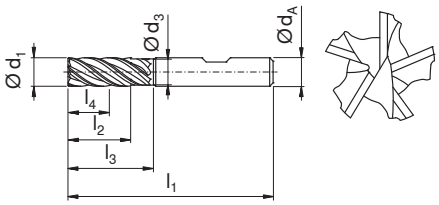
Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | | | | | | | |
| 1.1.2 | | | 240 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.1 | Baustahl | | 250 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.2.2 | | | 230 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.3 | | | 220 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.3.1 | Federstahl | | | | | | | | |
| 1.3.2 | | | | | | | | | |
| 1.3.3 | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 210 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.2 | | | 200 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.3 | | | 190 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.2.1 | Nitrierstahl | | 190 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.2.2 | | | 170 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.1 | Vergütungsstahl | | 200 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.2 | | | 190 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.3 | | | 190 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.4 | | | 180 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.5 | | | 170 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.6 | | | 150 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.1.1 | Werkzeugstahl unlegiert | | 185 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 180 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.2 | | | 170 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.3 | | | 150 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.2.4 | | | 160 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.5 | | | 140 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 200 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.2 | | | 180 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.3.3 | | | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.4 | | | 140 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.5 | | | 130 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 100 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.2 | | | 80 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.3 | | | 100 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.4 | | | 100 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.5 | | | 110 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | |
| 4.2.2 | | | | | | | | | |
| 4.2.3 | | | | | | | | | |
| 4.2.4 | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 200 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.2 | | | 160 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.3 | | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.2.1 | rostfreier Stahlguss | | 100 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 5.2.2 | | | 100 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 6.1.1 | GG mit lamellarem Graphit | | 200 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.2 | | | 180 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.3 | | | 160 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.1.4 | | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.1 | GGG mit Kugelgraphit | | 190 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.2 | | | 170 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.3 | | | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.1 | GTW weisser Temperguss | | 180 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.2 | | | 160 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.1 | GTS schwarzer Temperguss | | 180 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.2 | | | 160 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |






| d1 [mm] | Type, Bezeichnung | dA [mm] | d3 [mm] | l1 [mm] | l2 [mm] | l3 [mm] | l4 [mm] | F [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 6,0 | HPC-SF.ST.0550.0600.L.Z5.F0010A.HB | 6 | 5,8 | 57 | 13 | 19 | 8,5 | 0,1 | 5 | W0550060341 |
| 8,0 | HPC-SF.ST.0550.0800.L.Z5.F0020A.HB | 8 | 7,7 | 63 | 19 | 25 | 12,5 | 0,2 | 5 | W0550080341 |
| 10,0 | HPC-SF.ST.0550.1000.L.Z5.F0020A.HB | 10 | 9,7 | 72 | 22 | 30 | 14,5 | 0,2 | 5 | W0550100341 |
| 12,0 | HPC-SF.ST.0550.1200.L.Z5.F0030A.HB | 12 | 11,6 | 83 | 26 | 36 | 17,1 | 0,3 | 5 | W0550120341 |
| 16,0 | HPC-SF.ST.0550.1600.L.Z5.F0030A.HB | 16 | 15,5 | 92 | 32 | 42 | 21,1 | 0,3 | 5 | W0550160341 |
| 20,0 | HPC-SF.ST.0550.2000.L.Z5.F0030A.HB | 20 | 19,5 | 104 | 38 | 52 | 25,0 | 0,3 | 5 | W0550200341 |

# W0446-L, beschichtet

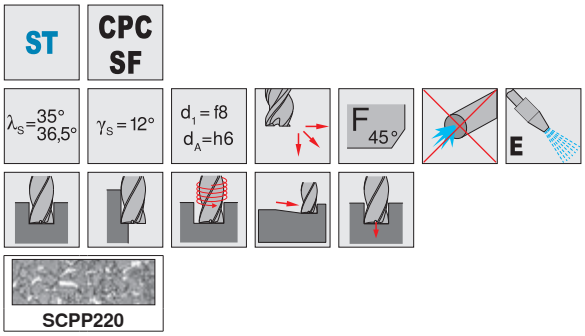
Schnittdatenempfehlung



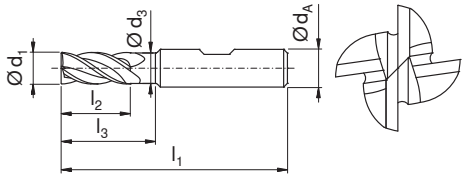
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | | | | | | | | |
| 1.1.2 | | | 240 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.1 | Baustahl | | 250 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.2.2 | | | 230 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.3 | | | 220 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.3.1 | Federstahl | | | | | | | | | |
| 1.3.2 | | | | | | | | | | |
| 1.3.3 | | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 210 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.2 | | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.3 | | | 190 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.2.1 | Nitrierstahl | | 190 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.2.2 | | | 170 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.1 | Vergütungsstahl | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.2 | | | 190 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.3 | | | 190 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.4 | | | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.5 | | | 170 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.6 | | | 150 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.1.1 | Werkzeugstahl unlegiert | | 185 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.2 | | | 170 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.3 | | | 150 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.2.4 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.5 | | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.2 | | | 180 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.3.3 | | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.4 | | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.5 | | | 130 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | | |
| 4.1.2 | | | | | | | | | | |
| 4.1.3 | | | | | | | | | | |
| 4.1.4 | | | | | | | | | | |
| 4.1.5 | | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | |
| 4.2.2 | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.2 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.3 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.2.1 | rostfreier Stahlguss | | | | | | | | | |
| 5.2.2 | | | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 200 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.2 | | | 180 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.3 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.1.4 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.1 | GGG mit Kugelgraphit | | 190 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.2 | | | 170 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.3 | | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.1 | GTW weisser Temperguss | | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.2 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.1 | GTS schwarzer Temperguss | | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.2 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.1.1 | Aluminium | | | | | | | | | |
| 7.1.2 | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | | 280 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.2 | | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.3 | | | 200 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.4 | | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.5 | | | 200 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.6 | | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.1 | CuZn (Messing) | | 300 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.2 | | | 350 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.1 | CuSn (Bronze) | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.2 | | | 280 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | | 140 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.2 | | | 160 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.8.1 | Titan | | 90 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.8.2 | | | 80 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 7.8.3 | | | 50 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |

# W0446-L, beschichtet

CPC-Schaftfräser (Circle Power Cutting)






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|---|---|
| 3,0 | CPC-SF.ST.0446.0300.L.Z4.F0010A.HB | 6 | 2,8 | 57 | 8 | 13 | 0,1 | 4 | W0446030341 |
| 4,0 | CPC-SF.ST.0446.0400.L.Z4.F0010A.HB | 6 | 3,8 | 57 | 11 | 17 | 0,1 | 4 | W0446040341 |
| 5,0 | CPC-SF.ST.0446.0500.L.Z4.F0010A.HB | 6 | 4,8 | 57 | 13 | 19 | 0,1 | 4 | W0446050341 |
| 6,0 | CPC-SF.ST.0446.0600.L.Z4.F0010A.HB | 6 | 5,8 | 57 | 13 | 19 | 0,1 | 4 | W0446060341 |
| 8,0 | CPC-SF.ST.0446.0800.L.Z4.F0020A.HB | 8 | 7,7 | 63 | 21 | 25 | 0,2 | 4 | W0446080341 |
| 10,0 | CPC-SF.ST.0446.1000.L.Z4.F0020A.HB | 10 | 9,7 | 72 | 22 | 30 | 0,2 | 4 | W0446100341 |
| 12,0 | CPC-SF.ST.0446.1200.L.Z4.F0030A.HB | 12 | 11,6 | 83 | 26 | 36 | 0,3 | 4 | W0446120341 |
| 16,0 | CPC-SF.ST.0446.1600.L.Z4.F0030A.HB | 16 | 15,5 | 92 | 36 | 42 | 0,3 | 4 | W0446160341 |
| 20,0 | CPC-SF.ST.0446.2000.L.Z4.F0030A.HB | 20 | 19,5 | 104 | 41 | 52 | 0,3 | 4 | W0446200341 |

# W0446-OL, beschichtet

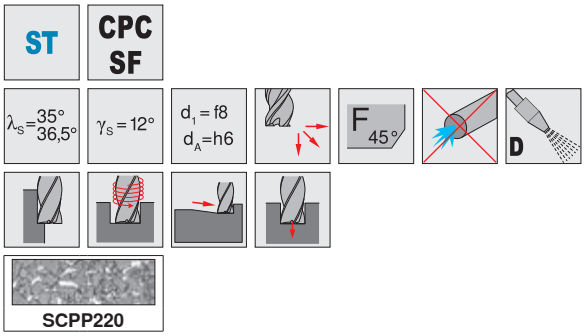
Schnittdatenempfehlung



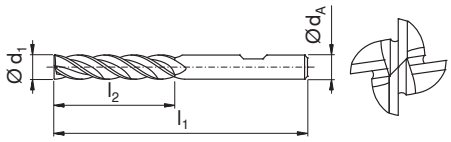
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,1xø | 4,5xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.1.2 | | | 90 | 0,1xø | 4,5xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.2.1 | Baustahl | | 100 | 0,1xø | 4,5xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.2 | | | 90 | 0,1xø | 4,5xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.3 | | | 90 | 0,1xø | 4,5xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.3.1 | Federstahl | | | | | | | | |
| 1.3.2 | | | | | | | | | |
| 1.3.3 | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 100 | 0,1xø | 4,5xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 2.1.2 | | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.1.3 | | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.1 | Nitrierstahl | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.2 | | | 80 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.1 | Vergütungsstahl | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.2 | | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.3 | | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.4 | | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.5 | | | 80 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.6 | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 80 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.2 | | | 80 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.3 | | | | | | | | | |
| 3.2.4 | | | 80 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.5 | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | |
| 3.3.2 | | | | | | | | | |
| 3.3.3 | | | 80 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.3.4 | | | | | | | | | |
| 3.3.5 | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | |
| 4.1.2 | | | | | | | | | |
| 4.1.3 | | | | | | | | | |
| 4.1.4 | | | | | | | | | |
| 4.1.5 | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | |
| 4.2.2 | | | | | | | | | |
| 4.2.3 | | | | | | | | | |
| 4.2.4 | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 100 | 0,1xø | 4,5xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 5.1.2 | | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 5.1.3 | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | 80 | 0,1xø | 4,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.2.2 | | | 80 | 0,1xø | 4,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.1.1 | GG mit lamellarem Graphit | | 110 | 0,1xø | 4,5xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.2 | | | 100 | 0,1xø | 4,5xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.3 | | | 100 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.1.4 | | | 90 | 0,1xø | 4,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.2.1 | GGG mit Kugelgraphit | | 110 | 0,1xø | 4,5xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.2 | | | 100 | 0,1xø | 4,5xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.3 | | | 100 | 0,1xø | 4,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.3.1 | GTW weisser Temperguss | | 110 | 0,1xø | 4,5xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.3.2 | | | 100 | 0,1xø | 4,5xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.1 | GTS schwarzer Temperguss | | 110 | 0,1xø | 4,5xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.2 | | | 100 | 0,1xø | 4,5xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |

# W0446-OL, beschichtet

CPC-Schaftfräser (Circle Power Cutting)






| d1 [mm] | Type, Bezeichnung | dA [mm] | l1 [mm] | l2 [mm] | F [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|
| 6,0 | CPC-SF.ST.0446.0600.OL.Z4.F0010A.HB | 6 | 80 | 33 | 0,1 | 4 | W0446060541 |
| 8,0 | CPC-SF.ST.0446.0800.OL.Z4.F0020A.HB | 8 | 100 | 40 | 0,2 | 4 | W0446080541 |
| 10,0 | CPC-SF.ST.0446.1000.OL.Z4.F0020A.HB | 10 | 105 | 50 | 0,2 | 4 | W0446100541 |
| 12,0 | CPC-SF.ST.0446.1200.OL.Z4.F0030A.HB | 12 | 125 | 60 | 0,3 | 4 | W0446120541 |
| 16,0 | CPC-SF.ST.0446.1600.OL.Z4.F0030A.HB | 16 | 150 | 80 | 0,3 | 4 | W0446160541 |
| 20,0 | CPC-SF.ST.0446.2000.OL.Z4.F0030A.HB | 20 | 160 | 90 | 0,3 | 4 | W0446200541 |

# W0446-OLS, beschichtet

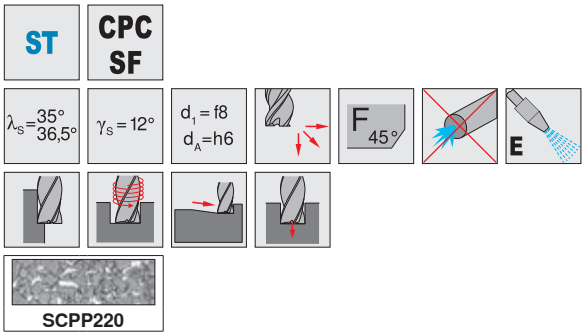
Schnittdatenempfehlung



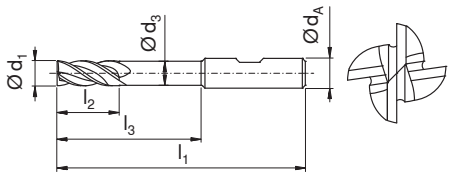
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,1xø | 2xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.1.2 | | | 90 | 0,1xø | 2xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.2.1 | Baustahl | | 100 | 0,1xø | 2xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.2 | | | 90 | 0,1xø | 2xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.3 | | | 90 | 0,1xø | 2xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.3.1 | Federstahl | | | | | | | | |
| 1.3.2 | | | | | | | | | |
| 1.3.3 | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 100 | 0,1xø | 2xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 2.1.2 | | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.1.3 | | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.1 | Nitrierstahl | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.2 | | | 80 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.1 | Vergütungsstahl | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.2 | | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.3 | | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.4 | | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.5 | | | 80 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.6 | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 80 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.2 | | | 80 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.3 | | | | | | | | | |
| 3.2.4 | | | 80 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.5 | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | |
| 3.3.2 | | | | | | | | | |
| 3.3.3 | | | 80 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.3.4 | | | | | | | | | |
| 3.3.5 | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | |
| 4.1.2 | | | | | | | | | |
| 4.1.3 | | | | | | | | | |
| 4.1.4 | | | | | | | | | |
| 4.1.5 | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | |
| 4.2.2 | | | | | | | | | |
| 4.2.3 | | | | | | | | | |
| 4.2.4 | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 100 | 0,1xø | 2xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 5.1.2 | | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 5.1.3 | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | 80 | 0,1xø | 2xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.2.2 | | | 80 | 0,1xø | 2xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.1.1 | GG mit lamellarem Graphit | | 110 | 0,1xø | 2xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.2 | | | 100 | 0,1xø | 2xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.3 | | | 100 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.1.4 | | | 90 | 0,1xø | 2xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.2.1 | GGG mit Kugelgraphit | | 110 | 0,1xø | 2xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.2 | | | 100 | 0,1xø | 2xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.3 | | | 100 | 0,1xø | 2xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.3.1 | GTW weisser Temperguss | | 110 | 0,1xø | 2xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.3.2 | | | 100 | 0,1xø | 2xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.1 | GTS schwarzer Temperguss | | 110 | 0,1xø | 2xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.2 | | | 100 | 0,1xø | 2xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |

# W0446-OLS, beschichtet

CPC-Schaftfräser (Circle Power Cutting)






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|---|---|
| 6,0 | CPC-SF.ST.0446.0600.OLS.Z4.F0010A.HB | 6 | 5,8 | 80 | 15 | 42 | 0,1 | 4 | W0446060441 |
| 8,0 | CPC-SF.ST.0446.0800.OLS.Z4.F0020A.HB | 8 | 7,7 | 100 | 20 | 62 | 0,2 | 4 | W0446080441 |
| 10,0 | CPC-SF.ST.0446.1000.OLS.Z4.F0020A.HB | 10 | 9,7 | 100 | 25 | 58 | 0,2 | 4 | W0446100441 |
| 12,0 | CPC-SF.ST.0446.1200.OLS.Z4.F0030A.HB | 12 | 11,6 | 120 | 30 | 73 | 0,3 | 4 | W0446120441 |
| 16,0 | CPC-SF.ST.0446.1600.OLS.Z4.F0030A.HB | 16 | 15,5 | 150 | 40 | 100 | 0,3 | 4 | W0446160441 |
| 20,0 | CPC-SF.ST.0446.2000.OLS.Z4.F0030A.HB | 20 | 19,5 | 150 | 50 | 98 | 0,3 | 4 | W0446200441 |

# W0421-L, beschichtet

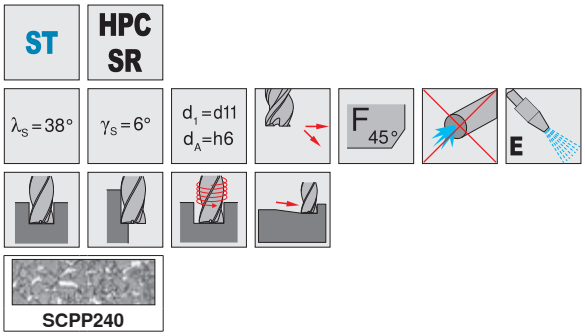
Schnittdatenempfehlung



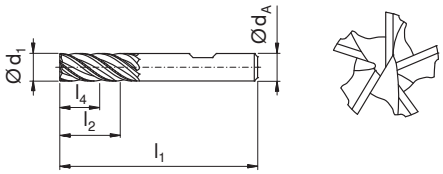
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 175 | 1xø | 1xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.1.2 | | | 150 | 1xø | 1xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.2.1 | Baustahl | | 175 | 1xø | 1xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.2 | | | 150 | 1xø | 1xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 1.2.3 | | | 150 | 1xø | 1xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 1.3.1 | Federstahl | | 150 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 1.3.2 | | | | | | | | | |
| 1.3.3 | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 175 | 1xø | 1xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 2.1.2 | | | 150 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.1.3 | | | 150 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.1 | Nitrierstahl | | 150 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.2.2 | | | 140 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.1 | Vergütungsstahl | | 150 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.2 | | | 150 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.3 | | | 150 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.4 | | | 150 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.5 | | | 140 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.6 | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 150 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 140 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.2 | | | 140 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.3 | | | | | | | | | |
| 3.2.4 | | | 140 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.5 | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | |
| 3.3.2 | | | | | | | | | |
| 3.3.3 | | | 140 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.3.4 | | | | | | | | | |
| 3.3.5 | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 100 | 1xø | 1xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.2 | | | 80 | 1xø | 1xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.3 | | | 100 | 1xø | 1xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.4 | | | 100 | 1xø | 1xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.1.5 | | | 105 | 1xø | 1xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | |
| 4.2.2 | | | | | | | | | |
| 4.2.3 | | | | | | | | | |
| 4.2.4 | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 175 | 1xø | 1xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 5.1.2 | | | 150 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 5.1.3 | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | 100 | 1xø | 1xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.2.2 | | | 100 | 1xø | 1xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.1.1 | GG mit lamellarem Graphit | | 190 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.2 | | | 175 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.1.3 | | | 175 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.1.4 | | | 150 | 1xø | 1xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 6.2.1 | GGG mit Kugelgraphit | | 190 | 1xø | 1xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.2 | | | 175 | 1xø | 1xø | 0,045 | 0,05 | 0,07 | 0,08 |
| 6.2.3 | | | 175 | 1xø | 1xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 6.3.1 | GTW weisser Temperguss | | 190 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.3.2 | | | 175 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.1 | GTS schwarzer Temperguss | | 190 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 6.4.2 | | | 175 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |

# W0421-L, beschichtet

HPC-Schruppfräser






| d1 [mm] | Type, Bezeichnung | dA [mm] | l1 [mm] | l2 [mm] | l4 [mm] | F [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|---|
| 6,0 | HPC-SR.ST.0421.0600.L.Z5.F0040A.HB | 6 | 57 | 13 | 8,6 | 0,4 | 5 | W0421060341 |
| 8,0 | HPC-SR.ST.0421.0800.L.Z5.F0040A.HB | 8 | 63 | 19 | 12,5 | 0,4 | 5 | W0421080341 |
| 10,0 | HPC-SR.ST.0421.1000.L.Z5.F0040A.HB | 10 | 72 | 22 | 14,5 | 0,4 | 5 | W0421100341 |
| 12,0 | HPC-SR.ST.0421.1200.L.Z5.F0040A.HB | 12 | 83 | 26 | 17,2 | 0,4 | 5 | W0421120341 |
| 14,0 | HPC-SR.ST.0421.1400.L.Z5.F0040A.HB | 14 | 83 | 26 | 17,2 | 0,4 | 5 | W0421140341 |
| 16,0 | HPC-SR.ST.0421.1600.L.Z5.F0040A.HB | 16 | 92 | 32 | 21,1 | 0,4 | 5 | W0421160341 |
| 18,0 | HPC-SR.ST.0421.1800.L.Z5.F0040A.HB | 18 | 92 | 32 | 21,1 | 0,4 | 5 | W0421180341 |
| 20,0 | HPC-SR.ST.0421.2000.L.Z5.F0040A.HB | 20 | 104 | 38 | 25,1 | 0,4 | 5 | W0421200341 |

# W0286-L und W0286-OL, beschichtet

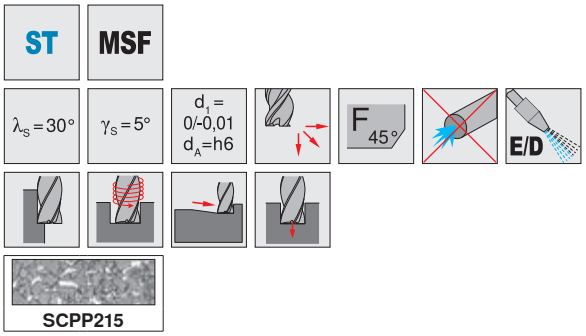
Schnittdatenempfehlung



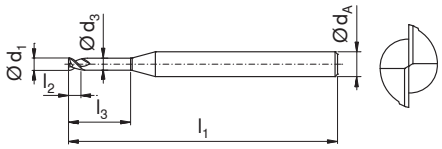
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 0,5 = Ø 0,6 | > Ø 0,6 = Ø 0,8 | > Ø 0,8 = Ø 1,0 | > Ø 1,0 = Ø 1,2 | > Ø 1,2 = Ø 1,5 | > Ø 1,5 = Ø 2,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 130 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 1.1.2 | | | 115 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 1.2.1 | Baustahl | | 130 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 1.2.2 | | | 115 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 1.2.3 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 1.3.1 | Federstahl | | 115 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 1.3.2 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 1.3.3 | | | 70 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 2.1.1 | Einsatzstahl | | 130 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.1.2 | | | 115 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.1.3 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.2.1 | Nitrierstahl | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.2.2 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.3.1 | Vergütungsstahl | | 115 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.3.2 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.3.3 | | | 115 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.3.4 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.3.5 | | | 70 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 2.3.6 | | | 60 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.1.1 | Werkzeugstahl unlegiert | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 3.2.2 | | | 70 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.2.3 | | | 60 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.2.4 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 3.2.5 | | | 70 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 70 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.3.2 | | | 60 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.3.3 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 3.3.4 | | | 70 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.3.5 | | | 60 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | 50 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.5.2 | | 55–58 HRC | | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | | | |
| 4.1.2 | | | | | | | | | | | |
| 4.1.3 | | | | | | | | | | | |
| 4.1.4 | | | | | | | | | | | |
| 4.1.5 | | | | | | | | | | | |
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| 4.2.2 | | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | | |
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| 5.1.2 | | | | | | | | | | | |
| 5.1.3 | | | | | | | | | | | |
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| 5.2.2 | | | | | | | | | | | |
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| 6.1.2 | | | | | | | | | | | |
| 6.1.3 | | | | | | | | | | | |
| 6.1.4 | | | | | | | | | | | |
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| 6.2.2 | | | | | | | | | | | |
| 6.2.3 | | | | | | | | | | | |
| 6.3.1 | GTW weisser Temperguss | | | | | | | | | | |
| 6.3.2 | | | | | | | | | | | |
| 6.4.1 | GTS schwarzer Temperguss | | | | | | | | | | |
| 6.4.2 | | | | | | | | | | | |
| 7.1.1 | Aluminium | | | | | | | | | | |
| 7.1.2 | | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | | |
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| 7.2.2 | | | | | | | | | | | |
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| 7.3.2 | | | | | | | | | | | |
| 7.3.3 | | | | | | | | | | | |
| 7.3.4 | | | | | | | | | | | |
| 7.3.5 | | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | | |
| 7.4.2 | | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | | |
| 7.5.2 | | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | | |
| 7.6.2 | | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | | |
| 7.8.2 | | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | | |

# W0286-L und W0286-OL, beschichtet

Micro-Schaftfräser






| d1 [mm] | Type, Bezeichnung | dA [mm] | d3 [mm] | l1 [mm] | l2 [mm] | l3 [mm] | F [mm] | z | HA Material | HA Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,5 | MSF.ST.0286.0050.L03D.Z2.F0005A.HA | 6 | 0,45 | 55 | 0,5 | 1,5 | 0,05 | 2 | W0286005140 | |
| 0,5 | MSF.ST.0286.0050.L05D.Z2.F0005A.HA | 6 | 0,45 | 55 | 1,2 | 2,5 | 0,05 | 2 | W0286005340 | |
| 0,5 | MSF.ST.0286.0050.L08D.Z2.F0005A.HA | 6 | 0,45 | 55 | 1,2 | 4 | 0,05 | 2 | W0286005540 | |
| 0,5 | MSF.ST.0286.0050.L10D.Z2.F0005A.HA | 6 | 0,45 | 55 | 1,2 | 5 | 0,05 | 2 | W0286005740 | |
| 1,0 | MSF.ST.0286.0100.L03D.Z2.F0010A.HA | 6 | 0,95 | 55 | 1,5 | 3 | 0,1 | 2 | W0286010140 | |
| 1,0 | MSF.ST.0286.0100.L05D.Z2.F0010A.HA | 6 | 0,95 | 55 | 1,5 | 5 | 0,1 | 2 | W0286010340 | |
| 1,0 | MSF.ST.0286.0100.OL08D.Z2.F0010A.HA | 6 | 0,95 | 65 | 1,5 | 8 | 0,1 | 2 | | W0286010D40 |
| 1,0 | MSF.ST.0286.0100.OL10D.Z2.F0010A.HA | 6 | 0,95 | 65 | 1,5 | 10 | 0,1 | 2 | | W0286010G40 |
| 1,0 | MSF.ST.0286.0100.OL12D.Z2.F0010A.HA | 6 | 0,95 | 65 | 1,5 | 12 | 0,1 | 2 | | W0286010440 |
| 1,5 | MSF.ST.0286.0150.L03D.Z2.F0010A.HA | 6 | 1,44 | 55 | 1,8 | 5 | 0,1 | 2 | W0286015140 | |
| 1,5 | MSF.ST.0286.0150.L05D.Z2.F0010A.HA | 6 | 1,44 | 55 | 1,8 | 7,5 | 0,1 | 2 | W0286015340 | |
| 1,5 | MSF.ST.0286.0150.OL08D.Z2.F0010A.HA | 6 | 1,44 | 65 | 1,8 | 12 | 0,1 | 2 | | W0286015D40 |
| 1,5 | MSF.ST.0286.0150.OL10D.Z2.F0010A.HA | 6 | 1,44 | 65 | 1,8 | 15 | 0,1 | 2 | | W0286015440 |
| 2,0 | MSF.ST.0286.0200.L03D.Z2.F0010A.HA | 6 | 1,92 | 55 | 2 | 6 | 0,1 | 2 | W0286020140 | |
| 2,0 | MSF.ST.0286.0200.L05D.Z2.F0010A.HA | 6 | 1,92 | 55 | 2 | 10 | 0,1 | 2 | W0286020340 | |
| 2,0 | MSF.ST.0286.0200.L07D.Z2.F0010A.HA | 6 | 1,92 | 55 | 2 | 14 | 0,1 | 2 | W0286020D40 | |
| 2,0 | MSF.ST.0286.0200.OL08D.Z2.F0010A.HA | 6 | 1,92 | 65 | 2 | 16 | 0,1 | 2 | | W0286020G40 |
| 2,0 | MSF.ST.0286.0200.OL10D.Z2.F0010A.HA | 6 | 1,92 | 65 | 2 | 20 | 0,1 | 2 | | W0286020440 |

# W0285-L und W0285-OL, beschichtet

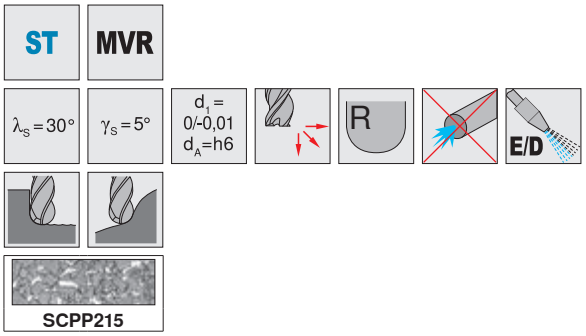
Schnittdatenempfehlung



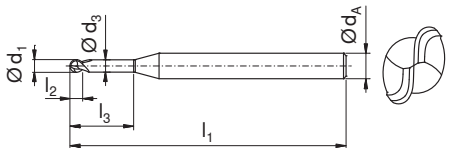
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 0,5 = Ø 0,6 | > Ø 0,6 = Ø 0,8 | > Ø 0,8 = Ø 1,0 | > Ø 1,0 = Ø 1,2 | > Ø 1,2 = Ø 1,5 | > Ø 1,5 = Ø 2,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 130 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 1.1.2 | | | 115 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 1.2.1 | Baustahl | | 130 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 1.2.2 | | | 115 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 1.2.3 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 1.3.1 | Federstahl | | 115 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 1.3.2 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 1.3.3 | | | 70 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 2.1.1 | Einsatzstahl | | 130 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.1.2 | | | 115 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.1.3 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.2.1 | Nitrierstahl | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.2.2 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.3.1 | Vergütungsstahl | | 115 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.3.2 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.3.3 | | | 115 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.3.4 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.3.5 | | | 70 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 2.3.6 | | | 60 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.1.1 | Werkzeugstahl unlegiert | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 3.2.2 | | | 70 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.2.3 | | | 60 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.2.4 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 3.2.5 | | | 70 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 70 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.3.2 | | | 60 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.3.3 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 3.3.4 | | | 70 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.3.5 | | | 60 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | 50 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.5.2 | | 55–58 HRC | | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | | | |
| 4.1.2 | | | | | | | | | | | |
| 4.1.3 | | | | | | | | | | | |
| 4.1.4 | | | | | | | | | | | |
| 4.1.5 | | | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | | |
| 4.2.2 | | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | | | | | | | | | |
| 5.1.2 | | | | | | | | | | | |
| 5.1.3 | | | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | | | | |
| 5.2.2 | | | | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | | | | | | | | | |
| 6.1.2 | | | | | | | | | | | |
| 6.1.3 | | | | | | | | | | | |
| 6.1.4 | | | | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | | | | | | | | | |
| 6.2.2 | | | | | | | | | | | |
| 6.2.3 | | | | | | | | | | | |
| 6.3.1 | GTW weisser Temperguss | | | | | | | | | | |
| 6.3.2 | | | | | | | | | | | |
| 6.4.1 | GTS schwarzer Temperguss | | | | | | | | | | |
| 6.4.2 | | | | | | | | | | | |
| 7.1.1 | Aluminium | | | | | | | | | | |
| 7.1.2 | | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | | |
| 7.2.2 | | | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | | | |
| 7.3.2 | | | | | | | | | | | |
| 7.3.3 | | | | | | | | | | | |
| 7.3.4 | | | | | | | | | | | |
| 7.3.5 | | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | | |
| 7.4.2 | | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | | |
| 7.5.2 | | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | | |
| 7.6.2 | | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | | |
| 7.8.2 | | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | | |

# W0285-L und W0285-OL, beschichtet

Micro-Vollradiusfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | R [mm] | z | HA Material | HA Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,5 | MVR.ST.0285.0050.L03D.Z2.R0025.HA | 6 | 0,45 | 55 | 0,5 | 1,5 | 0,25 | 2 | W0285005140 | |
| 0,5 | MVR.ST.0285.0050.L05D.Z2.R0025.HA | 6 | 0,45 | 55 | 1,2 | 2,5 | 0,25 | 2 | W0285005340 | |
| 0,5 | MVR.ST.0285.0050.L08D.Z2.R0025.HA | 6 | 0,45 | 55 | 1,2 | 4 | 0,25 | 2 | W0285005540 | |
| 0,5 | MVR.ST.0285.0050.L10D.Z2.R0025.HA | 6 | 0,45 | 55 | 1,2 | 5 | 0,25 | 2 | W0285005740 | |
| 1,0 | MVR.ST.0285.0100.L03D.Z2.R0050.HA | 6 | 0,95 | 55 | 1,5 | 3 | 0,5 | 2 | W0285010140 | |
| 1,0 | MVR.ST.0285.0100.L05D.Z2.R0050.HA | 6 | 0,95 | 55 | 1,5 | 5 | 0,5 | 2 | W0285010340 | |
| 1,0 | MVR.ST.0285.0100.OL08D.Z2.R0050.HA | 6 | 0,95 | 65 | 1,5 | 8 | 0,5 | 2 | | W0285010D40 |
| 1,0 | MVR.ST.0285.0100.OL10D.Z2.R0050.HA | 6 | 0,95 | 65 | 1,5 | 10 | 0,5 | 2 | | W0285010G40 |
| 1,0 | MVR.ST.0285.0100.OL12D.Z2.R0050.HA | 6 | 0,95 | 65 | 1,5 | 12 | 0,5 | 2 | | W0285010440 |
| 1,5 | MVR.ST.0285.0150.L03D.Z2.R0075.HA | 6 | 1,44 | 55 | 1,8 | 5 | 0,75 | 2 | W0285015140 | |
| 1,5 | MVR.ST.0285.0150.L05D.Z2.R0075.HA | 6 | 1,44 | 55 | 1,8 | 7,5 | 0,75 | 2 | W0285015340 | |
| 1,5 | MVR.ST.0285.0150.OL08D.Z2.R0075.HA | 6 | 1,44 | 65 | 1,8 | 12 | 0,75 | 2 | | W0285015D40 |
| 1,5 | MVR.ST.0285.0150.OL10D.Z2.R0075.HA | 6 | 1,44 | 65 | 1,8 | 15 | 0,75 | 2 | | W0285015440 |
| 2,0 | MVR.ST.0285.0200.L03D.Z2.R0100.HA | 6 | 1,92 | 55 | 2 | 6 | 1 | 2 | W0285020140 | |
| 2,0 | MVR.ST.0285.0200.L05D.Z2.R0100.HA | 6 | 1,92 | 55 | 2 | 10 | 1 | 2 | W0285020340 | |
| 2,0 | MVR.ST.0285.0200.L07D.Z2.R0100.HA | 6 | 1,92 | 55 | 2 | 14 | 1 | 2 | W0285020D40 | |
| 2,0 | MVR.ST.0285.0200.OL08D.Z2.R0100.HA | 6 | 1,92 | 65 | 2 | 16 | 1 | 2 | | W0285020G40 |
| 2,0 | MVR.ST.0285.0200.OL10D.Z2.R0100.HA | 6 | 1,92 | 65 | 2 | 20 | 1 | 2 | | W0285020440 |

# W0289-L und W0289-OL, beschichtet

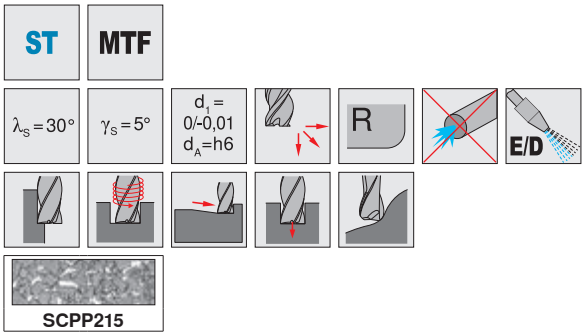
Schnittdatenempfehlung



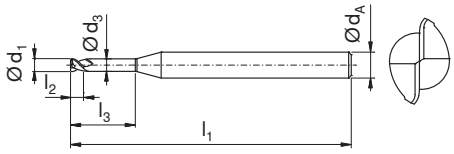
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 0,5 = Ø 0,6 | > Ø 0,6 = Ø 0,8 | > Ø 0,8 = Ø 1,0 | > Ø 1,0 = Ø 1,2 | > Ø 1,2 = Ø 1,5 | > Ø 1,5 = Ø 2,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 130 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 1.1.2 | | | 115 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 1.2.1 | Baustahl | | 130 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 1.2.2 | | | 115 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 1.2.3 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 1.3.1 | Federstahl | | 115 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 1.3.2 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 1.3.3 | | | 70 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 2.1.1 | Einsatzstahl | | 130 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.1.2 | | | 115 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.1.3 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.2.1 | Nitrierstahl | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.2.2 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.3.1 | Vergütungsstahl | | 115 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.3.2 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.3.3 | | | 115 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.3.4 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 2.3.5 | | | 70 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 2.3.6 | | | 60 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.1.1 | Werkzeugstahl unlegiert | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 3.2.2 | | | 70 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.2.3 | | | 60 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.2.4 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 3.2.5 | | | 70 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 70 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.3.2 | | | 60 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.3.3 | | | 90 | 1xø | 0,04xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,006 |
| 3.3.4 | | | 70 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.3.5 | | | 60 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | 50 | 1xø | 0,03xø | 0,005 | 0,007 | 0,009 | 0,011 | 0,014 | 0,005 |
| 3.5.2 | | 55–58 HRC | | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | | | |
| 4.1.2 | | | | | | | | | | | |
| 4.1.3 | | | | | | | | | | | |
| 4.1.4 | | | | | | | | | | | |
| 4.1.5 | | | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | | |
| 4.2.2 | | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | | | | | | | | | |
| 5.1.2 | | | | | | | | | | | |
| 5.1.3 | | | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | | | | |
| 5.2.2 | | | | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | | | | | | | | | |
| 6.1.2 | | | | | | | | | | | |
| 6.1.3 | | | | | | | | | | | |
| 6.1.4 | | | | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | | | | | | | | | |
| 6.2.2 | | | | | | | | | | | |
| 6.2.3 | | | | | | | | | | | |
| 6.3.1 | GTW weisser Temperguss | | | | | | | | | | |
| 6.3.2 | | | | | | | | | | | |
| 6.4.1 | GTS schwarzer Temperguss | | | | | | | | | | |
| 6.4.2 | | | | | | | | | | | |
| 7.1.1 | Aluminium | | | | | | | | | | |
| 7.1.2 | | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | | |
| 7.2.2 | | | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | | | |
| 7.3.2 | | | | | | | | | | | |
| 7.3.3 | | | | | | | | | | | |
| 7.3.4 | | | | | | | | | | | |
| 7.3.5 | | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | | |
| 7.4.2 | | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | | |
| 7.5.2 | | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | | |
| 7.6.2 | | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | | |
| 7.8.2 | | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | | |

# W0289-L und W0289-OL, beschichtet

Micro-Torusfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | R [mm] | z | HA Material | HA Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,5 | MTF.ST.0289.0050.L03D.Z2.R0005.HA | 6 | 0,45 | 55 | 0,5 | 1,5 | 0,05 | 2 | W0289005140 | |
| 0,5 | MTF.ST.0289.0050.L05D.Z2.R0005.HA | 6 | 0,45 | 55 | 1,2 | 2,5 | 0,05 | 2 | W0289005340 | |
| 0,5 | MTF.ST.0289.0050.L08D.Z2.R0005.HA | 6 | 0,45 | 55 | 1,2 | 4 | 0,05 | 2 | W0289005540 | |
| 0,5 | MTF.ST.0289.0050.L10D.Z2.R0005.HA | 6 | 0,45 | 55 | 1,2 | 5 | 0,05 | 2 | W0289005740 | |
| 1,0 | MTF.ST.0289.0100.L03D.Z2.R0010.HA | 6 | 0,95 | 55 | 1,5 | 3 | 0,1 | 2 | W0289010140 | |
| 1,0 | MTF.ST.0289.0100.L05D.Z2.R0010.HA | 6 | 0,95 | 55 | 1,5 | 5 | 0,1 | 2 | W0289010340 | |
| 1,0 | MTF.ST.0289.0100.OL08D.Z2.R0010.HA | 6 | 0,95 | 65 | 1,5 | 8 | 0,1 | 2 | | W0289010D40 |
| 1,0 | MTF.ST.0289.0100.OL10D.Z2.R0010.HA | 6 | 0,95 | 65 | 1,5 | 10 | 0,1 | 2 | | W0289010440 |
| 1,0 | MTF.ST.0289.0100.OL12D.Z2.R0010.HA | 6 | 0,95 | 65 | 1,5 | 12 | 0,1 | 2 | | W0289010640 |
| 1,5 | MTF.ST.0289.0150.L03D.Z2.R0015.HA | 6 | 1,44 | 55 | 1,8 | 5 | 0,15 | 2 | W0289015140 | |
| 1,5 | MTF.ST.0289.0150.L05D.Z2.R0015.HA | 6 | 1,44 | 55 | 1,8 | 7,5 | 0,15 | 2 | W0289015340 | |
| 1,5 | MTF.ST.0289.0150.OL08D.Z2.R0015.HA | 6 | 1,44 | 65 | 1,8 | 12 | 0,15 | 2 | | W0289015D40 |
| 1,5 | MTF.ST.0289.0150.OL10D.Z2.R0015.HA | 6 | 1,44 | 65 | 1,8 | 15 | 0,15 | 2 | | W0289015440 |
| 2,0 | MTF.ST.0289.0200.L03D.Z2.R0020.HA | 6 | 1,92 | 55 | 2 | 6 | 0,2 | 2 | W0289020140 | |
| 2,0 | MTF.ST.0289.0200.L05D.Z2.R0020.HA | 6 | 1,92 | 55 | 2 | 10 | 0,2 | 2 | W0289020240 | |
| 2,0 | MTF.ST.0289.0200.L07D.Z2.R0020.HA | 6 | 1,92 | 55 | 2 | 14 | 0,2 | 2 | W0289020340 | |
| 2,0 | MTF.ST.0289.0200.OL08D.Z2.R0020.HA | 6 | 1,92 | 65 | 2 | 16 | 0,2 | 2 | | W0289020D40 |
| 2,0 | MTF.ST.0289.0200.OL10D.Z2.R0020.HA | 6 | 1,92 | 65 | 2 | 20 | 0,2 | 2 | | W0289020440 |

# W0374-L, beschichtet

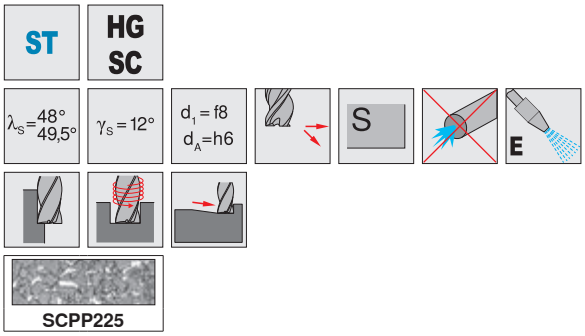
Schnittdatenempfehlung



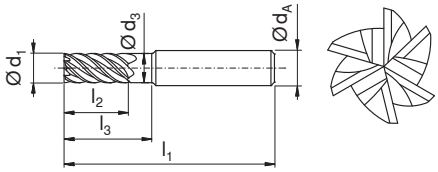
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 325 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.1.2 | | | 300 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.1 | Baustahl | | 310 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.2.2 | | | 290 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.3 | | | 280 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.3.1 | Federstahl | | 160 | 0,05xø | 2xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 1.3.2 | | | 150 | 0,05xø | 2xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 1.3.3 | | | 140 | 0,05xø | 2xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 2.1.1 | Einsatzstahl | | 260 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.2 | | | 250 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.3 | | | 230 | 0,05xø | 2xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.2.1 | Nitrierstahl | | 230 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.2.2 | | | 210 | 0,05xø | 2xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.1 | Vergütungsstahl | | 250 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.2 | | | 230 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.3 | | | 230 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.4 | | | 220 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.5 | | | 210 | 0,05xø | 2xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.6 | | | 190 | 0,05xø | 2xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.1.1 | Werkzeugstahl unlegiert | | 230 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 220 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.2 | | | 210 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.3 | | | 185 | 0,05xø | 2xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.2.4 | | | 200 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.5 | | | 175 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 205 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.2 | | | 185 | 0,05xø | 2xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.3.3 | | | 185 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.4 | | | 175 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.5 | | | 160 | 0,05xø | 2xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 120 | 0,05xø | 2xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.2 | | | 100 | 0,05xø | 2xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.3 | | | 120 | 0,05xø | 2xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.4 | | | 120 | 0,05xø | 2xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.5 | | | 130 | 0,05xø | 2xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.2.1 | hochwarmfeste Legierungen | | 40 | 0,05xø | 2xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.2 | | | 40 | 0,05xø | 2xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.3 | | | 40 | 0,05xø | 2xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.4 | | | 40 | 0,05xø | 2xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.1.1 | konventioneller Stahlguss | | 250 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.2 | | | 200 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.3 | | | 150 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.2.1 | rostfreier Stahlguss | | 120 | 0,05xø | 2xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 5.2.2 | | | 120 | 0,05xø | 2xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 6.1.1 | GG mit lamellarem Graphit | | 250 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.2 | | | 220 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.3 | | | 200 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.1.4 | | | 150 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.1 | GGG mit Kugelgraphit | | 230 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.2 | | | 210 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.3 | | | 185 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.1 | GTW weisser Temperguss | | 220 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.2 | | | 200 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.1 | GTS schwarzer Temperguss | | 220 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.2 | | | 200 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | 350 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.2 | | | 300 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.3 | | | 250 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.4 | | | 300 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.5 | | | 250 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.6 | | | 300 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.1 | CuZn (Messing) | | 370 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.2 | | | 430 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.1 | CuSn (Bronze) | | 300 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.2 | | | 350 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | | 175 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.2 | | | 200 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.8.1 | Titan | | 200 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.8.2 | | | 175 | 0,05xø | 2xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 7.8.3 | | | 125 | 0,05xø | 2xø | 0,025 | 0,04 | 0,05 | 0,07 |

# W0374-L, beschichtet

Hochgenauigkeits-Schlichtfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|
| 6,0 | HG-SC.ST.0374.0600.L.Z6.S.HA | 6 | 5,6 | 57 | 13 | 19 | 6 | W0374060340 |
| 8,0 | HG-SC.ST.0374.0800.L.Z6.S.HA | 8 | 7,6 | 63 | 19 | 25 | 6 | W0374080340 |
| 10,0 | HG-SC.ST.0374.1000.L.Z6.S.HA | 10 | 9,6 | 72 | 22 | 30 | 6 | W0374100340 |
| 12,0 | HG-SC.ST.0374.1200.L.Z6.S.HA | 12 | 11,5 | 83 | 26 | 36 | 6 | W0374120340 |
| 16,0 | HG-SC.ST.0374.1600.L.Z6.S.HA | 16 | 15 | 92 | 32 | 42 | 6 | W0374160340 |
| 20,0 | HG-SC.ST.0374.2000.L.Z6.S.HA | 20 | 19 | 104 | 38 | 52 | 6 | W0374200340 |

# W0374-OL und W0374-OLS, beschichtet

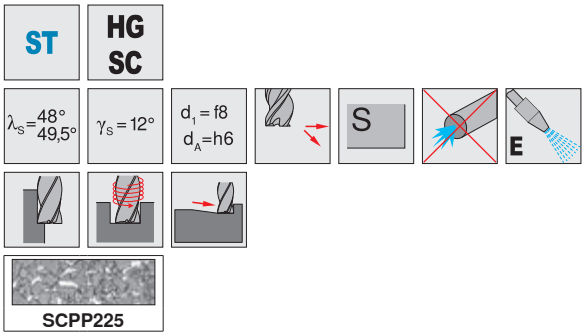
Schnittdatenempfehlung



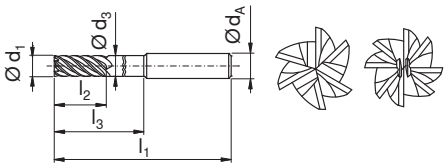
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 230 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.1.2 | | | 210 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.1 | Baustahl | | 215 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.2.2 | | | 205 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.3 | | | 195 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.3.1 | Federstahl | | 110 | 0,05xø | 2xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 1.3.2 | | | 105 | 0,05xø | 2xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 1.3.3 | | | 100 | 0,05xø | 2xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 2.1.1 | Einsatzstahl | | 180 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.2 | | | 175 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.3 | | | 160 | 0,05xø | 2xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.2.1 | Nitrierstahl | | 160 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.2.2 | | | 145 | 0,05xø | 2xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.1 | Vergütungsstahl | | 175 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.2 | | | 160 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.3 | | | 160 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.4 | | | 155 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.5 | | | 145 | 0,05xø | 2xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.6 | | | 135 | 0,05xø | 2xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.1.1 | Werkzeugstahl unlegiert | | 160 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 155 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.2 | | | 145 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.3 | | | 130 | 0,05xø | 2xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.2.4 | | | 140 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.2.5 | | | 120 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 145 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.2 | | | 130 | 0,05xø | 2xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.3.3 | | | 130 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.4 | | | 120 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 3.3.5 | | | 110 | 0,05xø | 2xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 80 | 0,05xø | 2xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.2 | | | 70 | 0,05xø | 2xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.3 | | | 80 | 0,05xø | 2xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.4 | | | 80 | 0,05xø | 2xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.5 | | | 90 | 0,05xø | 2xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.2.1 | hochwarmfeste Legierungen | | 30 | 0,05xø | 2xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.2 | | | 30 | 0,05xø | 2xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.3 | | | 30 | 0,05xø | 2xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.4 | | | 30 | 0,05xø | 2xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.1.1 | konventioneller Stahlguss | | 175 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.2 | | | 140 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.3 | | | 105 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.2.1 | rostfreier Stahlguss | | 80 | 0,05xø | 2xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 5.2.2 | | | 80 | 0,05xø | 2xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 6.1.1 | GG mit lamellarem Graphit | | 175 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.2 | | | 155 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.3 | | | 140 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.1.4 | | | 105 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.1 | GGG mit Kugelgraphit | | 160 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.2 | | | 145 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.3 | | | 130 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.1 | GTW weisser Temperguss | | 155 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.2 | | | 140 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.1 | GTS schwarzer Temperguss | | 155 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.2 | | | 140 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | 245 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.2 | | | 210 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.3 | | | 175 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.4 | | | 210 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.5 | | | 175 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.6 | | | 210 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.1 | CuZn (Messing) | | 260 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.2 | | | 300 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.1 | CuSn (Bronze) | | 210 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.2 | | | 245 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | | 120 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.2 | | | 140 | 0,05xø | 2xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.8.1 | Titan | | 140 | 0,05xø | 2xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.8.2 | | | 120 | 0,05xø | 2xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 7.8.3 | | | 85 | 0,05xø | 2xø | 0,025 | 0,04 | 0,05 | 0,07 |

# W0374-OL und W0374-OLS, beschichtet

Hochgenauigkeits-Schlichtfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | z | HA Material | HA Material |
|---|---|---|---|---|---|---|---|---|---|
| 6,0 | HG-SC.ST.0374.0600.OLS.Z6.S.HA | 6 | 5,6 | 80 | 15 | 42 | 6 | | W0374060440 |
| 6,0 | HG-SC.ST.0374.0600.OL.Z6.S.HA | 6 | | 80 | 33 | | 6 | W0374060540 | |
| 8,0 | HG-SC.ST.0374.0800.OLS.Z6.S.HA | 8 | 7,6 | 100 | 20 | 62 | 6 | | W0374080440 |
| 8,0 | HG-SC.ST.0374.0800.OL.Z6.S.HA | 8 | | 100 | 40 | | 6 | W0374080540 | |
| 10,0 | HG-SC.ST.0374.1000.OLS.Z6.S.HA | 10 | 9,6 | 100 | 25 | 58 | 6 | | W0374100440 |
| 10,0 | HG-SC.ST.0374.1000.OL.Z6.S.HA | 10 | | 100 | 55 | | 6 | W0374100540 | |
| 12,0 | HG-SC.ST.0374.1200.OLS.Z6.S.HA | 12 | 11,5 | 120 | 30 | 73 | 6 | | W0374120440 |
| 12,0 | HG-SC.ST.0374.1200.OL.Z6.S.HA | 12 | | 120 | 65 | | 6 | W0374120540 | |
| 16,0 | HG-SC.ST.0374.1600.OLS.Z6.S.HA | 16 | 15 | 150 | 40 | 100 | 6 | | W0374160440 |
| 16,0 | HG-SC.ST.0374.1600.OL.Z8.S.HA | 16 | | 150 | 85 | | 8 | W0374160540 | |
| 20,0 | HG-SC.ST.0374.2000.OLS.Z6.S.HA | 20 | 19 | 150 | 50 | 98 | 6 | | W0374200440 |
| 20,0 | HG-SC.ST.0374.2000.OL.Z8.S.HA | 20 | | 160 | 100 | | 8 | W0374200540 | |

# W0340-S und W0340-L, beschichtet

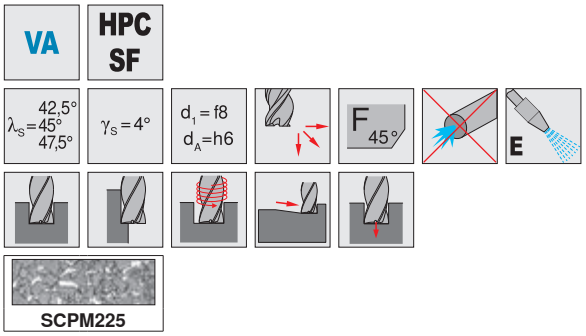
Schnittdatenempfehlung

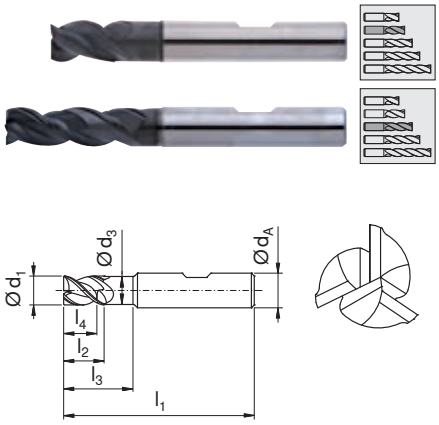


| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 1,0 = Ø 1,2 | > Ø 1,2 = Ø 1,5 | > Ø 1,5 = Ø 2,0 | > Ø 2,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 260 | 1xø | 1xø | | | 0,012 | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.1.2 | | | 240 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.1 | Baustahl | | 250 | 1xø | 1xø | | | 0,012 | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.2.2 | | | 230 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.3 | | | 220 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.3.1 | Federstahl | | | | | | | | | | | | |
| 1.3.2 | | | | | | | | | | | | | |
| 1.3.3 | | | | | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 210 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.2 | | | 200 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.3 | | | 190 | 1xø | 1xø | | | 0,007 | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.2.1 | Nitrierstahl | | 190 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.2.2 | | | 170 | 1xø | 1xø | | | 0,007 | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.1 | Vergütungsstahl | | 200 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.2 | | | 190 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.3 | | | 190 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.4 | | | 180 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.5 | | | 170 | 1xø | 1xø | | | 0,007 | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.6 | | | | | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | | | | | | | |
| 3.2.2 | | | | | | | | | | | | | |
| 3.2.3 | | | | | | | | | | | | | |
| 3.2.4 | | | | | | | | | | | | | |
| 3.2.5 | | | | | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | | | | | |
| 3.3.2 | | | | | | | | | | | | | |
| 3.3.3 | | | | | | | | | | | | | |
| 3.3.4 | | | | | | | | | | | | | |
| 3.3.5 | | | | | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 100 | 1xø | 1xø | | | 0,006 | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.2 | | | 80 | 1xø | 1xø | | | 0,006 | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.3 | | | 100 | 1xø | 1xø | | | 0,006 | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.4 | | | 100 | 1xø | 1xø | | | 0,006 | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.5 | | | 110 | 1xø | 1xø | | | 0,006 | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.2.1 | hochwarmfeste Legierungen | | 25 | 1xø | 0,5xø | 0,004 | 0,004 | 0,005 | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.2 | | | 25 | 1xø | 0,5xø | 0,004 | 0,004 | 0,005 | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.3 | | | 25 | 1xø | 0,5xø | 0,004 | 0,004 | 0,005 | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.4 | | | 25 | 1xø | 0,5xø | 0,004 | 0,004 | 0,005 | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.1.1 | konventioneller Stahlguss | | 200 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.2 | | | 160 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.3 | | | 120 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.2.1 | rostfreier Stahlguss | | 100 | 1xø | 1xø | | | 0,006 | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 5.2.2 | | | 100 | 1xø | 1xø | | | 0,006 | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 6.1.1 | GG mit lamellarem Graphit | | 200 | 1xø | 1xø | | | 0,012 | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.2 | | | 180 | 1xø | 1xø | | | 0,012 | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.3 | | | 160 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.1.4 | | | 120 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.1 | GGG mit Kugelgraphit | | 190 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.2 | | | 170 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.3 | | | 150 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.1 | GTW weisser Temperguss | | 180 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.2 | | | 160 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.1 | GTS schwarzer Temperguss | | 180 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.2 | | | 160 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.1.1 | Aluminium | | | | | | | | | | | | |
| 7.1.2 | | | | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | | | | |
| 7.2.2 | | | | | | | | | | | | | |
| 7.3.1 | Kupfer | | 280 | 1xø | 1xø | | | 0,012 | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.2 | | | 240 | 1xø | 1xø | | | 0,012 | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.3 | | | 200 | 1xø | 1xø | | | 0,012 | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.4 | | | 240 | 1xø | 1xø | | | 0,012 | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.5 | | | 200 | 1xø | 1xø | | | 0,012 | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.6 | | | 240 | 1xø | 1xø | | | 0,012 | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.1 | CuZn (Messing) | | 300 | 1xø | 1xø | | | 0,012 | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.2 | | | 350 | 1xø | 1xø | | | 0,012 | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.1 | CuSn (Bronze) | | 240 | 1xø | 1xø | | | 0,012 | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.2 | | | 280 | 1xø | 1xø | | | 0,012 | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | | 140 | 1xø | 1xø | | | 0,012 | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.2 | | | 160 | 1xø | 1xø | | | 0,012 | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.8.1 | Titan | | 90 | 1xø | 1xø | | | 0,01 | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.8.2 | | | 80 | 1xø | 1xø | | | 0,007 | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 7.8.3 | | | 50 | 1xø | 1xø | | | 0,006 | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |

# W0340-S und W0340-L, beschichtet

HPC-Schaftfräser




| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | $l_4$ [mm] | F [mm] | z | HB Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,0 | HPC-SF.VA.0340.0100.L.Z3.S.HB | 6 | 0,95 | 57 | 2,5 | 5 | 1,3 | 0 | 3 | | W0340010341 |
| 1,5 | HPC-SF.VA.0340.0150.L.Z3.S.HB | 6 | 1,44 | 57 | 4 | 7,5 | 1,9 | 0 | 3 | | W0340015341 |
| 2,0 | HPC-SF.VA.0340.0200.L.Z3.F0005A.HB | 6 | 1,92 | 57 | 5 | 10 | 2,6 | 0,05 | 3 | | W0340020341 |
| 2,5 | HPC-SF.VA.0340.0250.L.Z3.F0005A.HB | 6 | 2,4 | 57 | 6,5 | 12,5 | 3,2 | 0,05 | 3 | | W0340025341 |
| 3,0 | HPC-SF.VA.0340.0300.L.Z3.F0010A.HB | 6 | 2,9 | 57 | 8 | 15 | 3,9 | 0,1 | 3 | | W0340030341 |
| 3,5 | HPC-SF.VA.0340.0350.L.Z3.F0010A.HB | 6 | 3,4 | 57 | 11 | 16 | 4,5 | 0,1 | 3 | | W0340035341 |
| 4,0 | HPC-SF.VA.0340.0400.L.Z3.F0010A.HB | 6 | 3,9 | 57 | 11 | 16 | 5,2 | 0,1 | 3 | | W0340040341 |
| 4,0 | HPC-SF.VA.0340.0400.S.Z3.F0010A.HB | 6 | 3,9 | 54 | 8 | 15 | 4,4 | 0,1 | 3 | W0340040241 | |
| 4,5 | HPC-SF.VA.0340.0450.L.Z3.F0010A.HB | 6 | 4,4 | 57 | 13 | 19 | 5,8 | 0,1 | 3 | | W0340045341 |
| 5,0 | HPC-SF.VA.0340.0500.L.Z3.F0010A.HB | 6 | 4,9 | 57 | 13 | 19 | 6,5 | 0,1 | 3 | | W0340050341 |
| 5,0 | HPC-SF.VA.0340.0500.S.Z3.F0010A.HB | 6 | 4,9 | 54 | 9 | 16 | 5,5 | 0,1 | 3 | W0340050241 | |
| 5,5 | HPC-SF.VA.0340.0550.L.Z3.F0010A.HB | 6 | 5,4 | 57 | 13 | 19 | 7,1 | 0,1 | 3 | | W0340055341 |
| 6,0 | HPC-SF.VA.0340.0600.L.Z3.F0020A.HB | 6 | 5,9 | 57 | 13 | 19 | 7,8 | 0,2 | 3 | | W0340060341 |
| 6,0 | HPC-SF.VA.0340.0600.S.Z3.F0020A.HB | 6 | 5,9 | 54 | 10 | 17 | 6,6 | 0,2 | 3 | W0340060241 | |
| 6,5 | HPC-SF.VA.0340.0650.L.Z3.F0020A.HB | 8 | 6,3 | 63 | 19 | 25 | 8,4 | 0,2 | 3 | | W0340065341 |
| 7,0 | HPC-SF.VA.0340.0700.L.Z3.F0020A.HB | 8 | 6,8 | 63 | 19 | 25 | 9,1 | 0,2 | 3 | | W0340070341 |
| 7,5 | HPC-SF.VA.0340.0750.L.Z3.F0020A.HB | 8 | 7,3 | 63 | 19 | 25 | 9,7 | 0,2 | 3 | | W0340075341 |
| 8,0 | HPC-SF.VA.0340.0800.L.Z3.F0020A.HB | 8 | 7,8 | 63 | 19 | 25 | 10,4 | 0,2 | 3 | | W0340080341 |
| 8,0 | HPC-SF.VA.0340.0800.S.Z3.F0020A.HB | 8 | 7,8 | 58 | 12 | 20 | 8,8 | 0,2 | 3 | W0340080241 | |
| 8,5 | HPC-SF.VA.0340.0850.L.Z3.F0020A.HB | 10 | 8,2 | 72 | 22 | 30 | 11,0 | 0,2 | 3 | | W0340085341 |
| 9,0 | HPC-SF.VA.0340.0900.L.Z3.F0020A.HB | 10 | 8,7 | 72 | 22 | 30 | 11,7 | 0,2 | 3 | | W0340090341 |
| 9,5 | HPC-SF.VA.0340.0950.L.Z3.F0020A.HB | 10 | 9,2 | 72 | 22 | 30 | 12,3 | 0,2 | 3 | | W0340095341 |
| 10,0 | HPC-SF.VA.0340.1000.L.Z3.F0020A.HB | 10 | 9,7 | 72 | 22 | 30 | 13,0 | 0,2 | 3 | | W0340100341 |
| 10,0 | HPC-SF.VA.0340.1000.S.Z3.F0020A.HB | 10 | 9,7 | 66 | 14 | 24 | 11,0 | 0,2 | 3 | W0340100241 | |
| 12,0 | HPC-SF.VA.0340.1200.L.Z3.F0020A.HB | 12 | 11,7 | 83 | 26 | 36 | 15,6 | 0,2 | 3 | | W0340120341 |
| 12,0 | HPC-SF.VA.0340.1200.S.Z3.F0020A.HB | 12 | 11,7 | 73 | 16 | 26 | 13,2 | 0,2 | 3 | W0340120241 | |
| 14,0 | HPC-SF.VA.0340.1400.L.Z3.F0020A.HB | 14 | 13,7 | 83 | 26 | 36 | 18,2 | 0,2 | 3 | | W0340140341 |
| 14,0 | HPC-SF.VA.0340.1400.S.Z3.F0020A.HB | 14 | 13,7 | 75 | 18 | 28 | 15,4 | 0,2 | 3 | W0340140241 | |
| 16,0 | HPC-SF.VA.0340.1600.L.Z3.F0020A.HB | 16 | 15,5 | 92 | 32 | 42 | 20,8 | 0,2 | 3 | | W0340160341 |
| 16,0 | HPC-SF.VA.0340.1600.S.Z3.F0020A.HB | 16 | 15,5 | 82 | 22 | 32 | 17,6 | 0,2 | 3 | W0340160241 | |
| 18,0 | HPC-SF.VA.0340.1800.L.Z3.F0020A.HB | 18 | 17,5 | 92 | 32 | 42 | 23,4 | 0,2 | 3 | | W0340180341 |
| 18,0 | HPC-SF.VA.0340.1800.S.Z3.F0020A.HB | 18 | 17,5 | 84 | 24 | 34 | 19,8 | 0,2 | 3 | W0340180241 | |
| 20,0 | HPC-SF.VA.0340.2000.L.Z3.F0020A.HB | 20 | 19,5 | 104 | 38 | 52 | 26,0 | 0,2 | 3 | | W0340200341 |
| 20,0 | HPC-SF.VA.0340.2000.S.Z3.F0020A.HB | 20 | 19,5 | 92 | 26 | 40 | 22,0 | 0,2 | 3 | W0340200241 | |

# W0340-OL, beschichtet

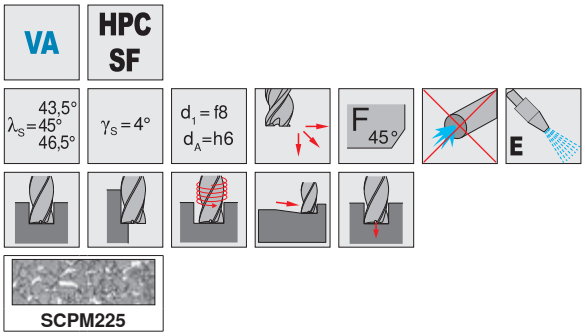
Schnittdatenempfehlung



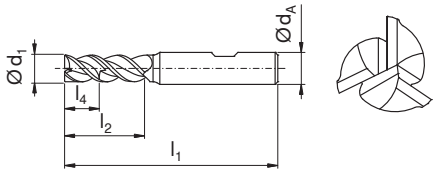
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 140 | 1xø | 0,8xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.1.2 | | | 120 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.1 | Baustahl | | 130 | 1xø | 0,8xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.2.2 | | | 110 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.3 | | | 100 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.3.1 | Federstahl | | | | | | | | |
| 1.3.2 | | | | | | | | | |
| 1.3.3 | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 105 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.2 | | | 100 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.3 | | | 95 | 1xø | 0,8xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.2.1 | Nitrierstahl | | 95 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.2.2 | | | 85 | 1xø | 0,8xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.1 | Vergütungsstahl | | 100 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.2 | | | 95 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.3 | | | 95 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.4 | | | 90 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.5 | | | 85 | 1xø | 0,8xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.6 | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | | | |
| 3.2.2 | | | | | | | | | |
| 3.2.3 | | | | | | | | | |
| 3.2.4 | | | | | | | | | |
| 3.2.5 | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | |
| 3.3.2 | | | | | | | | | |
| 3.3.3 | | | | | | | | | |
| 3.3.4 | | | | | | | | | |
| 3.3.5 | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 60 | 1xø | 0,8xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.2 | | | 50 | 1xø | 0,8xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.3 | | | 60 | 1xø | 0,8xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.4 | | | 60 | 1xø | 0,8xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.5 | | | 65 | 1xø | 0,8xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.2.1 | hochwarmfeste Legierungen | | 15 | 1xø | 0,8xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.2 | | | 15 | 1xø | 0,8xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.3 | | | 15 | 1xø | 0,8xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.4 | | | 15 | 1xø | 0,8xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.1.1 | konventioneller Stahlguss | | 100 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.2 | | | 80 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.3 | | | 60 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.2.1 | rostfreier Stahlguss | | 60 | 1xø | 0,8xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 5.2.2 | | | 60 | 1xø | 0,8xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 6.1.1 | GG mit lamellarem Graphit | | 100 | 1xø | 0,8xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.2 | | | 90 | 1xø | 0,8xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.3 | | | 80 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.1.4 | | | 60 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.1 | GGG mit Kugelgraphit | | 60 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.2 | | | 85 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.3 | | | 75 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.1 | GTW weisser Temperguss | | 90 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.2 | | | 80 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.1 | GTS schwarzer Temperguss | | 90 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.2 | | | 80 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | 140 | 1xø | 0,8xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.2 | | | 120 | 1xø | 0,8xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.3 | | | 100 | 1xø | 0,8xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.4 | | | 120 | 1xø | 0,8xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.5 | | | 100 | 1xø | 0,8xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.6 | | | 120 | 1xø | 0,8xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.1 | CuZn (Messing) | | 150 | 1xø | 0,8xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.2 | | | 175 | 1xø | 0,8xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.1 | CuSn (Bronze) | | 120 | 1xø | 0,8xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.2 | | | 140 | 1xø | 0,8xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | | 120 | 1xø | 0,8xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.2 | | | 80 | 1xø | 0,8xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.8.1 | Titan | | 45 | 1xø | 0,8xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.8.2 | | | 40 | 1xø | 0,8xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 7.8.3 | | | 25 | 1xø | 0,8xø | 0,025 | 0,04 | 0,05 | 0,07 |

# W0340-OL, beschichtet

HPC-Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_4$ [mm] | F [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|---|
| 4,0 | HPC-SF.VA.0340.0400.OL.Z3.F0010A.HB | 6 | 62 | 16 | 5,2 | 0,1 | 3 | W0340040441 |
| 5,0 | HPC-SF.VA.0340.0500.OL.Z3.F0010A.HB | 6 | 62 | 17 | 6,5 | 0,1 | 3 | W0340050441 |
| 6,0 | HPC-SF.VA.0340.0600.OL.Z3.F0020A.HB | 6 | 62 | 18 | 7,8 | 0,2 | 3 | W0340060441 |
| 8,0 | HPC-SF.VA.0340.0800.OL.Z3.F0020A.HB | 8 | 68 | 24 | 10,4 | 0,2 | 3 | W0340080441 |
| 10,0 | HPC-SF.VA.0340.1000.OL.Z3.F0020A.HB | 10 | 80 | 30 | 13,0 | 0,2 | 3 | W0340100441 |
| 12,0 | HPC-SF.VA.0340.1200.OL.Z3.F0020A.HB | 12 | 93 | 36 | 15,6 | 0,2 | 3 | W0340120441 |
| 14,0 | HPC-SF.VA.0340.1400.OL.Z3.F0020A.HB | 14 | 99 | 42 | 18,2 | 0,2 | 3 | W0340140441 |
| 16,0 | HPC-SF.VA.0340.1600.OL.Z3.F0020A.HB | 16 | 108 | 48 | 20,8 | 0,2 | 3 | W0340160441 |
| 18,0 | HPC-SF.VA.0340.1800.OL.Z3.F0020A.HB | 18 | 114 | 54 | 23,4 | 0,2 | 3 | W0340180441 |
| 20,0 | HPC-SF.VA.0340.2000.OL.Z3.F0020A.HB | 20 | 126 | 60 | 26,0 | 0,2 | 3 | W0340200441 |

# W0345-L, beschichtet

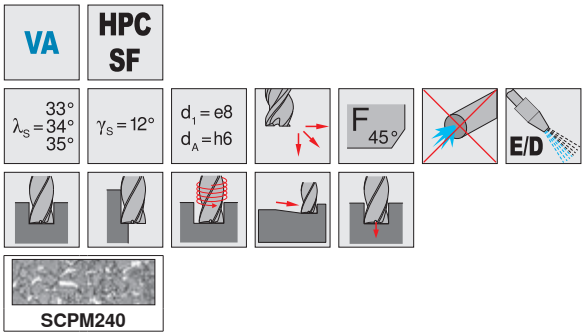
Schnittdatenempfehlung



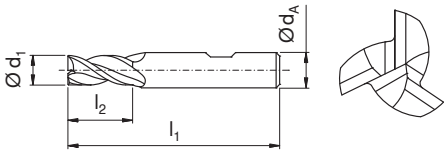
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | | | | | | | | |
| 1.1.2 | | | 240 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 1.2.1 | Baustahl | | 250 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.2 | | | 230 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 1.2.3 | | | 220 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 1.3.1 | Federstahl | | | | | | | | | |
| 1.3.2 | | | | | | | | | | |
| 1.3.3 | | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 210 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.1.2 | | | 200 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.1.3 | | | 190 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 2.2.1 | Nitrierstahl | | 190 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.2.2 | | | 170 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 2.3.1 | Vergütungsstahl | | 200 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.2 | | | 190 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.3 | | | 190 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.4 | | | 180 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.5 | | | 170 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 2.3.6 | | | 150 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 3.1.1 | Werkzeugstahl unlegiert | | 185 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 180 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.2.2 | | | 170 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.2.3 | | | 150 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 3.2.4 | | | 160 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.2.5 | | | 140 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 200 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.3.2 | | | 180 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 3.3.3 | | | 150 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.3.4 | | | 140 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.3.5 | | | 130 | 1xø | 1xø | 0,012 | 0,025 | 0,04 | 0,05 | 0,07 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 100 | 1xø | 1xø | 0,015 | 0,02 | 0,03 | 0,05 | 0,06 |
| 4.1.2 | | | 80 | 1xø | 1xø | 0,015 | 0,02 | 0,03 | 0,05 | 0,06 |
| 4.1.3 | | | 100 | 1xø | 1xø | 0,015 | 0,02 | 0,03 | 0,05 | 0,06 |
| 4.1.4 | | | 100 | 1xø | 1xø | 0,015 | 0,02 | 0,03 | 0,05 | 0,06 |
| 4.1.5 | | | 110 | 1xø | 1xø | 0,015 | 0,02 | 0,03 | 0,05 | 0,06 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | |
| 4.2.2 | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.2 | | | 160 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.3 | | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.2.1 | rostfreier Stahlguss | | 100 | 1xø | 1xø | 0,015 | 0,02 | 0,03 | 0,05 | 0,06 |
| 5.2.2 | | | 100 | 1xø | 1xø | 0,015 | 0,02 | 0,03 | 0,05 | 0,06 |
| 6.1.1 | GG mit lamellarem Graphit | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.1.2 | | | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.1.3 | | | 160 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 6.1.4 | | | 120 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 6.2.1 | GGG mit Kugelgraphit | | 190 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 6.2.2 | | | 170 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 6.2.3 | | | 150 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 6.3.1 | GTW weisser Temperguss | | 180 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 6.3.2 | | | 160 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 6.4.1 | GTS schwarzer Temperguss | | 180 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 6.4.2 | | | 160 | 1xø | 1xø | 0,015 | 0,03 | 0,05 | 0,06 | 0,08 |
| 7.1.1 | Aluminium | | | | | | | | | |
| 7.1.2 | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | | |
| 7.3.2 | | | | | | | | | | |
| 7.3.3 | | | | | | | | | | |
| 7.3.4 | | | | | | | | | | |
| 7.3.5 | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | |
| 7.4.2 | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | |
| 7.5.2 | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | |
| 7.6.2 | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | |
| 7.8.2 | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | |

# W0345-L, beschichtet

HPC-Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | F [mm] | z | Material |
|---|---|---|---|---|---|---|---|
| 3,0 | HPC-SF.VA.0345.0300.L.Z3.F0010A.HB | 6 | 57 | 8 | 0,1 | 3 | W0345030341 |
| 4,0 | HPC-SF.VA.0345.0400.L.Z3.F0010A.HB | 6 | 57 | 11 | 0,1 | 3 | W0345040341 |
| 5,0 | HPC-SF.VA.0345.0500.L.Z3.F0010A.HB | 6 | 57 | 13 | 0,1 | 3 | W0345050341 |
| 6,0 | HPC-SF.VA.0345.0600.L.Z3.F0010A.HB | 6 | 57 | 13 | 0,1 | 3 | W0345060341 |
| 8,0 | HPC-SF.VA.0345.0800.L.Z3.F0020A.HB | 8 | 63 | 21 | 0,2 | 3 | W0345080341 |
| 10,0 | HPC-SF.VA.0345.1000.L.Z3.F0020A.HB | 10 | 72 | 22 | 0,2 | 3 | W0345100341 |
| 12,0 | HPC-SF.VA.0345.1200.L.Z3.F0030A.HB | 12 | 83 | 26 | 0,3 | 3 | W0345120341 |
| 16,0 | HPC-SF.VA.0345.1600.L.Z3.F0030A.HB | 16 | 92 | 36 | 0,3 | 3 | W0345160341 |
| 20,0 | HPC-SF.VA.0345.2000.L.Z3.F0030A.HB | 20 | 104 | 41 | 0,3 | 3 | W0345200341 |

# W0445-L, beschichtet

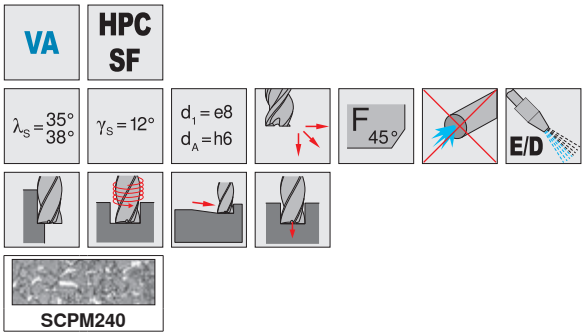
Schnittdatenempfehlung



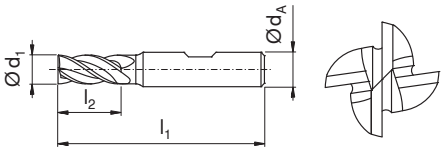
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | | | | | | | |
| 1.1.2 | | | 240 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 1.2.1 | Baustahl | | 250 | 0,8xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.2 | | | 230 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 1.2.3 | | | 220 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 1.3.1 | Federstahl | | | | | | | | |
| 1.3.2 | | | | | | | | | |
| 1.3.3 | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 210 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.1.2 | | | 200 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.1.3 | | | 190 | 0,8xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 2.2.1 | Nitrierstahl | | 190 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.2.2 | | | 170 | 0,8xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 2.3.1 | Vergütungsstahl | | 200 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.2 | | | 190 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.3 | | | 190 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.4 | | | 180 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.5 | | | 170 | 0,8xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 2.3.6 | | | 150 | 0,8xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 3.1.1 | Werkzeugstahl unlegiert | | 185 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 180 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.2.2 | | | 170 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.2.3 | | | 150 | 0,8xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 3.2.4 | | | 160 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.2.5 | | | 140 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 200 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.3.2 | | | 180 | 0,8xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 3.3.3 | | | 150 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.3.4 | | | 140 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 3.3.5 | | | 130 | 0,8xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 100 | 0,8xø | 1xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 4.1.2 | | | 80 | 0,8xø | 1xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 4.1.3 | | | 100 | 0,8xø | 1xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 4.1.4 | | | 100 | 0,8xø | 1xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 4.1.5 | | | 110 | 0,8xø | 1xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | |
| 4.2.2 | | | | | | | | | |
| 4.2.3 | | | | | | | | | |
| 4.2.4 | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 200 | 0,8xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.2 | | | 160 | 0,8xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.3 | | | 120 | 0,8xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.2.1 | rostfreier Stahlguss | | 100 | 0,8xø | 1xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 5.2.2 | | | 100 | 0,8xø | 1xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 6.1.1 | GG mit lamellarem Graphit | | 200 | 0,8xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.1.2 | | | 180 | 0,8xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.1.3 | | | 160 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 6.1.4 | | | 120 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 6.2.1 | GGG mit Kugelgraphit | | 190 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 6.2.2 | | | 170 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 6.2.3 | | | 150 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 6.3.1 | GTW weisser Temperguss | | 180 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 6.3.2 | | | 160 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 6.4.1 | GTS schwarzer Temperguss | | 180 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 6.4.2 | | | 160 | 0,8xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |

# W0445-L, beschichtet

HPC-Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | F [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|
| 4,0 | HPC-SF.VA.0445.0400.L.Z4.F0010A.HB | 6 | 57 | 11 | 0,1 | 4 | W0445040341 |
| 5,0 | HPC-SF.VA.0445.0500.L.Z4.F0010A.HB | 6 | 57 | 13 | 0,1 | 4 | W0445050341 |
| 6,0 | HPC-SF.VA.0445.0600.L.Z4.F0010A.HB | 6 | 57 | 13 | 0,1 | 4 | W0445060341 |
| 8,0 | HPC-SF.VA.0445.0800.L.Z4.F0020A.HB | 8 | 63 | 21 | 0,2 | 4 | W0445080341 |
| 10,0 | HPC-SF.VA.0445.1000.L.Z4.F0020A.HB | 10 | 72 | 22 | 0,2 | 4 | W0445100341 |
| 12,0 | HPC-SF.VA.0445.1200.L.Z4.F0030A.HB | 12 | 83 | 26 | 0,3 | 4 | W0445120341 |
| 16,0 | HPC-SF.VA.0445.1600.L.Z4.F0030A.HB | 16 | 92 | 36 | 0,3 | 4 | W0445160341 |
| 20,0 | HPC-SF.VA.0445.2000.L.Z4.F0030A.HB | 20 | 104 | 41 | 0,3 | 4 | W0445200341 |

# W0342-S und W0342-L, beschichtet

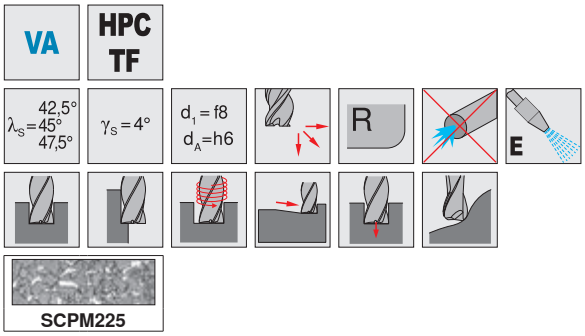
Schnittdatenempfehlung



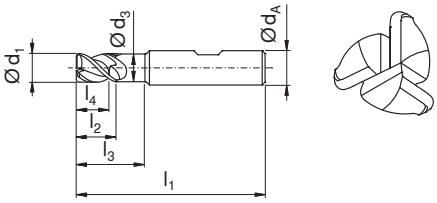
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 260 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.1.2 | | | 240 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.1 | Baustahl | | 250 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 1.2.2 | | | 230 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.2.3 | | | 220 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 1.3.1 | Federstahl | | | | | | | | |
| 1.3.2 | | | | | | | | | |
| 1.3.3 | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 210 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.2 | | | 200 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.1.3 | | | 190 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.2.1 | Nitrierstahl | | 190 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.2.2 | | | 170 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.1 | Vergütungsstahl | | 200 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.2 | | | 190 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.3 | | | 190 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.4 | | | 180 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 2.3.5 | | | 170 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 2.3.6 | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | | | |
| 3.2.2 | | | | | | | | | |
| 3.2.3 | | | | | | | | | |
| 3.2.4 | | | | | | | | | |
| 3.2.5 | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | |
| 3.3.2 | | | | | | | | | |
| 3.3.3 | | | | | | | | | |
| 3.3.4 | | | | | | | | | |
| 3.3.5 | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 100 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.2 | | | 80 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.3 | | | 100 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.4 | | | 100 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.5 | | | 110 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.2.1 | hochwarmfeste Legierungen | | 25 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.2 | | | 25 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.3 | | | 25 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 4.2.4 | | | 25 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 5.1.1 | konventioneller Stahlguss | | 200 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.2 | | | 160 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.1.3 | | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 5.2.1 | rostfreier Stahlguss | | 100 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 5.2.2 | | | 100 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 6.1.1 | GG mit lamellarem Graphit | | 200 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.2 | | | 180 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 6.1.3 | | | 160 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.1.4 | | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.1 | GGG mit Kugelgraphit | | 190 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.2 | | | 170 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.2.3 | | | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.1 | GTW weisser Temperguss | | 180 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.3.2 | | | 160 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.1 | GTS schwarzer Temperguss | | 180 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 6.4.2 | | | 160 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | 280 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.2 | | | 240 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.3 | | | 200 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.4 | | | 240 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.5 | | | 200 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.6 | | | 240 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.1 | CuZn (Messing) | | 300 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.2 | | | 350 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.1 | CuSn (Bronze) | | 240 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.2 | | | 280 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | | 140 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.2 | | | 160 | 1xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.8.1 | Titan | | 90 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.8.2 | | | 80 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |
| 7.8.3 | | | 50 | 1xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |

# W0342-S und W0342-L, beschichtet

HPC-Torusfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | $l_4$ [mm] | R [mm] | z | HB Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4,0 | HPC-TF.VA.0342.0400.L.Z3.R0050.HB | 6 | 3,9 | 57 | 11 | 16 | 5,2 | 0,5 | 3 | | W0342040341 |
| 4,0 | HPC-TF.VA.0342.0400.S.Z3.R0050.HB | 6 | 3,9 | 54 | 8 | 15 | 4,4 | 0,5 | 3 | W0342040241 | |
| 5,0 | HPC-TF.VA.0342.0500.L.Z3.R0050.HB | 6 | 4,9 | 57 | 13 | 19 | 6,5 | 0,5 | 3 | | W0342050341 |
| 5,0 | HPC-TF.VA.0342.0500.S.Z3.R0050.HB | 6 | 4,9 | 54 | 9 | 16 | 5,5 | 0,5 | 3 | W0342050241 | |
| 6,0 | HPC-TF.VA.0342.0600.L.Z3.R0050.HB | 6 | 5,9 | 57 | 13 | 19 | 7,8 | 0,5 | 3 | | W0342060341 |
| 6,0 | HPC-TF.VA.0342.0600.S.Z3.R0050.HB | 6 | 5,9 | 54 | 10 | 17 | 6,6 | 0,5 | 3 | W0342060241 | |
| 8,0 | HPC-TF.VA.0342.0800.L.Z3.R0100.HB | 8 | 7,8 | 63 | 19 | 25 | 10,4 | 1 | 3 | | W0342080341 |
| 8,0 | HPC-TF.VA.0342.0800.S.Z3.R0100.HB | 8 | 7,8 | 58 | 12 | 20 | 8,8 | 1 | 3 | W0342080241 | |
| 10,0 | HPC-TF.VA.0342.1000.L.Z3.R0100.HB | 10 | 9,7 | 72 | 22 | 30 | 13,0 | 1 | 3 | | W0342100341 |
| 10,0 | HPC-TF.VA.0342.1000.S.Z3.R0100.HB | 10 | 9,7 | 66 | 14 | 24 | 11,0 | 1 | 3 | W0342100241 | |
| 12,0 | HPC-TF.VA.0342.1200.L.Z3.R0150.HB | 12 | 11,7 | 83 | 26 | 36 | 15,6 | 1,5 | 3 | | W0342120341 |
| 12,0 | HPC-TF.VA.0342.1200.S.Z3.R0150.HB | 12 | 11,7 | 73 | 16 | 26 | 13,2 | 1,5 | 3 | W0342120241 | |
| 16,0 | HPC-TF.VA.0342.1600.L.Z3.R0200.HB | 16 | 15,5 | 92 | 32 | 42 | 20,8 | 2 | 3 | | W0342160341 |
| 16,0 | HPC-TF.VA.0342.1600.S.Z3.R0200.HB | 16 | 15,5 | 82 | 22 | 32 | 17,6 | 2 | 3 | W0342160241 | |
| 20,0 | HPC-TF.VA.0342.2000.L.Z3.R0200.HB | 20 | 19,5 | 104 | 38 | 52 | 26,0 | 2 | 3 | | W0342200341 |
| 20,0 | HPC-TF.VA.0342.2000.S.Z3.R0200.HB | 20 | 19,5 | 92 | 26 | 40 | 22,0 | 2 | 3 | W0342200241 | |

# W0456-L, beschichtet

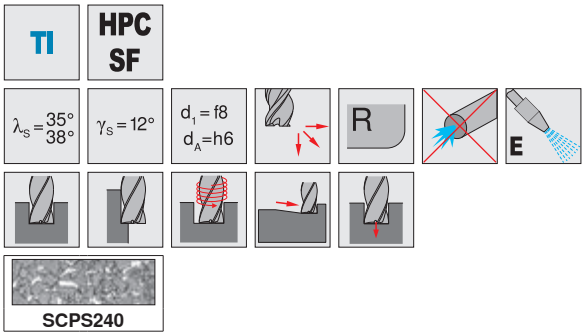
Schnittdatenempfehlung



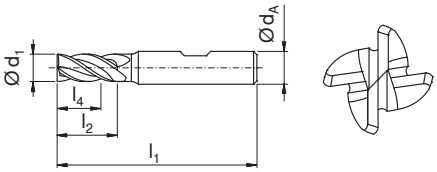
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
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| 4.1.4 | | | | | | | | | |
| 4.1.5 | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | 55 | 1xø | 0,5xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 4.2.2 | | | 55 | 1xø | 0,5xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 4.2.3 | | | 55 | 1xø | 0,5xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 4.2.4 | | | 55 | 1xø | 0,5xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 5.1.1 | konventioneller Stahlguss | | | | | | | | |
| 5.1.2 | | | | | | | | | |
| 5.1.3 | | | | | | | | | |
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| 5.2.2 | | | | | | | | | |
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| 6.1.3 | | | | | | | | | |
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| 7.3.1 | Kupfer | | | | | | | | |
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| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | 120 | 1xø | 0,5xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.8.2 | | | 100 | 1xø | 0,5xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.8.3 | | | 80 | 1xø | 0,5xø | 0,03 | 0,05 | 0,06 | 0,08 |

# W0456-L, beschichtet

HPC-Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_4$ [mm] | R [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|---|
| 4,0 | HPC-SF.TI.0456.0400.L.Z4.R0010.HB | 6 | 57 | 11 | 6,4 | 0,1 | 4 | W0456040341 |
| 5,0 | HPC-SF.TI.0456.0500.L.Z4.R0010.HB | 6 | 57 | 13 | 8,0 | 0,1 | 4 | W0456050341 |
| 6,0 | HPC-SF.TI.0456.0600.L.Z4.R0010.HB | 6 | 57 | 13 | 9,6 | 0,1 | 4 | W0456060341 |
| 8,0 | HPC-SF.TI.0456.0800.L.Z4.R0020.HB | 8 | 63 | 21 | 12,8 | 0,2 | 4 | W0456080341 |
| 10,0 | HPC-SF.TI.0456.1000.L.Z4.R0020.HB | 10 | 72 | 22 | 16,0 | 0,2 | 4 | W0456100341 |
| 12,0 | HPC-SF.TI.0456.1200.L.Z4.R0020.HB | 12 | 83 | 26 | 19,2 | 0,2 | 4 | W0456120341 |
| 16,0 | HPC-SF.TI.0456.1600.L.Z4.R0030.HB | 16 | 92 | 36 | 25,6 | 0,3 | 4 | W0456160341 |
| 20,0 | HPC-SF.TI.0456.2000.L.Z4.R0030.HB | 20 | 104 | 41 | 32,0 | 0,3 | 4 | W0456200341 |

# W0556-L, beschichtet

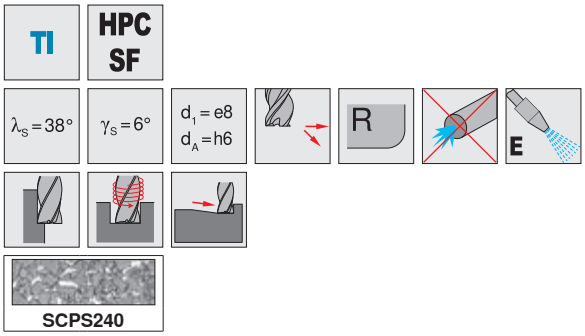
Schnittdatenempfehlung



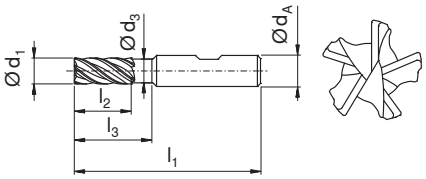
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | | | | | | | |
| 1.1.2 | | | | | | | | | |
| 1.2.1 | Baustahl | | | | | | | | |
| 1.2.2 | | | | | | | | | |
| 1.2.3 | | | | | | | | | |
| 1.3.1 | Federstahl | | | | | | | | |
| 1.3.2 | | | | | | | | | |
| 1.3.3 | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | | | | | | | |
| 2.1.2 | | | | | | | | | |
| 2.1.3 | | | | | | | | | |
| 2.2.1 | Nitrierstahl | | | | | | | | |
| 2.2.2 | | | | | | | | | |
| 2.3.1 | Vergütungsstahl | | | | | | | | |
| 2.3.2 | | | | | | | | | |
| 2.3.3 | | | | | | | | | |
| 2.3.4 | | | | | | | | | |
| 2.3.5 | | | | | | | | | |
| 2.3.6 | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | | | |
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| 3.2.3 | | | | | | | | | |
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| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | |
| 3.3.2 | | | | | | | | | |
| 3.3.3 | | | | | | | | | |
| 3.3.4 | | | | | | | | | |
| 3.3.5 | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 100 | 0,5xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.2 | | | 80 | 0,5xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.3 | | | 100 | 0,5xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.4 | | | 100 | 0,5xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.1.5 | | | 110 | 0,5xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 4.2.1 | hochwarmfeste Legierungen | | 55 | 0,5xø | 1xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 4.2.2 | | | 55 | 0,5xø | 1xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 4.2.3 | | | 55 | 0,5xø | 1xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 4.2.4 | | | 55 | 0,5xø | 1xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 5.1.1 | konventioneller Stahlguss | | | | | | | | |
| 5.1.2 | | | | | | | | | |
| 5.1.3 | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | 100 | 0,5xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 5.2.2 | | | 100 | 0,5xø | 1xø | 0,025 | 0,04 | 0,05 | 0,07 |
| 6.1.1 | GG mit lamellarem Graphit | | | | | | | | |
| 6.1.2 | | | | | | | | | |
| 6.1.3 | | | | | | | | | |
| 6.1.4 | | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | | | | | | | |
| 6.2.2 | | | | | | | | | |
| 6.2.3 | | | | | | | | | |
| 6.3.1 | GTW weisser Temperguss | | | | | | | | |
| 6.3.2 | | | | | | | | | |
| 6.4.1 | GTS schwarzer Temperguss | | | | | | | | |
| 6.4.2 | | | | | | | | | |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | 120 | 0,5xø | 1xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.8.2 | | | 100 | 0,5xø | 1xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.8.3 | | | 80 | 0,5xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 |

# W0556-L, beschichtet

HPC-Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | R [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|---|---|
| 4,0 | HPC-SF.TI.0556.0400.L.Z5.R0010.HB | 6 | 3,8 | 57 | 11 | 17 | 0,1 | 5 | W0556040341 |
| 5,0 | HPC-SF.TI.0556.0500.L.Z5.R0010.HB | 6 | 4,8 | 57 | 13 | 19 | 0,1 | 5 | W0556050341 |
| 6,0 | HPC-SF.TI.0556.0600.L.Z5.R0010.HB | 6 | 5,8 | 57 | 13 | 19 | 0,1 | 5 | W0556060341 |
| 8,0 | HPC-SF.TI.0556.0800.L.Z5.R0020.HB | 8 | 7,7 | 63 | 21 | 25 | 0,2 | 5 | W0556080341 |
| 10,0 | HPC-SF.TI.0556.1000.L.Z5.R0020.HB | 10 | 9,7 | 72 | 22 | 30 | 0,2 | 5 | W0556100341 |
| 12,0 | HPC-SF.TI.0556.1200.L.Z5.R0020.HB | 12 | 11,6 | 83 | 26 | 36 | 0,2 | 5 | W0556120341 |
| 16,0 | HPC-SF.TI.0556.1600.L.Z5.R0030.HB | 16 | 15,5 | 92 | 36 | 42 | 0,3 | 5 | W0556160341 |
| 20,0 | HPC-SF.TI.0556.2000.L.Z5.R0030.HB | 20 | 19,5 | 104 | 41 | 52 | 0,3 | 5 | W0556200341 |

# W0457-L, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | | | | | | | |
| 1.1.2 | | | | | | | | | |
| 1.2.1 | Baustahl | | | | | | | | |
| 1.2.2 | | | | | | | | | |
| 1.2.3 | | | | | | | | | |
| 1.3.1 | Federstahl | | | | | | | | |
| 1.3.2 | | | | | | | | | |
| 1.3.3 | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | | | | | | | |
| 2.1.2 | | | | | | | | | |
| 2.1.3 | | | | | | | | | |
| 2.2.1 | Nitrierstahl | | | | | | | | |
| 2.2.2 | | | | | | | | | |
| 2.3.1 | Vergütungsstahl | | | | | | | | |
| 2.3.2 | | | | | | | | | |
| 2.3.3 | | | | | | | | | |
| 2.3.4 | | | | | | | | | |
| 2.3.5 | | | | | | | | | |
| 2.3.6 | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | | | |
| 3.2.2 | | | | | | | | | |
| 3.2.3 | | | | | | | | | |
| 3.2.4 | | | | | | | | | |
| 3.2.5 | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | |
| 3.3.2 | | | | | | | | | |
| 3.3.3 | | | | | | | | | |
| 3.3.4 | | | | | | | | | |
| 3.3.5 | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | |
| 4.1.2 | | | | | | | | | |
| 4.1.3 | | | | | | | | | |
| 4.1.4 | | | | | | | | | |
| 4.1.5 | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | 55 | 1xø | 0,5xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 4.2.2 | | | 55 | 1xø | 0,5xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 4.2.3 | | | 55 | 1xø | 0,5xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 4.2.4 | | | 55 | 1xø | 0,5xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 5.1.1 | konventioneller Stahlguss | | | | | | | | |
| 5.1.2 | | | | | | | | | |
| 5.1.3 | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | | |
| 5.2.2 | | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | | | | | | | |
| 6.1.2 | | | | | | | | | |
| 6.1.3 | | | | | | | | | |
| 6.1.4 | | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | | | | | | | |
| 6.2.2 | | | | | | | | | |
| 6.2.3 | | | | | | | | | |
| 6.3.1 | GTW weisser Temperguss | | | | | | | | |
| 6.3.2 | | | | | | | | | |
| 6.4.1 | GTS schwarzer Temperguss | | | | | | | | |
| 6.4.2 | | | | | | | | | |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | 120 | 1xø | 0,5xø | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.8.2 | | | 100 | 1xø | 0,5xø | 0,04 | 0,06 | 0,08 | 0,1 |
| 7.8.3 | | | 80 | 1xø | 0,5xø | 0,03 | 0,05 | 0,06 | 0,08 |

# W0457-L, beschichtet

HPC-Torusfräser

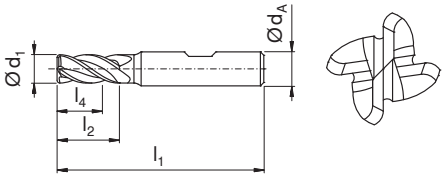


TI | HPC TF

$\lambda_S = 35° / 38°$ | $\gamma_S = 12°$ | $d_1 = f8$ $d_A = h6$ | R | E

SCPS240






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_4$ [mm] | R [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|---|
| 4,0 | HPC-TF.TI.0457.0400.L.Z4.R0020.HB | 6 | 57 | 11 | 6,4 | 0,2 | 4 | W0457040041 |
| 4,0 | HPC-TF.TI.0457.0400.L.Z4.R0040.HB | 6 | 57 | 11 | 6,4 | 0,4 | 4 | W0457040641 |
| 4,0 | HPC-TF.TI.0457.0400.L.Z4.R0050.HB | 6 | 57 | 11 | 6,4 | 0,5 | 4 | W0457040241 |
| 4,0 | HPC-TF.TI.0457.0400.L.Z4.R0100.HB | 6 | 57 | 11 | 6,4 | 1 | 4 | W0457040341 |
| 5,0 | HPC-TF.TI.0457.0500.L.Z4.R0050.HB | 6 | 57 | 13 | 8,0 | 0,5 | 4 | W0457050241 |
| 5,0 | HPC-TF.TI.0457.0500.L.Z4.R0100.HB | 6 | 57 | 13 | 8,0 | 1 | 4 | W0457050341 |
| 6,0 | HPC-TF.TI.0457.0600.L.Z4.R0040.HB | 6 | 57 | 13 | 9,6 | 0,4 | 4 | W0457060641 |
| 6,0 | HPC-TF.TI.0457.0600.L.Z4.R0050.HB | 6 | 57 | 13 | 9,6 | 0,5 | 4 | W0457060241 |
| 6,0 | HPC-TF.TI.0457.0600.L.Z4.R0060.HB | 6 | 57 | 13 | 9,6 | 0,6 | 4 | W0457060A41 |
| 6,0 | HPC-TF.TI.0457.0600.L.Z4.R0080.HB | 6 | 57 | 13 | 9,6 | 0,8 | 4 | W0457060B41 |
| 6,0 | HPC-TF.TI.0457.0600.L.Z4.R0100.HB | 6 | 57 | 13 | 9,6 | 1 | 4 | W0457060341 |
| 8,0 | HPC-TF.TI.0457.0800.L.Z4.R0050.HB | 8 | 63 | 21 | 12,8 | 0,5 | 4 | W0457080241 |
| 8,0 | HPC-TF.TI.0457.0800.L.Z4.R0080.HB | 8 | 63 | 21 | 12,8 | 0,8 | 4 | W0457080B41 |
| 8,0 | HPC-TF.TI.0457.0800.L.Z4.R0100.HB | 8 | 63 | 21 | 12,8 | 1 | 4 | W0457080341 |
| 8,0 | HPC-TF.TI.0457.0800.L.Z4.R0120.HB | 8 | 63 | 21 | 12,8 | 1,2 | 4 | W0457080C41 |
| 8,0 | HPC-TF.TI.0457.0800.L.Z4.R0150.HB | 8 | 63 | 21 | 12,8 | 1,5 | 4 | W0457080741 |
| 8,0 | HPC-TF.TI.0457.0800.L.Z4.R0200.HB | 8 | 63 | 21 | 12,8 | 2 | 4 | W0457080441 |
| 10,0 | HPC-TF.TI.0457.1000.L.Z4.R0030.HB | 10 | 72 | 22 | 16,0 | 0,3 | 4 | W0457100141 |
| 10,0 | HPC-TF.TI.0457.1000.L.Z4.R0050.HB | 10 | 72 | 22 | 16,0 | 0,5 | 4 | W0457100241 |
| 10,0 | HPC-TF.TI.0457.1000.L.Z4.R0100.HB | 10 | 72 | 22 | 16,0 | 1 | 4 | W0457100341 |
| 10,0 | HPC-TF.TI.0457.1000.L.Z4.R0120.HB | 10 | 72 | 22 | 16,0 | 1,2 | 4 | W0457100C41 |
| 10,0 | HPC-TF.TI.0457.1000.L.Z4.R0150.HB | 10 | 72 | 22 | 16,0 | 1,5 | 4 | W0457100741 |
| 10,0 | HPC-TF.TI.0457.1000.L.Z4.R0160.HB | 10 | 72 | 22 | 16,0 | 1,6 | 4 | W0457100D41 |
| 10,0 | HPC-TF.TI.0457.1000.L.Z4.R0200.HB | 10 | 72 | 22 | 16,0 | 2 | 4 | W0457100441 |
| 12,0 | HPC-TF.TI.0457.1200.L.Z4.R0030.HB | 12 | 83 | 26 | 19,2 | 0,3 | 4 | W0457120141 |
| 12,0 | HPC-TF.TI.0457.1200.L.Z4.R0050.HB | 12 | 83 | 26 | 19,2 | 0,5 | 4 | W0457120241 |
| 12,0 | HPC-TF.TI.0457.1200.L.Z4.R0100.HB | 12 | 83 | 26 | 19,2 | 1 | 4 | W0457120341 |
| 12,0 | HPC-TF.TI.0457.1200.L.Z4.R0120.HB | 12 | 83 | 26 | 19,2 | 1,2 | 4 | W0457120C41 |
| 12,0 | HPC-TF.TI.0457.1200.L.Z4.R0150.HB | 12 | 83 | 26 | 19,2 | 1,5 | 4 | W0457120741 |
| 12,0 | HPC-TF.TI.0457.1200.L.Z4.R0160.HB | 12 | 83 | 26 | 19,2 | 1,6 | 4 | W0457120D41 |
| 12,0 | HPC-TF.TI.0457.1200.L.Z4.R0200.HB | 12 | 83 | 26 | 19,2 | 2 | 4 | W0457120441 |
| 12,0 | HPC-TF.TI.0457.1200.L.Z4.R0250.HB | 12 | 83 | 26 | 19,2 | 2,5 | 4 | W0457120E41 |
| 12,0 | HPC-TF.TI.0457.1200.L.Z4.R0400.HB | 12 | 83 | 26 | 19,2 | 4 | 4 | W0457120541 |
| 16,0 | HPC-TF.TI.0457.1600.L.Z4.R0100.HB | 16 | 92 | 36 | 25,6 | 1 | 4 | W0457160341 |
| 16,0 | HPC-TF.TI.0457.1600.L.Z4.R0160.HB | 16 | 92 | 36 | 25,6 | 1,6 | 4 | W0457160D41 |
| 16,0 | HPC-TF.TI.0457.1600.L.Z4.R0200.HB | 16 | 92 | 36 | 25,6 | 2 | 4 | W0457160441 |
| 16,0 | HPC-TF.TI.0457.1600.L.Z4.R0250.HB | 16 | 92 | 36 | 25,6 | 2,5 | 4 | W0457160E41 |
| 16,0 | HPC-TF.TI.0457.1600.L.Z4.R0320.HB | 16 | 92 | 36 | 25,6 | 3,2 | 4 | W0457160F41 |
| 16,0 | HPC-TF.TI.0457.1600.L.Z4.R0400.HB | 16 | 92 | 36 | 25,6 | 4 | 4 | W0457160541 |
| 20,0 | HPC-TF.TI.0457.2000.L.Z4.R0100.HB | 20 | 104 | 41 | 32,0 | 1 | 4 | W0457200341 |
| 20,0 | HPC-TF.TI.0457.2000.L.Z4.R0200.HB | 20 | 104 | 41 | 32,0 | 2 | 4 | W0457200441 |
| 20,0 | HPC-TF.TI.0457.2000.L.Z4.R0400.HB | 20 | 104 | 41 | 32,0 | 4 | 4 | W0457200541 |
| 20,0 | HPC-TF.TI.0457.2000.L.Z4.R0500.HB | 20 | 104 | 41 | 32,0 | 5 | 4 | W0457200G41 |
| 20,0 | HPC-TF.TI.0457.2000.L.Z4.R0630.HB | 20 | 104 | 41 | 32,0 | 6,3 | 4 | W0457200H41 |

# W0453-S und W0453-L, beschichtet

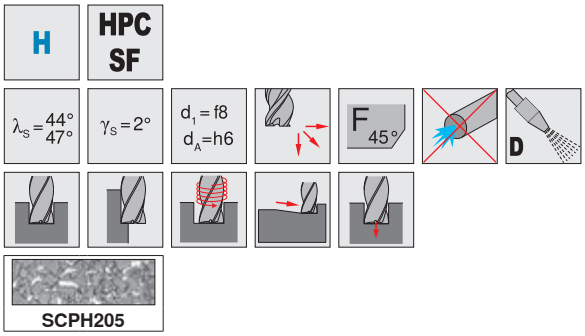
Schnittdatenempfehlung



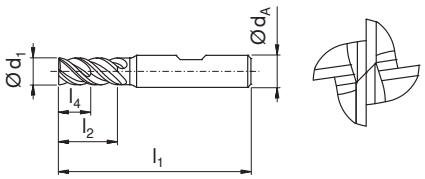
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | | | | | | | | |
| 1.1.2 | | | | | | | | | | |
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| 1.2.2 | | | | | | | | | | |
| 1.2.3 | | | | | | | | | | |
| 1.3.1 | Federstahl | | 160 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 1.3.2 | | | 135 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 1.3.3 | | | 100 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 2.1.1 | Einsatzstahl | | | | | | | | | |
| 2.1.2 | | | | | | | | | | |
| 2.1.3 | | | | | | | | | | |
| 2.2.1 | Nitrierstahl | | | | | | | | | |
| 2.2.2 | | | 160 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.1 | Vergütungsstahl | | | | | | | | | |
| 2.3.2 | | | | | | | | | | |
| 2.3.3 | | | | | | | | | | |
| 2.3.4 | | | 160 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.5 | | | 135 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.6 | | | 115 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 160 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.2 | | | 115 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.3 | | | 90 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.4 | | | 135 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.2.5 | | | 130 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 125 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.3.2 | | | 115 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.3.3 | | | 135 | 1xø | 1xø | 0,015 | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.3.4 | | | 125 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.3.5 | | | 115 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | 50 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.5.2 | | 55–58 HRC | 35 | 1xø | 0,5xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.5.3 | | 58–60 HRC | 25 | 1xø | 0,5xø | 0,008 | 0,01 | 0,02 | 0,03 | 0,04 |
| 3.5.4 | | 60–62 HRC | 20 | 1xø | 0,5xø | 0,008 | 0,01 | 0,02 | 0,03 | 0,04 |
| 3.5.5 | | 62–64 HRC | 15 | 1xø | 0,5xø | 0,008 | 0,01 | 0,02 | 0,03 | 0,04 |
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| 5.1.2 | | | | | | | | | | |
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| 6.1.3 | | | | | | | | | | |
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| 6.2.2 | | | | | | | | | | |
| 6.2.3 | | | | | | | | | | |
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| 6.3.2 | | | | | | | | | | |
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| 7.1.6 | | | | | | | | | | |
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| 7.3.1 | Kupfer | | | | | | | | | |
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| 7.3.5 | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | |
| 7.4.2 | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | |
| 7.5.2 | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | |
| 7.6.2 | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | |
| 7.8.2 | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | |

# W0453-S und W0453-L, beschichtet

HPC-Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_4$ [mm] | F [mm] | z | HB Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|
| 3,0 | HPC-SF.H.0453.0300.L.Z4.F0010A.HB | 6 | 57 | 8 | 3,6 | 0,1 | 4 | | W0453030341 |
| 3,0 | HPC-SF.H.0453.0300.S.Z4.F0010A.HB | 6 | 50 | 5 | 3,0 | 0,1 | 4 | W0453030241 | |
| 4,0 | HPC-SF.H.0453.0400.L.Z4.F0010A.HB | 6 | 57 | 11 | 4,8 | 0,1 | 4 | | W0453040341 |
| 4,0 | HPC-SF.H.0453.0400.S.Z4.F0010A.HB | 6 | 54 | 8 | 4,0 | 0,1 | 4 | W0453040241 | |
| 5,0 | HPC-SF.H.0453.0500.L.Z4.F0010A.HB | 6 | 57 | 13 | 6,0 | 0,1 | 4 | | W0453050341 |
| 5,0 | HPC-SF.H.0453.0500.S.Z4.F0010A.HB | 6 | 54 | 9 | 5,0 | 0,1 | 4 | W0453050241 | |
| 6,0 | HPC-SF.H.0453.0600.L.Z4.F0010A.HB | 6 | 57 | 13 | 7,2 | 0,1 | 4 | | W0453060341 |
| 6,0 | HPC-SF.H.0453.0600.S.Z4.F0010A.HB | 6 | 54 | 10 | 6,0 | 0,1 | 4 | W0453060241 | |
| 8,0 | HPC-SF.H.0453.0800.L.Z4.F0020A.HB | 8 | 63 | 21 | 9,6 | 0,2 | 4 | | W0453080341 |
| 8,0 | HPC-SF.H.0453.0800.S.Z4.F0020A.HB | 8 | 58 | 12 | 8,0 | 0,2 | 4 | W0453080241 | |
| 10,0 | HPC-SF.H.0453.1000.L.Z4.F0020A.HB | 10 | 72 | 22 | 12,0 | 0,2 | 4 | | W0453100341 |
| 10,0 | HPC-SF.H.0453.1000.S.Z4.F0020A.HB | 10 | 66 | 14 | 10,0 | 0,2 | 4 | W0453100241 | |
| 12,0 | HPC-SF.H.0453.1200.L.Z4.F0030A.HB | 12 | 83 | 26 | 14,4 | 0,3 | 4 | | W0453120341 |
| 12,0 | HPC-SF.H.0453.1200.S.Z4.F0030A.HB | 12 | 73 | 16 | 12,0 | 0,3 | 4 | W0453120241 | |
| 14,0 | HPC-SF.H.0453.1400.L.Z4.F0030A.HB | 14 | 83 | 26 | 16,8 | 0,3 | 4 | | W0453140341 |
| 14,0 | HPC-SF.H.0453.1400.S.Z4.F0030A.HB | 14 | 73 | 16 | 14,0 | 0,3 | 4 | W0453140241 | |
| 16,0 | HPC-SF.H.0453.1600.L.Z4.F0030A.HB | 16 | 92 | 36 | 19,2 | 0,3 | 4 | | W0453160341 |
| 16,0 | HPC-SF.H.0453.1600.S.Z4.F0030A.HB | 16 | 82 | 22 | 16,0 | 0,3 | 4 | W0453160241 | |
| 18,0 | HPC-SF.H.0453.1800.S.Z4.F0030A.HB | 18 | 82 | 22 | 18,0 | 0,3 | 4 | W0453180241 | |
| 20,0 | HPC-SF.H.0453.2000.L.Z4.F0030A.HB | 20 | 104 | 41 | 24,0 | 0,3 | 4 | | W0453200341 |
| 20,0 | HPC-SF.H.0453.2000.S.Z4.F0030A.HB | 20 | 92 | 26 | 20,0 | 0,3 | 4 | W0453200241 | |

# W0453-OL, beschichtet

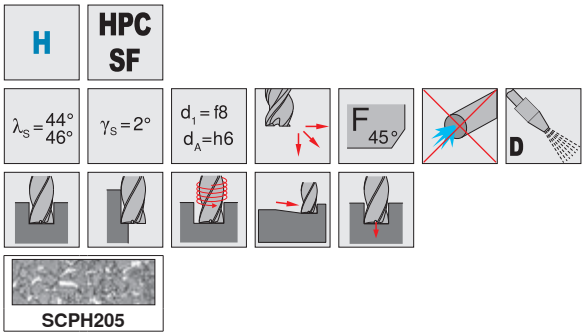
Schnittdatenempfehlung



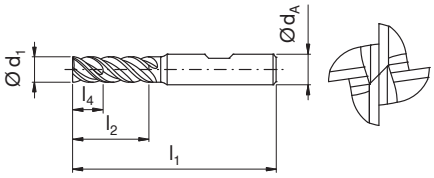
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | | | | | | | |
| 1.1.2 | | | | | | | | | |
| 1.2.1 | Baustahl | | | | | | | | |
| 1.2.2 | | | | | | | | | |
| 1.2.3 | | | | | | | | | |
| 1.3.1 | Federstahl | | 80 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 1.3.2 | | | 70 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 1.3.3 | | | 50 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 2.1.1 | Einsatzstahl | | | | | | | | |
| 2.1.2 | | | | | | | | | |
| 2.1.3 | | | | | | | | | |
| 2.2.1 | Nitrierstahl | | | | | | | | |
| 2.2.2 | | | 80 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.1 | Vergütungsstahl | | | | | | | | |
| 2.3.2 | | | | | | | | | |
| 2.3.3 | | | | | | | | | |
| 2.3.4 | | | 80 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.5 | | | 70 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.6 | | | 60 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 80 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.2 | | | 60 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.3 | | | 45 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.4 | | | 70 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.2.5 | | | 65 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 60 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.3.2 | | | 55 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.3.3 | | | 70 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.3.4 | | | 60 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.3.5 | | | 55 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | 35 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.5.2 | | 55–58 HRC | 20 | 1xø | 0,4xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.5.3 | | 58–60 HRC | 15 | 1xø | 0,4xø | 0,01 | 0,02 | 0,03 | 0,04 |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
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| 6.2.2 | | | | | | | | | |
| 6.2.3 | | | | | | | | | |
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| 6.3.2 | | | | | | | | | |
| 6.4.1 | GTS schwarzer Temperguss | | | | | | | | |
| 6.4.2 | | | | | | | | | |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |

# W0453-OL, beschichtet

HPC-Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_4$ [mm] | F [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|---|
| 4,0 | HPC-SF.H.0453.0400.OL.Z4.F0010A.HB | 6 | 62 | 16 | 4,8 | 0,1 | 4 | W0453040441 |
| 5,0 | HPC-SF.H.0453.0500.OL.Z4.F0010A.HB | 6 | 62 | 17 | 6,0 | 0,1 | 4 | W0453050441 |
| 6,0 | HPC-SF.H.0453.0600.OL.Z4.F0010A.HB | 6 | 62 | 18 | 7,2 | 0,1 | 4 | W0453060441 |
| 8,0 | HPC-SF.H.0453.0800.OL.Z4.F0020A.HB | 8 | 68 | 24 | 9,6 | 0,2 | 4 | W0453080441 |
| 10,0 | HPC-SF.H.0453.1000.OL.Z4.F0020A.HB | 10 | 80 | 30 | 12,0 | 0,2 | 4 | W0453100441 |
| 12,0 | HPC-SF.H.0453.1200.OL.Z4.F0030A.HB | 12 | 93 | 36 | 14,4 | 0,3 | 4 | W0453120441 |
| 14,0 | HPC-SF.H.0453.1400.OL.Z4.F0030A.HB | 14 | 99 | 42 | 16,8 | 0,3 | 4 | W0453140441 |
| 16,0 | HPC-SF.H.0453.1600.OL.Z4.F0030A.HB | 16 | 108 | 48 | 19,2 | 0,3 | 4 | W0453160441 |
| 18,0 | HPC-SF.H.0453.1800.OL.Z4.F0030A.HB | 18 | 114 | 54 | 21,6 | 0,3 | 4 | W0453180441 |
| 20,0 | HPC-SF.H.0453.2000.OL.Z4.F0030A.HB | 20 | 126 | 60 | 24,0 | 0,3 | 4 | W0453200441 |

# W0281-S, beschichtet

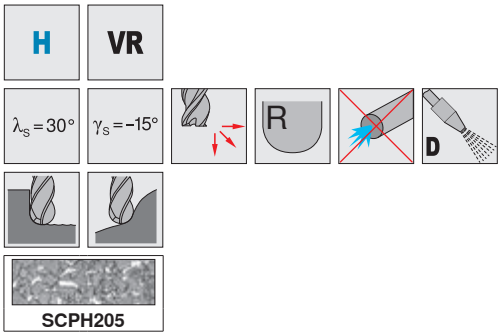
Schnittdatenempfehlung



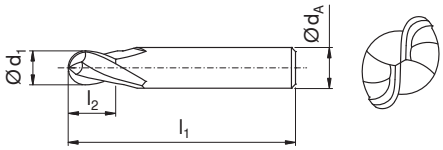
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | $f_z$ [mm] > Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | | | | | | |
| 1.1.2 | | | | | | | | |
| 1.2.1 | Baustahl | | | | | | | |
| 1.2.2 | | | | | | | | |
| 1.2.3 | | | | | | | | |
| 1.3.1 | Federstahl | | | | | | | |
| 1.3.2 | | | | | | | | |
| 1.3.3 | | | | | | | | |
| 2.1.1 | Einsatzstahl | | | | | | | |
| 2.1.2 | | | | | | | | |
| 2.1.3 | | | 400 | 0,05xø | 0,08xø | 0,04 | 0,08 | 0,12 |
| 2.2.1 | Nitrierstahl | | | | | | | |
| 2.2.2 | | | 350 | 0,05xø | 0,08xø | 0,04 | 0,06 | 0,08 |
| 2.3.1 | Vergütungsstahl | | | | | | | |
| 2.3.2 | | | | | | | | |
| 2.3.3 | | | | | | | | |
| 2.3.4 | | | | | | | | |
| 2.3.5 | | | 350 | 0,05xø | 0,08xø | 0,04 | 0,06 | 0,08 |
| 2.3.6 | | | 290 | 0,04xø | 0,05xø | 0,035 | 0,06 | 0,07 |
| 3.1.1 | Werkzeugstahl unlegiert | | 460 | 0,05xø | 0,08xø | 0,04 | 0,08 | 0,12 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 390 | 0,05xø | 0,08xø | 0,04 | 0,08 | 0,12 |
| 3.2.2 | | | 330 | 0,04xø | 0,05xø | 0,04 | 0,06 | 0,08 |
| 3.2.3 | | | 260 | 0,04xø | 0,05xø | 0,035 | 0,06 | 0,07 |
| 3.2.4 | | | 330 | 0,05xø | 0,08xø | 0,04 | 0,06 | 0,08 |
| 3.2.5 | | | 230 | 0,04xø | 0,05xø | 0,035 | 0,06 | 0,07 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 330 | 0,04xø | 0,05xø | 0,04 | 0,08 | 0,12 |
| 3.3.2 | | | 260 | 0,04xø | 0,05xø | 0,04 | 0,06 | 0,08 |
| 3.3.3 | | | 330 | 0,05xø | 0,08xø | 0,04 | 0,06 | 0,08 |
| 3.3.4 | | | 230 | 0,04xø | 0,05xø | 0,035 | 0,06 | 0,07 |
| 3.3.5 | | | 210 | 0,04xø | 0,05xø | 0,035 | 0,06 | 0,07 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | 230 | 0,04xø | 0,05xø | 0,035 | 0,06 | 0,07 |
| 3.5.2 | | 55–58 HRC | 200 | 0,04xø | 0,05xø | 0,035 | 0,06 | 0,07 |
| 3.5.3 | | 58–60 HRC | 180 | 0,03xø | 0,03xø | 0,035 | 0,06 | 0,07 |
| 3.5.4 | | 60–62 HRC | 150 | 0,03xø | 0,03xø | 0,035 | 0,06 | 0,07 |
| 3.5.5 | | 62–64 HRC | 130 | 0,02xø | 0,02xø | 0,035 | 0,06 | 0,07 |
| 4.1.1 | rostfreier Stahl | | | | | | | |
| 4.1.2 | | | | | | | | |
| 4.1.3 | | | | | | | | |
| 4.1.4 | | | | | | | | |
| 4.1.5 | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | |
| 4.2.2 | | | | | | | | |
| 4.2.3 | | | | | | | | |
| 4.2.4 | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | | | | | | |
| 5.1.2 | | | | | | | | |
| 5.1.3 | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | |
| 5.2.2 | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 610 | 0,05xø | 0,08xø | 0,04 | 0,08 | 0,12 |
| 6.1.2 | | | 520 | 0,05xø | 0,08xø | 0,04 | 0,08 | 0,12 |
| 6.1.3 | | | 460 | 0,05xø | 0,08xø | 0,04 | 0,06 | 0,08 |
| 6.1.4 | | | 330 | 0,05xø | 0,08xø | 0,04 | 0,06 | 0,08 |
| 6.2.1 | GGG mit Kugelgraphit | | 610 | 0,05xø | 0,08xø | 0,04 | 0,08 | 0,12 |
| 6.2.2 | | | 520 | 0,05xø | 0,08xø | 0,04 | 0,06 | 0,08 |
| 6.2.3 | | | 430 | 0,05xø | 0,08xø | 0,04 | 0,06 | 0,08 |
| 6.3.1 | GTW weisser Temperguss | | 610 | 0,05xø | 0,08xø | 0,04 | 0,08 | 0,12 |
| 6.3.2 | | | 520 | 0,05xø | 0,08xø | 0,04 | 0,06 | 0,08 |
| 6.4.1 | GTS schwarzer Temperguss | | 610 | 0,05xø | 0,08xø | 0,04 | 0,08 | 0,12 |
| 6.4.2 | | | 520 | 0,05xø | 0,08xø | 0,04 | 0,06 | 0,08 |
| 7.1.1 | Aluminium | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |

# W0281-S, beschichtet

Vollradiusfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | R [mm] | $d_1$-Tol. [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|
| 3,0 | VR.H.0281.0300.S.Z2.R0150.HA | 6 | 54 | 5 | 1,5 | 0/-0.02 | 2 | W0281030640 |
| 4,0 | VR.H.0281.0400.S.Z2.R0200.HA | 6 | 54 | 8 | 2 | 0/-0.02 | 2 | W0281040640 |
| 5,0 | VR.H.0281.0500.S.Z2.R0250.HA | 6 | 54 | 9 | 2,5 | 0/-0.02 | 2 | W0281050640 |
| 6,0 | VR.H.0281.0600.S.Z2.R0300.HA | 6 | 54 | 10 | 3 | 0/-0.02 | 2 | W0281060240 |
| 8,0 | VR.H.0281.0800.S.Z2.R0400.HA | 8 | 64 | 12 | 4 | 0/-0.025 | 2 | W0281080340 |
| 10,0 | VR.H.0281.1000.S.Z2.R0500.HA | 10 | 67 | 14 | 5 | 0/-0.025 | 2 | W0281100340 |
| 12,0 | VR.H.0281.1200.S.Z2.R0600.HA | 12 | 75 | 16 | 6 | 0/-0.025 | 2 | W0281120440 |

# W0281-OL und W0281-XL, beschichtet

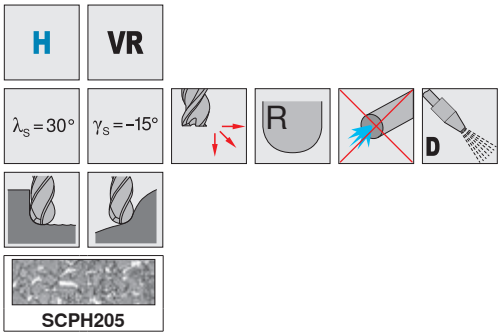
Schnittdatenempfehlung



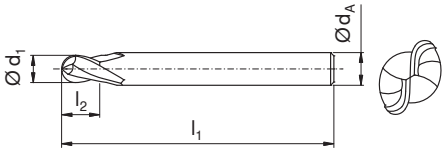
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | $f_z$ [mm] > Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | | | | | | |
| 1.1.2 | | | | | | | | |
| 1.2.1 | Baustahl | | | | | | | |
| 1.2.2 | | | | | | | | |
| 1.2.3 | | | | | | | | |
| 1.3.1 | Federstahl | | | | | | | |
| 1.3.2 | | | | | | | | |
| 1.3.3 | | | | | | | | |
| 2.1.1 | Einsatzstahl | | | | | | | |
| 2.1.2 | | | | | | | | |
| 2.1.3 | | | 240 | 0,05xø | 0,08xø | 0,04 | 0,08 | 0,12 |
| 2.2.1 | Nitrierstahl | | | | | | | |
| 2.2.2 | | | 210 | 0,05xø | 0,08xø | 0,04 | 0,06 | 0,08 |
| 2.3.1 | Vergütungsstahl | | | | | | | |
| 2.3.2 | | | | | | | | |
| 2.3.3 | | | | | | | | |
| 2.3.4 | | | | | | | | |
| 2.3.5 | | | 210 | 0,05xø | 0,08xø | 0,04 | 0,06 | 0,08 |
| 2.3.6 | | | 175 | 0,04xø | 0,05xø | 0,035 | 0,06 | 0,07 |
| 3.1.1 | Werkzeugstahl unlegiert | | 280 | 0,05xø | 0,08xø | 0,04 | 0,08 | 0,12 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 230 | 0,05xø | 0,08xø | 0,04 | 0,08 | 0,12 |
| 3.2.2 | | | 200 | 0,04xø | 0,05xø | 0,04 | 0,06 | 0,08 |
| 3.2.3 | | | 155 | 0,04xø | 0,05xø | 0,035 | 0,06 | 0,07 |
| 3.2.4 | | | 200 | 0,05xø | 0,08xø | 0,04 | 0,06 | 0,08 |
| 3.2.5 | | | 140 | 0,04xø | 0,05xø | 0,035 | 0,06 | 0,07 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 200 | 0,04xø | 0,05xø | 0,04 | 0,08 | 0,12 |
| 3.3.2 | | | 155 | 0,04xø | 0,05xø | 0,04 | 0,06 | 0,08 |
| 3.3.3 | | | 200 | 0,05xø | 0,08xø | 0,04 | 0,06 | 0,08 |
| 3.3.4 | | | 140 | 0,04xø | 0,05xø | 0,035 | 0,06 | 0,07 |
| 3.3.5 | | | 130 | 0,04xø | 0,05xø | 0,035 | 0,06 | 0,07 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | 120 | 0,04xø | 0,05xø | 0,035 | 0,06 | 0,07 |
| 3.5.2 | | 55–58 HRC | 110 | 0,04xø | 0,05xø | 0,035 | 0,06 | 0,07 |
| 3.5.3 | | 58–60 HRC | 100 | 0,03xø | 0,03xø | 0,035 | 0,06 | 0,07 |
| 3.5.4 | | 60–62 HRC | 80 | 0,03xø | 0,03xø | 0,035 | 0,06 | 0,07 |
| 3.5.5 | | 62–64 HRC | 70 | 0,02xø | 0,02xø | 0,035 | 0,06 | 0,07 |
| 4.1.1 | rostfreier Stahl | | | | | | | |
| 4.1.2 | | | | | | | | |
| 4.1.3 | | | | | | | | |
| 4.1.4 | | | | | | | | |
| 4.1.5 | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | |
| 4.2.2 | | | | | | | | |
| 4.2.3 | | | | | | | | |
| 4.2.4 | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | | | | | | |
| 5.1.2 | | | | | | | | |
| 5.1.3 | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | |
| 5.2.2 | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 370 | 0,05xø | 0,08xø | 0,04 | 0,08 | 0,12 |
| 6.1.2 | | | 310 | 0,05xø | 0,08xø | 0,04 | 0,08 | 0,12 |
| 6.1.3 | | | 275 | 0,05xø | 0,08xø | 0,04 | 0,06 | 0,08 |
| 6.1.4 | | | 200 | 0,05xø | 0,08xø | 0,04 | 0,06 | 0,08 |
| 6.2.1 | GGG mit Kugelgraphit | | 365 | 0,05xø | 0,08xø | 0,04 | 0,08 | 0,12 |
| 6.2.2 | | | 310 | 0,05xø | 0,08xø | 0,04 | 0,06 | 0,08 |
| 6.2.3 | | | 260 | 0,05xø | 0,08xø | 0,04 | 0,06 | 0,08 |
| 6.3.1 | GTW weisser Temperguss | | 365 | 0,05xø | 0,08xø | 0,04 | 0,08 | 0,12 |
| 6.3.2 | | | 310 | 0,05xø | 0,08xø | 0,04 | 0,06 | 0,08 |
| 6.4.1 | GTS schwarzer Temperguss | | 365 | 0,05xø | 0,08xø | 0,04 | 0,08 | 0,12 |
| 6.4.2 | | | 310 | 0,05xø | 0,08xø | 0,04 | 0,06 | 0,08 |
| 7.1.1 | Aluminium | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |

# W0281-OL und W0281-XL, beschichtet

Vollradiusfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | R [mm] | $d_1$-Tol. [mm] | z | HA Material | HA Material |
|---|---|---|---|---|---|---|---|---|---|
| 3,0 | VR.H.0281.0300.XL.Z2.R0150.HA | 6 | 100 | 8 | 1,5 | 0/-0.02 | 2 | | W0281030940 |
| 4,0 | VR.H.0281.0400.XL.Z2.R0200.HA | 6 | 100 | 8 | 2 | 0/-0.02 | 2 | | W0281040940 |
| 5,0 | VR.H.0281.0500.XL.Z2.R0250.HA | 6 | 100 | 9 | 2,5 | 0/-0.02 | 2 | | W0281050940 |
| 6,0 | VR.H.0281.0600.XL.Z2.R0300.HA | 6 | 100 | 10 | 3 | 0/-0.02 | 2 | | W0281060540 |
| 8,0 | VR.H.0281.0800.OL.Z2.R0400.HA | 8 | 100 | 12 | 4 | 0/-0.025 | 2 | W0281080540 | |
| 10,0 | VR.H.0281.1000.OL.Z2.R0500.HA | 10 | 100 | 14 | 5 | 0/-0.025 | 2 | W0281100540 | |
| 12,0 | VR.H.0281.1200.OL.Z2.R0600.HA | 12 | 100 | 16 | 6 | 0/-0.025 | 2 | W0281120540 | |

# W0441-L, beschichtet

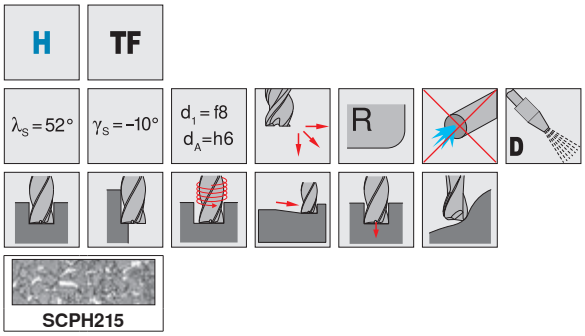
Schnittdatenempfehlung



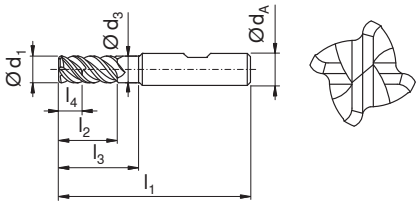
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | | | | | | | |
| 1.1.2 | | | | | | | | | |
| 1.2.1 | Baustahl | | | | | | | | |
| 1.2.2 | | | | | | | | | |
| 1.2.3 | | | | | | | | | |
| 1.3.1 | Federstahl | | 85 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 1.3.2 | | | 75 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 1.3.3 | | | 60 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 2.1.1 | Einsatzstahl | | | | | | | | |
| 2.1.2 | | | | | | | | | |
| 2.1.3 | | | | | | | | | |
| 2.2.1 | Nitrierstahl | | | | | | | | |
| 2.2.2 | | | 130 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.1 | Vergütungsstahl | | | | | | | | |
| 2.3.2 | | | | | | | | | |
| 2.3.3 | | | | | | | | | |
| 2.3.4 | | | 140 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.5 | | | 130 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.6 | | | 120 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 140 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.2 | | | 135 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.3 | | | 125 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.4 | | | 115 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.2.5 | | | 130 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 135 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.3.2 | | | 125 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.3.3 | | | 135 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.3.4 | | | 125 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.3.5 | | | 115 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | 50 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.5.2 | | 55–58 HRC | 30 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.5.3 | | 58–60 HRC | 25 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | |
| 4.1.2 | | | | | | | | | |
| 4.1.3 | | | | | | | | | |
| 4.1.4 | | | | | | | | | |
| 4.1.5 | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | |
| 4.2.2 | | | | | | | | | |
| 4.2.3 | | | | | | | | | |
| 4.2.4 | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | | | | | | | |
| 5.1.2 | | | | | | | | | |
| 5.1.3 | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | | |
| 5.2.2 | | | | | | | | | |
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| 6.1.2 | | | | | | | | | |
| 6.1.3 | | | | | | | | | |
| 6.1.4 | | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | | | | | | | |
| 6.2.2 | | | | | | | | | |
| 6.2.3 | | | | | | | | | |
| 6.3.1 | GTW weisser Temperguss | | | | | | | | |
| 6.3.2 | | | | | | | | | |
| 6.4.1 | GTS schwarzer Temperguss | | | | | | | | |
| 6.4.2 | | | | | | | | | |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |

# W0441-L, beschichtet

Torusfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | $l_4$ [mm] | R [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 4,0 | TF.H.0441.0400.L.Z4.R0050.HB | 6 | 3,9 | 57 | 11 | 18 | 4,4 | 0,5 | 4 | W0441040341 |
| 5,0 | TF.H.0441.0500.L.Z4.R0050.HB | 6 | 4,9 | 57 | 13 | 19 | 4,8 | 0,5 | 4 | W0441050341 |
| 6,0 | TF.H.0441.0600.L.Z4.R0050.HB | 6 | 5,9 | 57 | 13 | 19 | 5,2 | 0,5 | 4 | W0441060341 |
| 8,0 | TF.H.0441.0800.L.Z4.R0100.HB | 8 | 7,7 | 63 | 19 | 25 | 7,6 | 1 | 4 | W0441080341 |
| 10,0 | TF.H.0441.1000.L.Z4.R0100.HB | 10 | 9,7 | 72 | 22 | 30 | 8,8 | 1 | 4 | W0441100341 |
| 12,0 | TF.H.0441.1200.L.Z4.R0150.HB | 12 | 11,7 | 83 | 26 | 36 | 10,4 | 1,5 | 4 | W0441120341 |
| 14,0 | TF.H.0441.1400.L.Z4.R0150.HB | 14 | 13,7 | 83 | 26 | 36 | 10,4 | 1,5 | 4 | W0441140341 |
| 16,0 | TF.H.0441.1600.L.Z4.R0200.HB | 16 | 15,5 | 92 | 32 | 42 | 12,8 | 2 | 4 | W0441160341 |
| 18,0 | TF.H.0441.1800.L.Z4.R0200.HB | 18 | 17,5 | 92 | 32 | 42 | 12,8 | 2 | 4 | W0441180341 |
| 20,0 | TF.H.0441.2000.L.Z4.R0200.HB | 20 | 19,5 | 104 | 38 | 52 | 15,2 | 2 | 4 | W0441200341 |

# W0441-OL, beschichtet

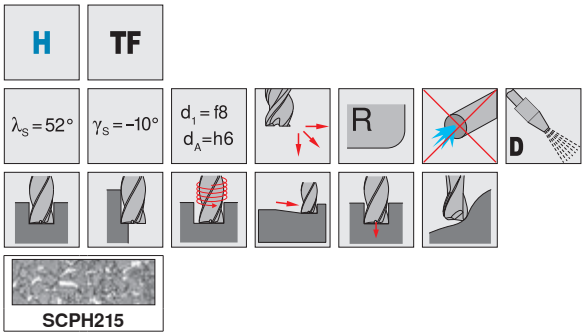
Schnittdatenempfehlung



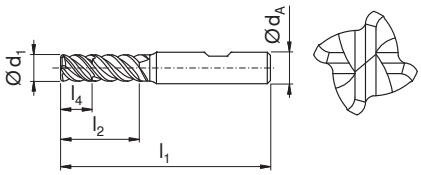
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | | | | | | | |
| 1.1.2 | | | | | | | | | |
| 1.2.1 | Baustahl | | | | | | | | |
| 1.2.2 | | | | | | | | | |
| 1.2.3 | | | | | | | | | |
| 1.3.1 | Federstahl | | 55 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 1.3.2 | | | 45 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 1.3.3 | | | 30 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 2.1.1 | Einsatzstahl | | | | | | | | |
| 2.1.2 | | | | | | | | | |
| 2.1.3 | | | | | | | | | |
| 2.2.1 | Nitrierstahl | | | | | | | | |
| 2.2.2 | | | 90 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.1 | Vergütungsstahl | | | | | | | | |
| 2.3.2 | | | | | | | | | |
| 2.3.3 | | | | | | | | | |
| 2.3.4 | | | 100 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.5 | | | 90 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 2.3.6 | | | 80 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 100 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.2 | | | 95 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.3 | | | 85 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.2.4 | | | 75 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.2.5 | | | 90 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 100 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.3.2 | | | 90 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.3.3 | | | 100 | 1xø | 0,5xø | 0,03 | 0,04 | 0,05 | 0,06 |
| 3.3.4 | | | 90 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.3.5 | | | 80 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | 35 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.5.2 | | 55–58 HRC | 20 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.5.3 | | 58–60 HRC | 15 | 1xø | 0,5xø | 0,02 | 0,03 | 0,04 | 0,05 |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | |
| 4.1.2 | | | | | | | | | |
| 4.1.3 | | | | | | | | | |
| 4.1.4 | | | | | | | | | |
| 4.1.5 | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | |
| 4.2.2 | | | | | | | | | |
| 4.2.3 | | | | | | | | | |
| 4.2.4 | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | | | | | | | |
| 5.1.2 | | | | | | | | | |
| 5.1.3 | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | | |
| 5.2.2 | | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | | | | | | | |
| 6.1.2 | | | | | | | | | |
| 6.1.3 | | | | | | | | | |
| 6.1.4 | | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | | | | | | | |
| 6.2.2 | | | | | | | | | |
| 6.2.3 | | | | | | | | | |
| 6.3.1 | GTW weisser Temperguss | | | | | | | | |
| 6.3.2 | | | | | | | | | |
| 6.4.1 | GTS schwarzer Temperguss | | | | | | | | |
| 6.4.2 | | | | | | | | | |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |

# W0441-OL, beschichtet

Torusfräser






| d1 [mm] | Type, Bezeichnung | dA [mm] | l1 [mm] | l2 [mm] | l4 [mm] | R [mm] | z | Material |
|---|---|---|---|---|---|---|---|---|
| 4,0 | TF.H.0441.0400.OL.Z4.R0050.HB | 6 | 62 | 16 | 6,4 | 0,5 | 4 | W0441040441 |
| 5,0 | TF.H.0441.0500.OL.Z4.R0050.HB | 6 | 62 | 17 | 6,8 | 0,5 | 4 | W0441050441 |
| 6,0 | TF.H.0441.0600.OL.Z4.R0050.HB | 6 | 62 | 18 | 7,2 | 0,5 | 4 | W0441060441 |
| 8,0 | TF.H.0441.0800.OL.Z4.R0100.HB | 8 | 68 | 24 | 9,6 | 1 | 4 | W0441080441 |
| 10,0 | TF.H.0441.1000.OL.Z4.R0100.HB | 10 | 80 | 30 | 12,0 | 1 | 4 | W0441100441 |
| 12,0 | TF.H.0441.1200.OL.Z4.R0150.HB | 12 | 93 | 36 | 14,4 | 1,5 | 4 | W0441120441 |
| 14,0 | TF.H.0441.1400.OL.Z4.R0150.HB | 14 | 99 | 42 | 16,8 | 1,5 | 4 | W0441140441 |
| 16,0 | TF.H.0441.1600.OL.Z4.R0200.HB | 16 | 108 | 48 | 19,2 | 2 | 4 | W0441160441 |
| 18,0 | TF.H.0441.1800.OL.Z4.R0200.HB | 18 | 114 | 54 | 21,6 | 2 | 4 | W0441180441 |
| 20,0 | TF.H.0441.2000.OL.Z4.R0200.HB | 20 | 126 | 60 | 24,0 | 2 | 4 | W0441200441 |

# W0367-L, beschichtet

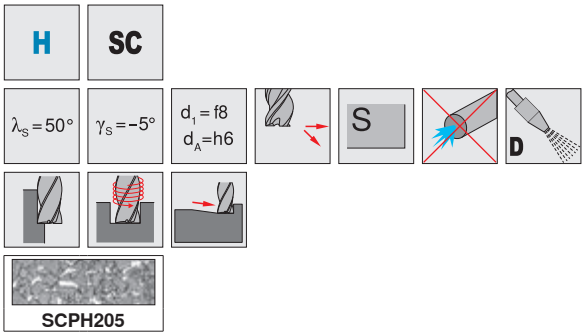
Schnittdatenempfehlung



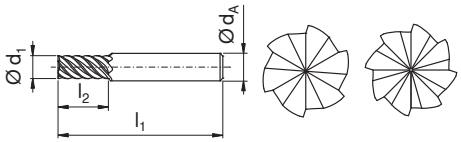
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 | > Ø 20,0 = Ø 25,0 | > Ø 25,0 = Ø 30,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | | | | | | | | | | |
| 1.1.2 | | | | | | | | | | | | |
| 1.2.1 | Baustahl | | | | | | | | | | | |
| 1.2.2 | | | | | | | | | | | | |
| 1.2.3 | | | | | | | | | | | | |
| 1.3.1 | Federstahl | | 130 | 0,05xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 1.3.2 | | | 120 | 0,05xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 1.3.3 | | | 115 | 0,05xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 2.1.1 | Einsatzstahl | | | | | | | | | | | |
| 2.1.2 | | | | | | | | | | | | |
| 2.1.3 | | | | | | | | | | | | |
| 2.2.1 | Nitrierstahl | | | | | | | | | | | |
| 2.2.2 | | | 120 | 0,05xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 2.3.1 | Vergütungsstahl | | | | | | | | | | | |
| 2.3.2 | | | | | | | | | | | | |
| 2.3.3 | | | | | | | | | | | | |
| 2.3.4 | | | | | | | | | | | | |
| 2.3.5 | | | 120 | 0,05xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 2.3.6 | | | 110 | 0,05xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.1.1 | Werkzeugstahl unlegiert | | 135 | 0,05xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 130 | 0,05xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.2.2 | | | 120 | 0,05xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.2.3 | | | 110 | 0,05xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.2.4 | | | 100 | 0,05xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.2.5 | | | 90 | 0,05xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 120 | 0,05xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.3.2 | | | 110 | 0,05xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.3.3 | | | 100 | 0,05xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.3.4 | | | 90 | 0,05xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.3.5 | | | 85 | 0,05xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | 80 | 0,05xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.5.2 | | 55–58 HRC | 70 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.5.3 | | 58–60 HRC | 60 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.5.4 | | 60–62 HRC | 45 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.5.5 | | 62–64 HRC | 35 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 4.1.1 | rostfreier Stahl | | | | | | | | | | | |
| 4.1.2 | | | | | | | | | | | | |
| 4.1.3 | | | | | | | | | | | | |
| 4.1.4 | | | | | | | | | | | | |
| 4.1.5 | | | | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | | | |
| 4.2.2 | | | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | | | | | | | | | | |
| 5.1.2 | | | | | | | | | | | | |
| 5.1.3 | | | | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | | | | | |
| 5.2.2 | | | | | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | | | | | | | | | | |
| 6.1.2 | | | | | | | | | | | | |
| 6.1.3 | | | | | | | | | | | | |
| 6.1.4 | | | | | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | | | | | | | | | | |
| 6.2.2 | | | | | | | | | | | | |
| 6.2.3 | | | | | | | | | | | | |
| 6.3.1 | GTW weisser Temperguss | | | | | | | | | | | |
| 6.3.2 | | | | | | | | | | | | |
| 6.4.1 | GTS schwarzer Temperguss | | | | | | | | | | | |
| 6.4.2 | | | | | | | | | | | | |
| 7.1.1 | Aluminium | | | | | | | | | | | |
| 7.1.2 | | | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | | | |
| 7.2.2 | | | | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | | | | |
| 7.3.2 | | | | | | | | | | | | |
| 7.3.3 | | | | | | | | | | | | |
| 7.3.4 | | | | | | | | | | | | |
| 7.3.5 | | | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | | | |
| 7.4.2 | | | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | | | |
| 7.5.2 | | | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | | | |
| 7.6.2 | | | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | | | |
| 7.8.2 | | | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | | | |

# W0367-L, beschichtet

Schlichtfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | z | HA Material |
|---|---|---|---|---|---|---|
| 3,0 | SC.H.0367.0300.L.Z6.S.HA | 6 | 57 | 8 | 6 | W0367030340 |
| 4,0 | SC.H.0367.0400.L.Z6.S.HA | 6 | 57 | 11 | 6 | W0367040340 |
| 5,0 | SC.H.0367.0500.L.Z6.S.HA | 6 | 57 | 13 | 6 | W0367050340 |
| 6,0 | SC.H.0367.0600.L.Z6.S.HA | 6 | 57 | 13 | 6 | W0367060340 |
| 8,0 | SC.H.0367.0800.L.Z6.S.HA | 8 | 63 | 19 | 6 | W0367080340 |
| 10,0 | SC.H.0367.1000.L.Z6.S.HA | 10 | 72 | 22 | 6 | W0367100340 |
| 12,0 | SC.H.0367.1200.L.Z6.S.HA | 12 | 83 | 26 | 6 | W0367120340 |
| 14,0 | SC.H.0367.1400.L.Z6.S.HA | 14 | 83 | 26 | 6 | W0367140340 |
| 16,0 | SC.H.0367.1600.L.Z8.S.HA | 16 | 92 | 32 | 8 | W0367160340 |
| 18,0 | SC.H.0367.1800.L.Z8.S.HA | 18 | 92 | 32 | 8 | W0367180340 |
| 20,0 | SC.H.0367.2000.L.Z8.S.HA | 20 | 104 | 38 | 8 | W0367200340 |
| 25,0 | SC.H.0367.2500.L.Z8.S.HA | 25 | 150 | 75 | 8 | W0367250340 |
| 32,0 | SC.H.0367.3200.L.Z8.S.HA | 32 | 150 | 75 | 8 | W0367320340 |

# W0367-OL, beschichtet

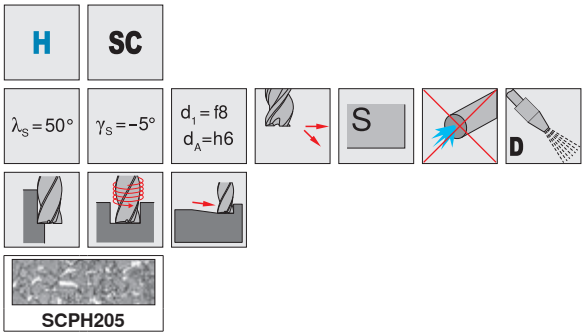
Schnittdatenempfehlung



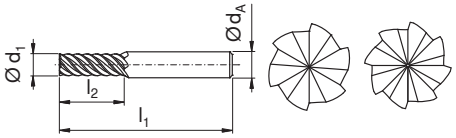
| Index | Materialbezeichnung | | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 | > Ø 20,0 = Ø 25,0 | > Ø 25,0 = Ø 30,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | | | | | | | | | | |
| 1.1.2 | | | | | | | | | | | | |
| 1.2.1 | Baustahl | | | | | | | | | | | |
| 1.2.2 | | | | | | | | | | | | |
| 1.2.3 | | | | | | | | | | | | |
| 1.3.1 | Federstahl | | 110 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 1.3.2 | | | 100 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 1.3.3 | | | 90 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 2.1.1 | Einsatzstahl | | | | | | | | | | | |
| 2.1.2 | | | | | | | | | | | | |
| 2.1.3 | | | | | | | | | | | | |
| 2.2.1 | Nitrierstahl | | | | | | | | | | | |
| 2.2.2 | | | 95 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 2.3.1 | Vergütungsstahl | | | | | | | | | | | |
| 2.3.2 | | | | | | | | | | | | |
| 2.3.3 | | | | | | | | | | | | |
| 2.3.4 | | | | | | | | | | | | |
| 2.3.5 | | | 95 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 2.3.6 | | | 90 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.1.1 | Werkzeugstahl unlegiert | | 120 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 110 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.2.2 | | | 100 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.2.3 | | | 90 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.2.4 | | | 80 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.2.5 | | | 60 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 100 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.3.2 | | | 90 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.3.3 | | | 80 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.3.4 | | | 70 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.3.5 | | | 60 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | 55 | 0,03xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.5.2 | | 55–58 HRC | 50 | 0,02xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.5.3 | | 58–60 HRC | 40 | 0,02xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.5.4 | | 60–62 HRC | 30 | 0,02xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 3.5.5 | | 62–64 HRC | 25 | 0,02xø | 1,5xø | 0,04 | 0,045 | 0,06 | 0,07 | 0,1 | 0,125 | 0,16 |
| 4.1.1 | rostfreier Stahl | | | | | | | | | | | |
| 4.1.2 | | | | | | | | | | | | |
| 4.1.3 | | | | | | | | | | | | |
| 4.1.4 | | | | | | | | | | | | |
| 4.1.5 | | | | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | | | |
| 4.2.2 | | | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | | | | | | | | | | |
| 5.1.2 | | | | | | | | | | | | |
| 5.1.3 | | | | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | | | | | |
| 5.2.2 | | | | | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | | | | | | | | | | |
| 6.1.2 | | | | | | | | | | | | |
| 6.1.3 | | | | | | | | | | | | |
| 6.1.4 | | | | | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | | | | | | | | | | |
| 6.2.2 | | | | | | | | | | | | |
| 6.2.3 | | | | | | | | | | | | |
| 6.3.1 | GTW weisser Temperguss | | | | | | | | | | | |
| 6.3.2 | | | | | | | | | | | | |
| 6.4.1 | GTS schwarzer Temperguss | | | | | | | | | | | |
| 6.4.2 | | | | | | | | | | | | |
| 7.1.1 | Aluminium | | | | | | | | | | | |
| 7.1.2 | | | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | | | |
| 7.2.2 | | | | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | | | | |
| 7.3.2 | | | | | | | | | | | | |
| 7.3.3 | | | | | | | | | | | | |
| 7.3.4 | | | | | | | | | | | | |
| 7.3.5 | | | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | | | |
| 7.4.2 | | | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | | | |
| 7.5.2 | | | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | | | |
| 7.6.2 | | | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | | | |
| 7.8.2 | | | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | | | |

# W0367-OL, beschichtet

Schlichtfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | z | HA Material |
|---|---|---|---|---|---|---|
| 3,0 | SC.H.0367.0300.OL.Z6.S.HA | 6 | 62 | 12 | 6 | W0367030440 |
| 4,0 | SC.H.0367.0400.OL.Z6.S.HA | 6 | 62 | 16 | 6 | W0367040440 |
| 5,0 | SC.H.0367.0500.OL.Z6.S.HA | 6 | 62 | 18 | 6 | W0367050440 |
| 6,0 | SC.H.0367.0600.OL.Z6.S.HA | 6 | 62 | 18 | 6 | W0367060440 |
| 8,0 | SC.H.0367.0800.OL.Z6.S.HA | 8 | 68 | 24 | 6 | W0367080440 |
| 10,0 | SC.H.0367.1000.OL.Z6.S.HA | 10 | 80 | 30 | 6 | W0367100440 |
| 12,0 | SC.H.0367.1200.OL.Z6.S.HA | 12 | 93 | 36 | 6 | W0367120440 |
| 14,0 | SC.H.0367.1400.OL.Z6.S.HA | 14 | 99 | 42 | 6 | W0367140440 |
| 16,0 | SC.H.0367.1600.OL.Z8.S.HA | 16 | 108 | 48 | 8 | W0367160440 |
| 18,0 | SC.H.0367.1800.OL.Z8.S.HA | 18 | 114 | 54 | 8 | W0367180440 |
| 20,0 | SC.H.0367.2000.OL.Z8.S.HA | 20 | 126 | 60 | 8 | W0367200440 |
| 25,0 | SC.H.0367.2500.OL.Z8.S.HA | 25 | 160 | 95 | 8 | W0367250440 |
| 32,0 | SC.H.0367.3200.OL.Z8.S.HA | 32 | 160 | 95 | 8 | W0367320440 |

# W0360-L, beschichtet

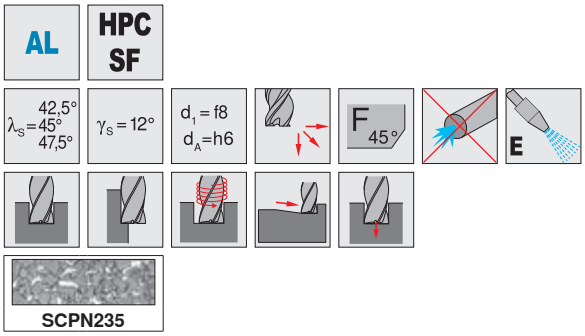
Schnittdatenempfehlung



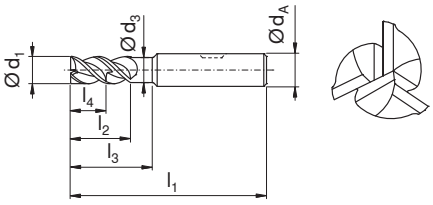
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 600 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 600 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 600 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 480 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 360 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 240 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | Magnesium | 220 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 200 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | Kupfer | 170 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 155 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | CuZn (Messing) | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 240 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | CuSn (Bronze) | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 170 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | 55 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 70 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |
| 8.1.1 | Thermoplast | | | | | | | | |
| 8.1.2 | | | | | | | | | |
| 8.1.3 | | | | | | | | | |
| 8.1.4 | | | | | | | | | |
| 8.1.5 | | | | | | | | | |
| 8.1.6 | | | | | | | | | |
| 8.1.7 | | | | | | | | | |
| 8.1.8 | | | | | | | | | |
| 8.1.9 | | | | | | | | | |
| 8.2.1 | Duroplast | | | | | | | | |
| 8.2.2 | | | | | | | | | |
| 8.2.3 | | | | | | | | | |
| 8.2.4 | | | | | | | | | |
| 8.2.5 | | | | | | | | | |
| 8.2.6 | | | | | | | | | |
| 8.2.7 | | | | | | | | | |
| 8.2.8 | | | | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | | |
| 8.3.2 | | | | | | | | | |
| 8.3.3 | | | | | | | | | |
| 8.3.4 | | | | | | | | | |
| 8.3.5 | | | | | | | | | |
| 8.3.6 | | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | | |
| 8.4.2 | | | | | | | | | |
| 8.4.3 | | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | | |
| 9.1.2 | | | | | | | | | |

# W0360-L, beschichtet

HPC-Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | $l_4$ [mm] | F [mm] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3,0 | HPC-SF.AL.0360.0300.L.Z3.F0010A.HA | 6 | 2,7 | 57 | 8 | 12 | 3,9 | 0,1 | 3 | W0360030360 | |
| 4,0 | HPC-SF.AL.0360.0400.L.Z3.F0010A.HA | 6 | 3,7 | 57 | 11 | 18 | 5,2 | 0,1 | 3 | W0360040360 | |
| 5,0 | HPC-SF.AL.0360.0500.L.Z3.F0010A.HA | 6 | 4,7 | 57 | 13 | 18 | 6,5 | 0,1 | 3 | W0360050360 | |
| 6,0 | HPC-SF.AL.0360.0600.L.Z3.F0020A.HA | 6 | 5,7 | 57 | 13 | 18 | 7,8 | 0,2 | 3 | W0360060360 | |
| 8,0 | HPC-SF.AL.0360.0800.L.Z3.F0020A.HA | 8 | 7,4 | 63 | 21 | 25 | 10,4 | 0,2 | 3 | W0360080360 | |
| 10,0 | HPC-SF.AL.0360.1000.L.Z3.F0020A.HA | 10 | 9,2 | 72 | 22 | 30 | 13,0 | 0,2 | 3 | W0360100360 | |
| 12,0 | HPC-SF.AL.0360.1200.L.Z3.F0020A.HA | 12 | 11 | 83 | 26 | 36 | 15,6 | 0,2 | 3 | W0360120360 | |
| 16,0 | HPC-SF.AL.0360.1600.L.Z3.F0020A.HB | 16 | 15 | 92 | 36 | 42 | 20,8 | 0,2 | 3 | | W0360160361 |
| 18,0 | HPC-SF.AL.0360.1800.L.Z3.F0020A.HB | 18 | 17 | 92 | 36 | 42 | 23,4 | 0,2 | 3 | | W0360180361 |
| 20,0 | HPC-SF.AL.0360.2000.L.Z3.F0020A.HB | 20 | 19 | 104 | 41 | 52 | 26,0 | 0,2 | 3 | | W0360200361 |

# W0360-OL, beschichtet

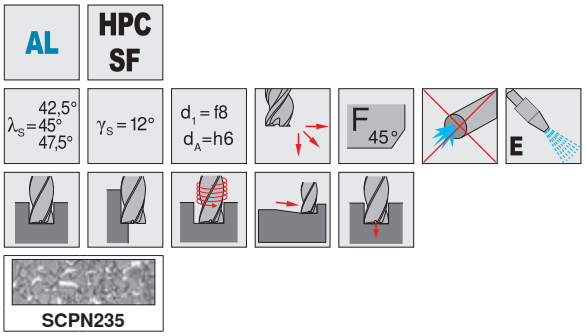
Schnittdatenempfehlung



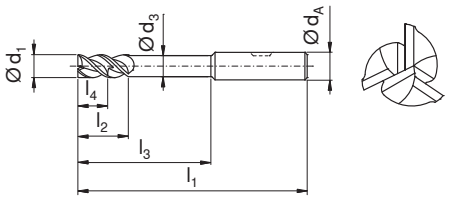
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | 300 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 300 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 300 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 260 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 200 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 140 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | **Magnesium** | 130 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 120 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | **Kupfer** | 110 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 100 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 80 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 90 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 80 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 90 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | **CuZn (Messing)** | 100 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 140 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | **CuSn (Bronze)** | 90 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 100 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | **CuAlFe (Ampco)** | 35 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 45 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | **Titan** | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | | | | | | | |
| 8.2.8 | | | | | | | | |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | | | | | | | |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | | | | | | | |
| 8.4.1 | **Sandwich** | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | | |
| 9.1.2 | | | | | | | | |

# W0360-OL, beschichtet

HPC-Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | $l_4$ [mm] | F [mm] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6,0 | HPC-SF.AL.0360.0600.OL.Z3.F0020A.HA | 6 | 5,7 | 80 | 13 | 42 | 7,8 | 0,2 | 3 | W0360060460 | |
| 8,0 | HPC-SF.AL.0360.0800.OL.Z3.F0020A.HA | 8 | 7,4 | 100 | 21 | 62 | 10,4 | 0,2 | 3 | W0360080460 | |
| 10,0 | HPC-SF.AL.0360.1000.OL.Z3.F0020A.HA | 10 | 9,2 | 100 | 22 | 58 | 13,0 | 0,2 | 3 | W0360100460 | |
| 12,0 | HPC-SF.AL.0360.1200.OL.Z3.F0020A.HA | 12 | 11 | 120 | 26 | 73 | 15,6 | 0,2 | 3 | W0360120460 | |
| 16,0 | HPC-SF.AL.0360.1600.OL.Z3.F0020A.HB | 16 | 15 | 150 | 36 | 100 | 20,8 | 0,2 | 3 | | W0360160461 |
| 18,0 | HPC-SF.AL.0360.1800.OL.Z3.F0020A.HB | 18 | 17 | 150 | 36 | 100 | 23,4 | 0,2 | 3 | | W0360180461 |
| 20,0 | HPC-SF.AL.0360.2000.OL.Z3.F0020A.HB | 20 | 19 | 150 | 41 | 98 | 26,0 | 0,2 | 3 | | W0360200461 |

# W0360-OLS, beschichtet

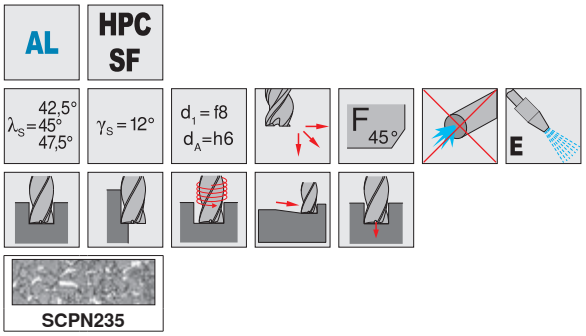
Schnittdatenempfehlung



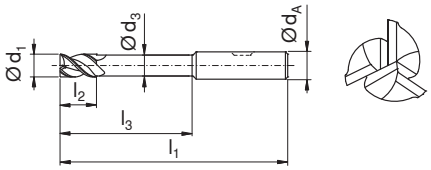
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | 300 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 300 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 300 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 260 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 200 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 140 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | **Magnesium** | 130 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 120 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | **Kupfer** | 110 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 80 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 90 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 80 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 90 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | **CuZn (Messing)** | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | **CuSn (Bronze)** | 90 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | **CuAlFe (Ampco)** | 35 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 45 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | **Titan** | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | | | |
| 8.1.2 | | | | | | | | | |
| 8.1.3 | | | | | | | | | |
| 8.1.4 | | | | | | | | | |
| 8.1.5 | | | | | | | | | |
| 8.1.6 | | | | | | | | | |
| 8.1.7 | | | | | | | | | |
| 8.1.8 | | | | | | | | | |
| 8.1.9 | | | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | | | |
| 8.2.2 | | | | | | | | | |
| 8.2.3 | | | | | | | | | |
| 8.2.4 | | | | | | | | | |
| 8.2.5 | | | | | | | | | |
| 8.2.6 | | | | | | | | | |
| 8.2.7 | | | | | | | | | |
| 8.2.8 | | | | | | | | | |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | | | | | |
| 8.3.2 | | | | | | | | | |
| 8.3.3 | | | | | | | | | |
| 8.3.4 | | | | | | | | | |
| 8.3.5 | | | | | | | | | |
| 8.3.6 | | | | | | | | | |
| 8.4.1 | **Sandwich** | | | | | | | | |
| 8.4.2 | | | | | | | | | |
| 8.4.3 | | | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | | | |
| 9.1.2 | | | | | | | | | |

# W0360-OLS, beschichtet

HPC-Schaftfräser





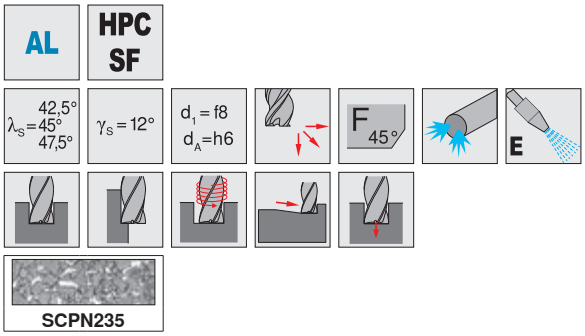

| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | $l_4$ [mm] | F [mm] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3,0 | HPC-SF.AL.0360.0300.OLS.Z3.F0010A.HA | 6 | 2,7 | 80 | 5 | 18 | | 0,1 | 3 | W0360030R60 | |
| 4,0 | HPC-SF.AL.0360.0400.OLS.Z3.F0010A.HA | 6 | 3,7 | 80 | 6,5 | 24 | | 0,1 | 3 | W0360040R60 | |
| 5,0 | HPC-SF.AL.0360.0500.OLS.Z3.F0010A.HA | 6 | 4,7 | 80 | 8 | 30 | | 0,1 | 3 | W0360050R60 | |
| 6,0 | HPC-SF.AL.0360.0600.OLS.Z3.F0020A.HA | 6 | 5,7 | 80 | 10 | 42 | | 0,2 | 3 | W0360060R60 | |
| 8,0 | HPC-SF.AL.0360.0800.OLS.Z3.F0020A.HA | 8 | 7,4 | 100 | 13 | 62 | | 0,2 | 3 | W0360080R60 | |
| 10,0 | HPC-SF.AL.0360.1000.OLS.Z3.F0020A.HA | 10 | 9,2 | 100 | 16 | 58 | | 0,2 | 3 | W0360100R60 | |
| 12,0 | HPC-SF.AL.0360.1200.OLS.Z3.F0020A.HA | 12 | 11 | 120 | 19 | 73 | | 0,2 | 3 | W0360120R60 | |
| 16,0 | HPC-SF.AL.0360.1600.OLS.Z3.F0020A.HB | 16 | 15 | 150 | 25 | 100 | | 0,2 | 3 | | W0360160R61 |
| 20,0 | HPC-SF.AL.0360.2000.OLS.Z3.F0020A.HB | 20 | 19 | 150 | 32 | 98 | | 0,2 | 3 | | W0360200R61 |

# W0361-L, beschichtet

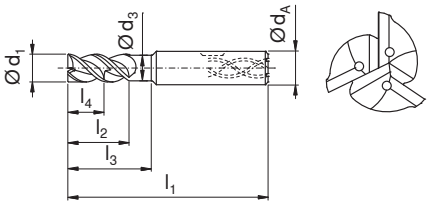
Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 480 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 360 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 240 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | **Magnesium** | 220 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 200 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | **Kupfer** | 170 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 155 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | **CuZn (Messing)** | 180 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 240 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | **CuSn (Bronze)** | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 170 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | **CuAlFe (Ampco)** | 55 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 70 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | **Titan** | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | | | | | | | |
| 8.2.8 | | | | | | | | |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | | | | | | | |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | | | | | | | |
| 8.4.1 | **Sandwich** | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | | |
| 9.1.2 | | | | | | | | |






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | $l_4$ [mm] | F [mm] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6,0 | HPC-SF.AL.0361.0600.L.Z3.F0020A.HA | 6 | 5,7 | 57 | 13 | 18 | 7,8 | 0,2 | 3 | W0361060360 | |
| 8,0 | HPC-SF.AL.0361.0800.L.Z3.F0020A.HA | 8 | 7,4 | 63 | 21 | 25 | 10,4 | 0,2 | 3 | W0361080360 | |
| 10,0 | HPC-SF.AL.0361.1000.L.Z3.F0020A.HA | 10 | 9,2 | 72 | 22 | 30 | 13,0 | 0,2 | 3 | W0361100360 | |
| 12,0 | HPC-SF.AL.0361.1200.L.Z3.F0020A.HA | 12 | 11 | 83 | 26 | 36 | 15,6 | 0,2 | 3 | W0361120360 | |
| 16,0 | HPC-SF.AL.0361.1600.L.Z3.F0020A.HB | 16 | 15 | 92 | 36 | 42 | 20,8 | 0,2 | 3 | | W0361160361 |
| 20,0 | HPC-SF.AL.0361.2000.L.Z3.F0020A.HB | 20 | 19 | 104 | 41 | 52 | 26,0 | 0,2 | 3 | | W0361200361 |

# W0361-OLS, beschichtet

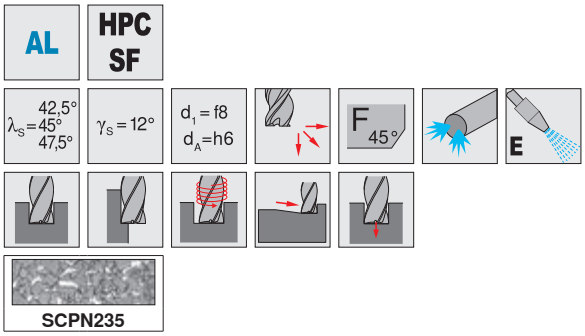
Schnittdatenempfehlung



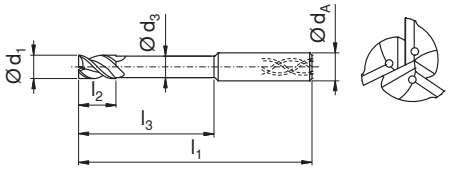
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 300 | 1xø | 1xø | 0,06 | 0,07 |
| 7.1.2 | | 300 | 1xø | 1xø | 0,06 | 0,07 |
| 7.1.3 | | 300 | 1xø | 1xø | 0,06 | 0,07 |
| 7.1.4 | | 260 | 1xø | 1xø | 0,06 | 0,07 |
| 7.1.5 | | 200 | 1xø | 1xø | 0,05 | 0,07 |
| 7.1.6 | | 140 | 1xø | 1xø | 0,05 | 0,07 |
| 7.2.1 | Magnesium | 130 | 1xø | 1xø | 0,05 | 0,07 |
| 7.2.2 | | 120 | 1xø | 1xø | 0,05 | 0,07 |
| 7.3.1 | Kupfer | 110 | 1xø | 1xø | 0,04 | 0,06 |
| 7.3.2 | | 100 | 1xø | 1xø | 0,04 | 0,06 |
| 7.3.3 | | 80 | 1xø | 1xø | 0,04 | 0,06 |
| 7.3.4 | | 90 | 1xø | 1xø | 0,04 | 0,06 |
| 7.3.5 | | 80 | 1xø | 1xø | 0,04 | 0,06 |
| 7.3.6 | | 90 | 1xø | 1xø | 0,04 | 0,06 |
| 7.4.1 | CuZn (Messing) | 100 | 1xø | 1xø | 0,04 | 0,06 |
| 7.4.2 | | 140 | 1xø | 1xø | 0,04 | 0,06 |
| 7.5.1 | CuSn (Bronze) | 90 | 1xø | 1xø | 0,04 | 0,06 |
| 7.5.2 | | 100 | 1xø | 1xø | 0,04 | 0,06 |
| 7.6.1 | CuAlFe (Ampco) | 35 | 1xø | 1xø | 0,04 | 0,06 |
| 7.6.2 | | 45 | 1xø | 1xø | 0,04 | 0,06 |
| 7.8.1 | Titan | | | | | |
| 7.8.2 | | | | | | |
| 7.8.3 | | | | | | |
| 8.1.1 | Thermoplast | | | | | |
| 8.1.2 | | | | | | |
| 8.1.3 | | | | | | |
| 8.1.4 | | | | | | |
| 8.1.5 | | | | | | |
| 8.1.6 | | | | | | |
| 8.1.7 | | | | | | |
| 8.1.8 | | | | | | |
| 8.1.9 | | | | | | |
| 8.2.1 | Duroplast | | | | | |
| 8.2.2 | | | | | | |
| 8.2.3 | | | | | | |
| 8.2.4 | | | | | | |
| 8.2.5 | | | | | | |
| 8.2.6 | | | | | | |
| 8.2.7 | | | | | | |
| 8.2.8 | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | |
| 8.3.2 | | | | | | |
| 8.3.3 | | | | | | |
| 8.3.4 | | | | | | |
| 8.3.5 | | | | | | |
| 8.3.6 | | | | | | |
| 8.4.1 | Sandwich | | | | | |
| 8.4.2 | | | | | | |
| 8.4.3 | | | | | | |
| 9.1.1 | Standard Graphit | | | | | |
| 9.1.2 | | | | | | |

# W0361-OLS, beschichtet

HPC-Schaftfräser





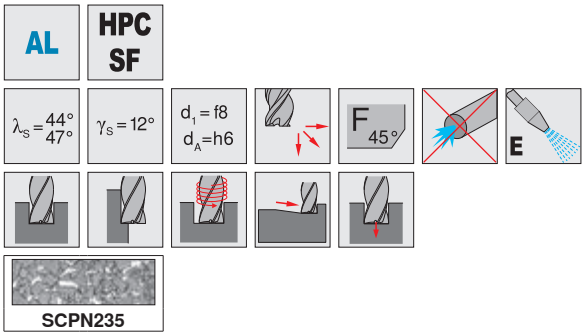

| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|---|
| 6,0 | HPC-SF.AL.0361.0600.OLS.Z3.F0020A.HA | 6 | 5,7 | 80 | 10 | 42 | 0,2 | 3 | W0361060R60 |
| 8,0 | HPC-SF.AL.0361.0800.OLS.Z3.F0020A.HA | 8 | 7,4 | 100 | 13 | 62 | 0,2 | 3 | W0361080R60 |
| 10,0 | HPC-SF.AL.0361.1000.OLS.Z3.F0020A.HA | 10 | 9,2 | 100 | 16 | 58 | 0,2 | 3 | W0361100R60 |
| 12,0 | HPC-SF.AL.0361.1200.OLS.Z3.F0020A.HA | 12 | 11 | 120 | 19 | 73 | 0,2 | 3 | W0361120R60 |

# W0460-L, beschichtet

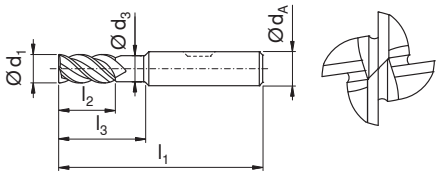
Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 600 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 600 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 600 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 480 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 360 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 240 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | Magnesium | 220 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 200 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | Kupfer | 170 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 155 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | CuZn (Messing) | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 240 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | CuSn (Bronze) | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 170 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | 55 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 70 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |
| 8.1.1 | Thermoplast | | | | | | | | |
| 8.1.2 | | | | | | | | | |
| 8.1.3 | | | | | | | | | |
| 8.1.4 | | | | | | | | | |
| 8.1.5 | | | | | | | | | |
| 8.1.6 | | | | | | | | | |
| 8.1.7 | | | | | | | | | |
| 8.1.8 | | | | | | | | | |
| 8.1.9 | | | | | | | | | |
| 8.2.1 | Duroplast | | | | | | | | |
| 8.2.2 | | | | | | | | | |
| 8.2.3 | | | | | | | | | |
| 8.2.4 | | | | | | | | | |
| 8.2.5 | | | | | | | | | |
| 8.2.6 | | | | | | | | | |
| 8.2.7 | | | | | | | | | |
| 8.2.8 | | | | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | | |
| 8.3.2 | | | | | | | | | |
| 8.3.3 | | | | | | | | | |
| 8.3.4 | | | | | | | | | |
| 8.3.5 | | | | | | | | | |
| 8.3.6 | | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | | |
| 8.4.2 | | | | | | | | | |
| 8.4.3 | | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | | |
| 9.1.2 | | | | | | | | | |






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 3,0 | HPC-SF.AL.0460.0300.L.Z4.F0010A.HA | 6 | 2,7 | 57 | 6 | 10 | 0,1 | 4 | W0460030360 | |
| 4,0 | HPC-SF.AL.0460.0400.L.Z4.F0010A.HA | 6 | 3,7 | 57 | 8 | 14 | 0,1 | 4 | W0460040360 | |
| 5,0 | HPC-SF.AL.0460.0500.L.Z4.F0010A.HA | 6 | 4,7 | 57 | 10 | 16 | 0,1 | 4 | W0460050360 | |
| 6,0 | HPC-SF.AL.0460.0600.L.Z4.F0020A.HA | 6 | 5,5 | 57 | 12 | 19 | 0,2 | 4 | W0460060360 | |
| 8,0 | HPC-SF.AL.0460.0800.L.Z4.F0020A.HA | 8 | 7,4 | 63 | 16 | 25 | 0,2 | 4 | W0460080360 | |
| 10,0 | HPC-SF.AL.0460.1000.L.Z4.F0020A.HA | 10 | 9,2 | 72 | 20 | 30 | 0,2 | 4 | W0460100360 | |
| 12,0 | HPC-SF.AL.0460.1200.L.Z4.F0020A.HA | 12 | 11 | 83 | 24 | 36 | 0,2 | 4 | W0460120360 | |
| 16,0 | HPC-SF.AL.0460.1600.L.Z4.F0020A.HB | 16 | 15 | 92 | 32 | 42 | 0,2 | 4 | | W0460160361 |
| 20,0 | HPC-SF.AL.0460.2000.L.Z4.F0020A.HB | 20 | 19 | 104 | 40 | 52 | 0,2 | 4 | | W0460200361 |

# W0460-OL, beschichtet

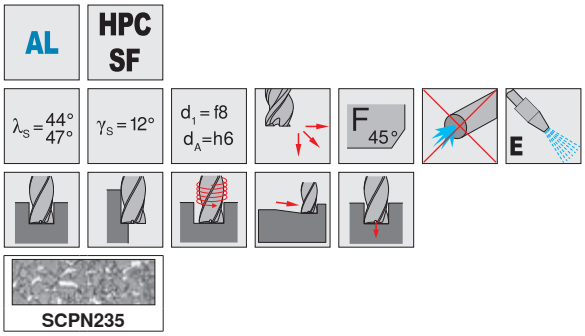
Schnittdatenempfehlung



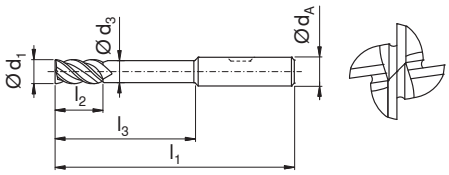
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | 300 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 300 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 300 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 260 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 200 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 140 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | **Magnesium** | 130 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 120 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | **Kupfer** | 110 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 100 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 80 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 90 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 80 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 90 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | **CuZn (Messing)** | 100 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 140 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | **CuSn (Bronze)** | 90 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 100 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | **CuAlFe (Ampco)** | 35 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 45 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | **Titan** | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | | | | | | | |
| 8.2.8 | | | | | | | | |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | | | | | | | |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | | | | | | | |
| 8.4.1 | **Sandwich** | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | | |
| 9.1.2 | | | | | | | | |

# W0460-OL, beschichtet

HPC-Schaftfräser






| d1 [mm] | Type, Bezeichnung | dA [mm] | d3 [mm] | l1 [mm] | l2 [mm] | l3 [mm] | F [mm] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 4,0 | HPC-SF.AL.0460.0400.M.Z4.F0010A.HA | 6 | 3,7 | 64 | 16 | 22 | | 4 | W0460040460 | |
| 5,0 | HPC-SF.AL.0460.0500.M.Z4.F0010A.HA | 6 | 4,7 | 64 | 17 | 24 | | 4 | W0460050460 | |
| 6,0 | HPC-SF.AL.0460.0600.OL.Z4.F0020A.HA | 6 | 5,5 | 80 | 12 | 42 | 0,2 | 4 | W0460060460 | |
| 8,0 | HPC-SF.AL.0460.0800.OL.Z4.F0020A.HA | 8 | 7,4 | 100 | 16 | 62 | 0,2 | 4 | W0460080460 | |
| 10,0 | HPC-SF.AL.0460.1000.OL.Z4.F0020A.HA | 10 | 9,2 | 100 | 20 | 58 | 0,2 | 4 | W0460100460 | |
| 12,0 | HPC-SF.AL.0460.1200.OL.Z4.F0020A.HA | 12 | 11 | 120 | 24 | 73 | 0,2 | 4 | W0460120460 | |
| 16,0 | HPC-SF.AL.0460.1600.OL.Z4.F0020A.HB | 16 | 15 | 150 | 32 | 100 | 0,2 | 4 | | W0460160461 |
| 20,0 | HPC-SF.AL.0460.2000.OL.Z4.F0020A.HB | 20 | 19 | 150 | 40 | 98 | 0,2 | 4 | | W0460200461 |

# W0224-L, unbeschichtet

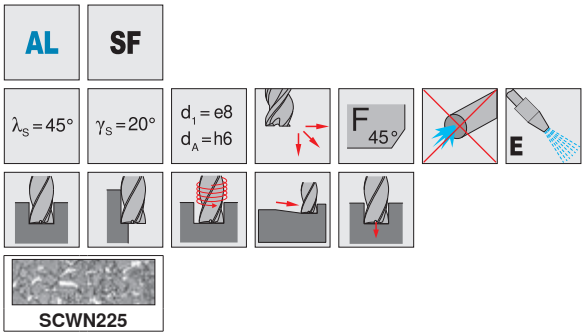
Schnittdatenempfehlung



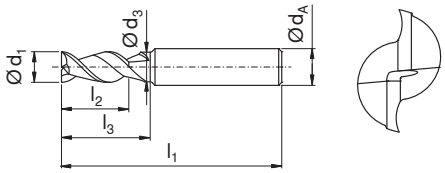
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 2,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 300 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.2 | | 300 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.3 | | 300 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.4 | | 250 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.5 | | 200 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 150 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | Magnesium | 140 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 130 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | Kupfer | 110 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 90 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 75 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 90 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 75 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 90 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | CuZn (Messing) | 130 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | CuSn (Bronze) | 90 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 110 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | 90 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 110 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |
| 8.1.1 | Thermoplast | 210 | 1xø | 1xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.2 | | 210 | 1xø | 1xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.3 | | 210 | 1xø | 1xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.4 | | 90 | 1xø | 1xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.5 | | 70 | 1xø | 1xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.6 | | 120 | 1xø | 1xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.7 | | 210 | 1xø | 1xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.8 | | 180 | 1xø | 1xø | 0,125 | 0,25 | 0,35 | 0,45 | 0,55 |
| 8.1.9 | | 50 | 1xø | 1xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.1 | Duroplast | 60 | 1xø | 1xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.2 | | 60 | 1xø | 1xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.3 | | 60 | 1xø | 1xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.4 | | 90 | 1xø | 1xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.5 | | 60 | 1xø | 1xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.6 | | 50 | 1xø | 1xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.7 | | 60 | 1xø | 1xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.8 | | 60 | 1xø | 1xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | | |
| 8.3.2 | | | | | | | | | |
| 8.3.3 | | | | | | | | | |
| 8.3.4 | | | | | | | | | |
| 8.3.5 | | | | | | | | | |
| 8.3.6 | | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | | |
| 8.4.2 | | | | | | | | | |
| 8.4.3 | | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | | |
| 9.1.2 | | | | | | | | | |

# W0224-L, unbeschichtet

Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|---|
| 2,0 | SF.AL.0224.0200.L.Z2.F0005A.HA | 6 | 1,9 | 57 | 8 | 16 | 0,05 | 2 | W0224020300 |
| 3,0 | SF.AL.0224.0300.L.Z2.F0010A.HA | 6 | 2,9 | 57 | 8 | 18 | 0,1 | 2 | W0224030300 |
| 4,0 | SF.AL.0224.0400.L.Z2.F0010A.HA | 6 | 3,9 | 57 | 11 | 18 | 0,1 | 2 | W0224040300 |
| 5,0 | SF.AL.0224.0500.L.Z2.F0010A.HA | 6 | 4,9 | 57 | 13 | 20 | 0,1 | 2 | W0224050300 |
| 6,0 | SF.AL.0224.0600.L.Z2.F0010A.HA | 6 | 5,9 | 57 | 13 | 20 | 0,1 | 2 | W0224060300 |
| 8,0 | SF.AL.0224.0800.L.Z2.F0010A.HA | 8 | 7,7 | 63 | 19 | 26 | 0,1 | 2 | W0224080300 |
| 10,0 | SF.AL.0224.1000.L.Z2.F0010A.HA | 10 | 9,7 | 72 | 22 | 29 | 0,1 | 2 | W0224100300 |
| 12,0 | SF.AL.0224.1200.L.Z2.F0010A.HA | 12 | 11,7 | 83 | 26 | 36 | 0,1 | 2 | W0224120300 |
| 14,0 | SF.AL.0224.1400.L.Z2.F0010A.HA | 14 | 13,7 | 83 | 26 | 36 | 0,1 | 2 | W0224140300 |
| 16,0 | SF.AL.0224.1600.L.Z2.F0010A.HA | 16 | 15,5 | 92 | 32 | 42 | 0,1 | 2 | W0224160300 |
| 18,0 | SF.AL.0224.1800.L.Z2.F0010A.HA | 18 | 17,5 | 92 | 32 | 42 | 0,1 | 2 | W0224180300 |
| 20,0 | SF.AL.0224.2000.L.Z2.F0010A.HA | 20 | 19,5 | 104 | 38 | 52 | 0,1 | 2 | W0224200300 |

# W0306-L, unbeschichtet

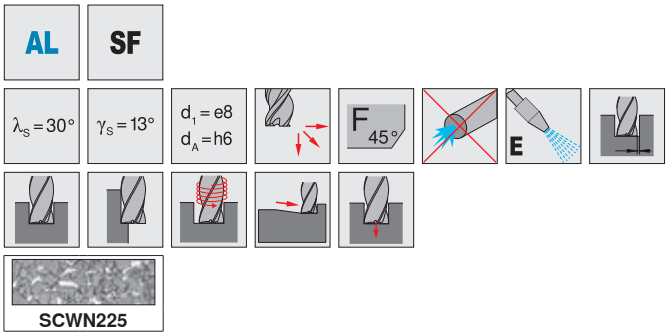
Schnittdatenempfehlung



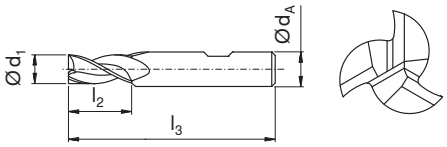
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 2,8 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | 250 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.2 | | 250 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.3 | | 250 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.4 | | 200 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.5 | | 180 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 150 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | **Magnesium** | 180 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 160 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | **Kupfer** | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | **CuZn (Messing)** | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | **CuSn (Bronze)** | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | **CuAlFe (Ampco)** | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | **Titan** | 50 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.2 | | 35 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.3 | | 20 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 8.1.1 | **Thermoplast** | | | | | | | | |
| 8.1.2 | | | | | | | | | |
| 8.1.3 | | | | | | | | | |
| 8.1.4 | | | | | | | | | |
| 8.1.5 | | | | | | | | | |
| 8.1.6 | | | | | | | | | |
| 8.1.7 | | | | | | | | | |
| 8.1.8 | | | | | | | | | |
| 8.1.9 | | | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | | | |
| 8.2.2 | | | | | | | | | |
| 8.2.3 | | | | | | | | | |
| 8.2.4 | | | | | | | | | |
| 8.2.5 | | | | | | | | | |
| 8.2.6 | | | | | | | | | |
| 8.2.7 | | | | | | | | | |
| 8.2.8 | | | | | | | | | |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | | | | | |
| 8.3.2 | | | | | | | | | |
| 8.3.3 | | | | | | | | | |
| 8.3.4 | | | | | | | | | |
| 8.3.5 | | | | | | | | | |
| 8.3.6 | | | | | | | | | |
| 8.4.1 | **Sandwich** | | | | | | | | |
| 8.4.2 | | | | | | | | | |
| 8.4.3 | | | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | | | |
| 9.1.2 | | | | | | | | | |

# W0306-L, unbeschichtet

Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | F [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|
| 2,8 | SF.AL.0306.0280.L.Z3.F0005A.HB | 6 | 57 | 8 | 0,05 | 3 | W0306028301 |
| 3,0 | SF.AL.0306.0300.L.Z3.F0010A.HB | 6 | 57 | 8 | 0,1 | 3 | W0306030301 |
| 3,8 | SF.AL.0306.0380.L.Z3.F0010A.HB | 6 | 57 | 11 | 0,1 | 3 | W0306038301 |
| 4,0 | SF.AL.0306.0400.L.Z3.F0010A.HB | 6 | 57 | 11 | 0,1 | 3 | W0306040301 |
| 4,8 | SF.AL.0306.0480.L.Z3.F0010A.HB | 6 | 57 | 13 | 0,1 | 3 | W0306048301 |
| 5,0 | SF.AL.0306.0500.L.Z3.F0010A.HB | 6 | 57 | 13 | 0,1 | 3 | W0306050301 |
| 5,8 | SF.AL.0306.0580.L.Z3.F0010A.HB | 6 | 57 | 13 | 0,1 | 3 | W0306058301 |
| 6,0 | SF.AL.0306.0600.L.Z3.F0010A.HB | 6 | 57 | 13 | 0,1 | 3 | W0306060301 |
| 6,8 | SF.AL.0306.0680.L.Z3.F0010A.HB | 8 | 63 | 16 | 0,1 | 3 | W0306068301 |
| 7,0 | SF.AL.0306.0700.L.Z3.F0010A.HB | 8 | 63 | 16 | 0,1 | 3 | W0306070301 |
| 7,8 | SF.AL.0306.0780.L.Z3.F0010A.HB | 8 | 63 | 19 | 0,1 | 3 | W0306078301 |
| 8,0 | SF.AL.0306.0800.L.Z3.F0010A.HB | 8 | 63 | 19 | 0,1 | 3 | W0306080301 |
| 8,7 | SF.AL.0306.0870.L.Z3.F0010A.HB | 10 | 72 | 19 | 0,1 | 3 | W0306087301 |
| 9,0 | SF.AL.0306.0900.L.Z3.F0010A.HB | 10 | 72 | 19 | 0,1 | 3 | W0306090301 |
| 9,7 | SF.AL.0306.0970.L.Z3.F0010A.HB | 10 | 72 | 22 | 0,1 | 3 | W0306097301 |
| 10,0 | SF.AL.0306.1000.L.Z3.F0010A.HB | 10 | 72 | 22 | 0,1 | 3 | W0306100301 |
| 10,7 | SF.AL.0306.1070.L.Z3.F0010A.HB | 12 | 83 | 26 | 0,1 | 3 | W0306107301 |
| 11,0 | SF.AL.0306.1100.L.Z3.F0010A.HB | 12 | 83 | 26 | 0,1 | 3 | W0306110301 |
| 11,7 | SF.AL.0306.1170.L.Z3.F0010A.HB | 12 | 83 | 26 | 0,1 | 3 | W0306117301 |
| 12,0 | SF.AL.0306.1200.L.Z3.F0010A.HB | 12 | 83 | 26 | 0,1 | 3 | W0306120301 |
| 12,7 | SF.AL.0306.1270.L.Z3.F0010A.HB | 14 | 83 | 26 | 0,1 | 3 | W0306127301 |
| 13,7 | SF.AL.0306.1370.L.Z3.F0010A.HB | 14 | 83 | 26 | 0,1 | 3 | W0306137301 |
| 14,0 | SF.AL.0306.1400.L.Z3.F0010A.HB | 14 | 83 | 26 | 0,1 | 3 | W0306140301 |
| 15,7 | SF.AL.0306.1570.L.Z3.F0010A.HB | 16 | 92 | 32 | 0,1 | 3 | W0306157301 |
| 16,0 | SF.AL.0306.1600.L.Z3.F0010A.HB | 16 | 92 | 32 | 0,1 | 3 | W0306160301 |
| 17,7 | SF.AL.0306.1770.L.Z3.F0010A.HB | 18 | 92 | 32 | 0,1 | 3 | W0306177301 |
| 18,0 | SF.AL.0306.1800.L.Z3.F0010A.HB | 18 | 92 | 32 | 0,1 | 3 | W0306180301 |
| 19,7 | SF.AL.0306.1970.L.Z3.F0010A.HB | 20 | 104 | 38 | 0,1 | 3 | W0306197301 |
| 20,0 | SF.AL.0306.2000.L.Z3.F0010A.HB | 20 | 104 | 38 | 0,1 | 3 | W0306200301 |

# W0314-L, unbeschichtet

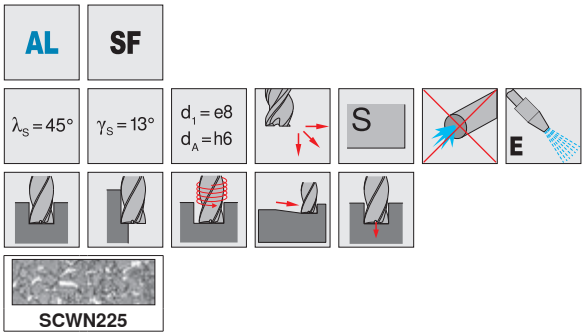
Schnittdatenempfehlung



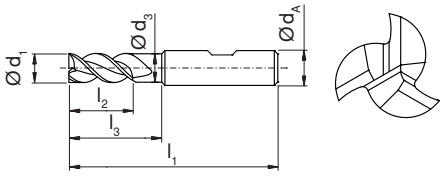
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 250 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.2 | | 250 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.3 | | 250 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.4 | | 200 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.5 | | 180 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 150 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | Magnesium | 180 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 160 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | Kupfer | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | CuZn (Messing) | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | CuSn (Bronze) | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | Titan | 50 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.2 | | 35 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.3 | | 20 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 8.1.1 | Thermoplast | | | | | | | | |
| 8.1.2 | | | | | | | | | |
| 8.1.3 | | | | | | | | | |
| 8.1.4 | | | | | | | | | |
| 8.1.5 | | | | | | | | | |
| 8.1.6 | | | | | | | | | |
| 8.1.7 | | | | | | | | | |
| 8.1.8 | | | | | | | | | |
| 8.1.9 | | | | | | | | | |
| 8.2.1 | Duroplast | | | | | | | | |
| 8.2.2 | | | | | | | | | |
| 8.2.3 | | | | | | | | | |
| 8.2.4 | | | | | | | | | |
| 8.2.5 | | | | | | | | | |
| 8.2.6 | | | | | | | | | |
| 8.2.7 | | | | | | | | | |
| 8.2.8 | | | | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | | |
| 8.3.2 | | | | | | | | | |
| 8.3.3 | | | | | | | | | |
| 8.3.4 | | | | | | | | | |
| 8.3.5 | | | | | | | | | |
| 8.3.6 | | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | | |
| 8.4.2 | | | | | | | | | |
| 8.4.3 | | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | | |
| 9.1.2 | | | | | | | | | |

# W0314-L, unbeschichtet

Schaftfräser





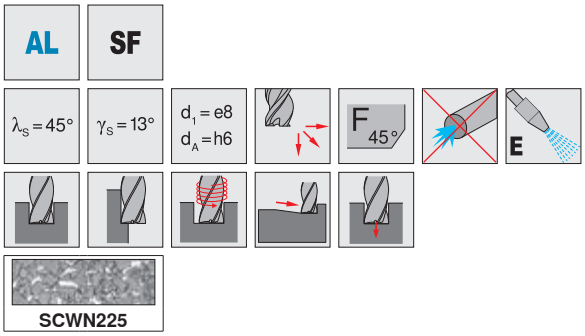

| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|---|
| 3,0 | SF.AL.0314.0300.L.Z3.S.HB | 6 | 2,8 | 57 | 8 | 15 | 3 | W0314030301 |
| 3,5 | SF.AL.0314.0350.L.Z3.S.HB | 6 | 3,3 | 57 | 11 | 15 | 3 | W0314035301 |
| 4,0 | SF.AL.0314.0400.L.Z3.S.HB | 6 | 3,8 | 57 | 11 | 15 | 3 | W0314040301 |
| 4,5 | SF.AL.0314.0450.L.Z3.S.HB | 6 | 4,3 | 57 | 13 | 21 | 3 | W0314045301 |
| 5,0 | SF.AL.0314.0500.L.Z3.S.HB | 6 | 4,8 | 57 | 13 | 21 | 3 | W0314050301 |
| 5,5 | SF.AL.0314.0550.L.Z3.S.HB | 6 | 5,3 | 57 | 13 | 21 | 3 | W0314055301 |
| 6,0 | SF.AL.0314.0600.L.Z3.S.HB | 6 | 5,8 | 57 | 13 | 21 | 3 | W0314060301 |
| 6,5 | SF.AL.0314.0650.L.Z3.S.HB | 8 | 6,3 | 63 | 16 | 27 | 3 | W0314065301 |
| 7,0 | SF.AL.0314.0700.L.Z3.S.HB | 8 | 6,8 | 63 | 16 | 27 | 3 | W0314070301 |
| 7,5 | SF.AL.0314.0750.L.Z3.S.HB | 8 | 7,3 | 63 | 19 | 27 | 3 | W0314075301 |
| 8,0 | SF.AL.0314.0800.L.Z3.S.HB | 8 | 7,8 | 63 | 21 | 27 | 3 | W0314080301 |
| 8,5 | SF.AL.0314.0850.L.Z3.S.HB | 10 | 8,3 | 72 | 21 | 32 | 3 | W0314085301 |
| 9,0 | SF.AL.0314.0900.L.Z3.S.HB | 10 | 8,8 | 72 | 21 | 32 | 3 | W0314090301 |
| 9,5 | SF.AL.0314.0950.L.Z3.S.HB | 10 | 9,3 | 72 | 22 | 32 | 3 | W0314095301 |
| 10,0 | SF.AL.0314.1000.L.Z3.S.HB | 10 | 9,8 | 72 | 22 | 32 | 3 | W0314100301 |
| 11,0 | SF.AL.0314.1100.L.Z3.S.HB | 12 | 10,8 | 83 | 26 | 38 | 3 | W0314110301 |
| 12,0 | SF.AL.0314.1200.L.Z3.S.HB | 12 | 11,8 | 83 | 26 | 38 | 3 | W0314120301 |
| 14,0 | SF.AL.0314.1400.L.Z3.S.HB | 14 | 13,8 | 83 | 26 | 38 | 3 | W0314140301 |
| 16,0 | SF.AL.0314.1600.L.Z3.S.HB | 16 | 15,7 | 92 | 36 | 44 | 3 | W0314160301 |
| 18,0 | SF.AL.0314.1800.L.Z3.S.HB | 18 | 17,7 | 92 | 36 | 44 | 3 | W0314180301 |
| 20,0 | SF.AL.0314.2000.L.Z3.S.HB | 20 | 19,7 | 104 | 41 | 54 | 3 | W0314200301 |

# W0316-S, unbeschichtet

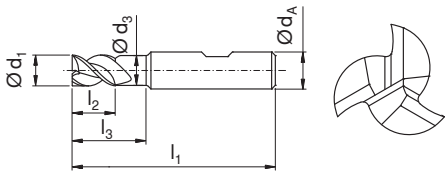
Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 250 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.2 | | 250 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.3 | | 250 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.4 | | 200 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.5 | | 180 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 150 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | Magnesium | 180 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 160 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | Kupfer | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | CuZn (Messing) | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | CuSn (Bronze) | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | Titan | 50 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.2 | | 35 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.3 | | 20 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 8.1.1 | Thermoplast | | | | | | | | |
| 8.1.2 | | | | | | | | | |
| 8.1.3 | | | | | | | | | |
| 8.1.4 | | | | | | | | | |
| 8.1.5 | | | | | | | | | |
| 8.1.6 | | | | | | | | | |
| 8.1.7 | | | | | | | | | |
| 8.1.8 | | | | | | | | | |
| 8.1.9 | | | | | | | | | |
| 8.2.1 | Duroplast | | | | | | | | |
| 8.2.2 | | | | | | | | | |
| 8.2.3 | | | | | | | | | |
| 8.2.4 | | | | | | | | | |
| 8.2.5 | | | | | | | | | |
| 8.2.6 | | | | | | | | | |
| 8.2.7 | | | | | | | | | |
| 8.2.8 | | | | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | | |
| 8.3.2 | | | | | | | | | |
| 8.3.3 | | | | | | | | | |
| 8.3.4 | | | | | | | | | |
| 8.3.5 | | | | | | | | | |
| 8.3.6 | | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | | |
| 8.4.2 | | | | | | | | | |
| 8.4.3 | | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | | |
| 9.1.2 | | | | | | | | | |





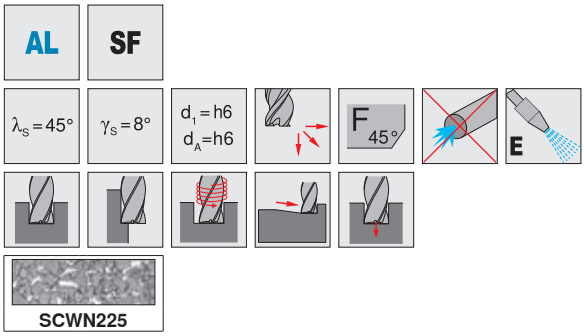

| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|---|---|
| 3,0 | SF.AL.0316.0300.S.Z3.F0010A.HB | 6 | 2,9 | 50 | 5 | 12 | 0,1 | 3 | W0316030101 |
| 3,5 | SF.AL.0316.0350.S.Z3.F0010A.HB | 6 | 3,4 | 50 | 6 | 13 | 0,1 | 3 | W0316035101 |
| 4,0 | SF.AL.0316.0400.S.Z3.F0010A.HB | 6 | 3,9 | 54 | 8 | 15 | 0,1 | 3 | W0316040101 |
| 4,5 | SF.AL.0316.0450.S.Z3.F0010A.HB | 6 | 4,4 | 54 | 8 | 15 | 0,1 | 3 | W0316045101 |
| 5,0 | SF.AL.0316.0500.S.Z3.F0010A.HB | 6 | 4,9 | 54 | 9 | 16 | 0,1 | 3 | W0316050101 |
| 5,5 | SF.AL.0316.0550.S.Z3.F0010A.HB | 6 | 5,4 | 54 | 10 | 17 | 0,1 | 3 | W0316055101 |
| 6,0 | SF.AL.0316.0600.S.Z3.F0010A.HB | 6 | 5,9 | 54 | 10 | 17 | 0,1 | 3 | W0316060101 |
| 6,5 | SF.AL.0316.0650.S.Z3.F0010A.HB | 8 | 6,3 | 58 | 11 | 19 | 0,1 | 3 | W0316065101 |
| 7,0 | SF.AL.0316.0700.S.Z3.F0010A.HB | 8 | 6,8 | 58 | 11 | 19 | 0,1 | 3 | W0316070101 |
| 7,5 | SF.AL.0316.0750.S.Z3.F0010A.HB | 8 | 7,3 | 58 | 12 | 20 | 0,1 | 3 | W0316075101 |
| 8,0 | SF.AL.0316.0800.S.Z3.F0010A.HB | 8 | 7,8 | 58 | 12 | 20 | 0,1 | 3 | W0316080101 |
| 8,5 | SF.AL.0316.0850.S.Z3.F0010A.HB | 10 | 8,3 | 66 | 13 | 23 | 0,1 | 3 | W0316085101 |
| 9,0 | SF.AL.0316.0900.S.Z3.F0010A.HB | 10 | 8,8 | 66 | 13 | 23 | 0,1 | 3 | W0316090101 |
| 9,5 | SF.AL.0316.0950.S.Z3.F0010A.HB | 10 | 9,3 | 66 | 14 | 24 | 0,1 | 3 | W0316095101 |
| 10,0 | SF.AL.0316.1000.S.Z3.F0010A.HB | 10 | 9,7 | 66 | 14 | 24 | 0,1 | 3 | W0316100101 |
| 12,0 | SF.AL.0316.1200.S.Z3.F0010A.HB | 12 | 11,7 | 73 | 16 | 26 | 0,1 | 3 | W0316120101 |
| 16,0 | SF.AL.0316.1600.S.Z3.F0010A.HB | 16 | 15,5 | 82 | 22 | 32 | 0,1 | 3 | W0316160101 |
| 20,0 | SF.AL.0316.2000.S.Z3.F0010A.HB | 20 | 19,5 | 92 | 26 | 40 | 0,1 | 3 | W0316200101 |

# W0319-L, unbeschichtet

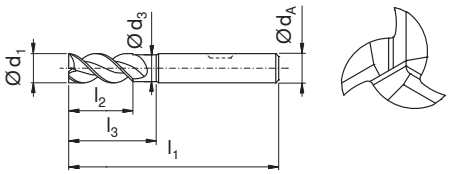
Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 480 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 360 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 240 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | Magnesium | 220 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 200 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | Kupfer | 170 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 155 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | CuZn (Messing) | 180 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 240 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | CuSn (Bronze) | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 170 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | 55 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 70 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | Thermoplast | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | Duroplast | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | | | | | | | |
| 8.2.8 | | | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | | | | | | | |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | |
| 9.1.2 | | | | | | | | |





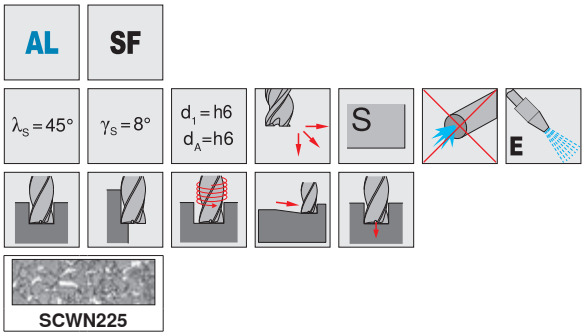

| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 4,0 | SF.AL.0319.0400.L.Z3.F0010A.HA | 6 | 3,7 | 57 | 11 | 17 | 0,1 | 3 | W0319040300 | |
| 6,0 | SF.AL.0319.0600.L.Z3.F0020A.HA | 6 | 5,7 | 57 | 13 | 19 | 0,2 | 3 | W0319060300 | |
| 8,0 | SF.AL.0319.0800.L.Z3.F0020A.HA | 8 | 7,4 | 63 | 21 | 25 | 0,2 | 3 | W0319080300 | |
| 10,0 | SF.AL.0319.1000.L.Z3.F0020A.HA | 10 | 9,2 | 72 | 22 | 30 | 0,2 | 3 | W0319100300 | |
| 12,0 | SF.AL.0319.1200.L.Z3.F0020A.HA | 12 | 11 | 83 | 26 | 36 | 0,2 | 3 | W0319120300 | |
| 14,0 | SF.AL.0319.1400.L.Z3.F0020A.HA | 14 | 13 | 83 | 26 | 36 | 0,2 | 3 | W0319140300 | |
| 16,0 | SF.AL.0319.1600.L.Z3.F0020A.HB | 16 | 15 | 92 | 36 | 42 | 0,2 | 3 | | W0319160301 |
| 18,0 | SF.AL.0319.1800.L.Z3.F0020A.HB | 18 | 17 | 92 | 36 | 42 | 0,2 | 3 | | W0319180301 |
| 20,0 | SF.AL.0319.2000.L.Z3.F0020A.HB | 20 | 19 | 104 | 41 | 52 | 0,2 | 3 | | W0319200301 |

# W0320-L, unbeschichtet

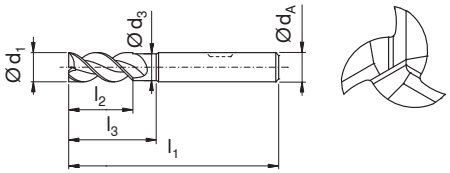
Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 480 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 360 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 240 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | **Magnesium** | 220 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 200 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | **Kupfer** | 170 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 155 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | **CuZn (Messing)** | 180 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 240 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | **CuSn (Bronze)** | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 170 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | **CuAlFe (Ampco)** | 55 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 70 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | **Titan** | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | | | | | | | |
| 8.2.8 | | | | | | | | |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | | | | | | | |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | | | | | | | |
| 8.4.1 | **Sandwich** | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | | |
| 9.1.2 | | | | | | | | |






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|
| 4,0 | SF.AL.0320.0400.L.Z3.S.HA | 6 | 3,7 | 57 | 11 | 17 | 3 | W0320040300 | |
| 5,0 | SF.AL.0320.0500.L.Z3.S.HA | 6 | 4,7 | 57 | 13 | 19 | 3 | W0320050300 | |
| 6,0 | SF.AL.0320.0600.L.Z3.S.HA | 6 | 5,7 | 57 | 13 | 19 | 3 | W0320060300 | |
| 8,0 | SF.AL.0320.0800.L.Z3.S.HA | 8 | 7,4 | 63 | 21 | 25 | 3 | W0320080300 | |
| 10,0 | SF.AL.0320.1000.L.Z3.S.HA | 10 | 9,2 | 72 | 22 | 30 | 3 | W0320100300 | |
| 12,0 | SF.AL.0320.1200.L.Z3.S.HA | 12 | 11 | 83 | 26 | 36 | 3 | W0320120300 | |
| 14,0 | SF.AL.0320.1400.L.Z3.S.HA | 14 | 13 | 83 | 26 | 36 | 3 | W0320140300 | |
| 16,0 | SF.AL.0320.1600.L.Z3.S.HB | 16 | 15 | 92 | 36 | 42 | 3 | | W0320160301 |
| 18,0 | SF.AL.0320.1800.L.Z3.S.HB | 18 | 17 | 92 | 36 | 42 | 3 | | W0320180301 |
| 20,0 | SF.AL.0320.2000.L.Z3.S.HB | 20 | 19 | 104 | 41 | 52 | 3 | | W0320200301 |

# W0305-S, beschichtet

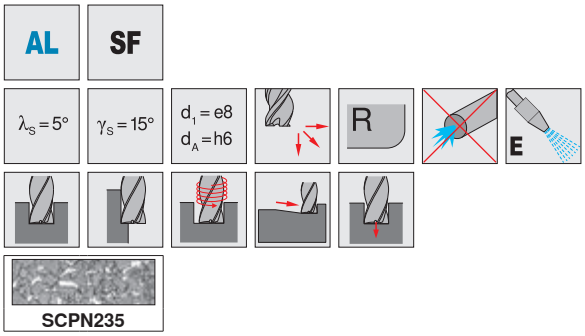
Schnittdatenempfehlung



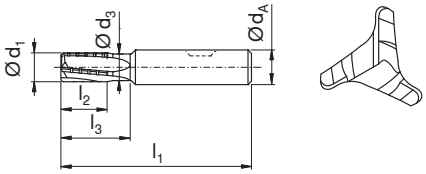
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 5,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 480 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 360 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 240 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | **Magnesium** | 220 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 200 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | **Kupfer** | 170 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 155 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | **CuZn (Messing)** | 180 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 240 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | **CuSn (Bronze)** | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 170 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | **CuAlFe (Ampco)** | 55 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 70 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | **Titan** | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | | | | | | | |
| 8.2.8 | | | | | | | | |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | | | | | | | |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | | | | | | | |
| 8.4.1 | **Sandwich** | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | | |
| 9.1.2 | | | | | | | | |

# W0305-S, beschichtet

Schaftfräser





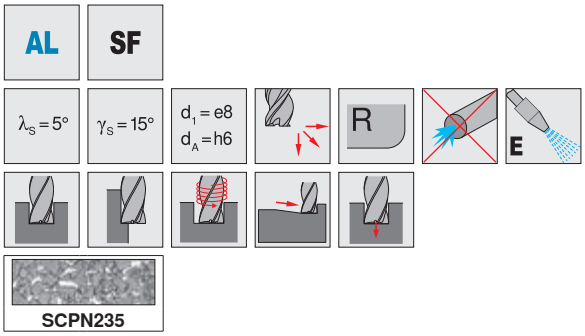

| d1 [mm] | Type, Bezeichnung | dA [mm] | d3 [mm] | l1 [mm] | l2 [mm] | l3 [mm] | R [mm] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 5,0 | SF.AL.0305.0500.S.Z3.R0015.HA | 6 | 4,7 | 54 | 8 | 16 | 0,15 | 3 | W0305050160 | |
| 6,0 | SF.AL.0305.0600.S.Z3.R0020.HA | 6 | 5,7 | 54 | 10 | 17 | 0,2 | 3 | W0305060160 | |
| 8,0 | SF.AL.0305.0800.S.Z3.R0025.HA | 8 | 7,4 | 58 | 13 | 20 | 0,25 | 3 | W0305080160 | |
| 10,0 | SF.AL.0305.1000.S.Z3.R0030.HA | 10 | 9,2 | 66 | 16 | 24 | 0,3 | 3 | W0305100160 | |
| 12,0 | SF.AL.0305.1200.S.Z3.R0035.HA | 12 | 11 | 73 | 19 | 26 | 0,35 | 3 | W0305120160 | |
| 16,0 | SF.AL.0305.1600.S.Z3.R0050.HB | 16 | 15 | 82 | 25 | 32 | 0,5 | 3 | | W0305160161 |
| 20,0 | SF.AL.0305.2000.S.Z3.R0060.HB | 20 | 19 | 92 | 32 | 40 | 0,6 | 3 | | W0305200161 |

# W0305-L, beschichtet

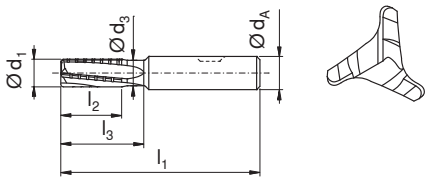
Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 5,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 480 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 360 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 240 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | **Magnesium** | 220 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 200 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | **Kupfer** | 170 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 155 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | **CuZn (Messing)** | 180 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 240 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | **CuSn (Bronze)** | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 170 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | **CuAlFe (Ampco)** | 55 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 70 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | **Titan** | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | | | | | | | |
| 8.2.8 | | | | | | | | |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | | | | | | | |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | | | | | | | |
| 8.4.1 | **Sandwich** | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | | |
| 9.1.2 | | | | | | | | |






| d1 [mm] | Type, Bezeichnung | dA [mm] | d3 [mm] | l1 [mm] | l2 [mm] | l3 [mm] | R [mm] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 5,0 | SF.AL.0305.0500.L.Z3.R0015.HA | 6 | 4,7 | 57 | 13 | 18 | 0,15 | 3 | W0305050360 | |
| 6,0 | SF.AL.0305.0600.L.Z3.R0020.HA | 6 | 5,7 | 57 | 13 | 18 | 0,2 | 3 | W0305060360 | |
| 8,0 | SF.AL.0305.0800.L.Z3.R0025.HA | 8 | 7,4 | 63 | 21 | 25 | 0,25 | 3 | W0305080360 | |
| 10,0 | SF.AL.0305.1000.L.Z3.R0030.HA | 10 | 9,2 | 72 | 22 | 30 | 0,3 | 3 | W0305100360 | |
| 12,0 | SF.AL.0305.1200.L.Z3.R0035.HA | 12 | 11 | 83 | 26 | 36 | 0,35 | 3 | W0305120360 | |
| 16,0 | SF.AL.0305.1600.L.Z3.R0050.HB | 16 | 15 | 92 | 36 | 42 | 0,5 | 3 | | W0305160361 |
| 20,0 | SF.AL.0305.2000.L.Z3.R0060.HB | 20 | 19 | 104 | 41 | 52 | 0,6 | 3 | | W0305200361 |

# W0305-OLS, beschichtet

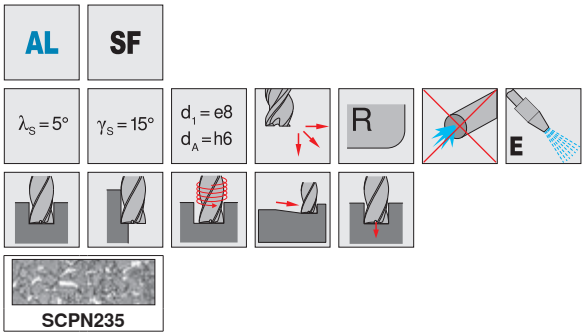
Schnittdatenempfehlung



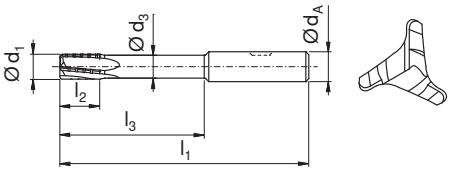
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 5,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | 300 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 300 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 300 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 260 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 200 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 140 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | **Magnesium** | 130 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 120 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | **Kupfer** | 110 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 100 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 80 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 90 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 80 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 90 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | **CuZn (Messing)** | 100 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 140 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | **CuSn (Bronze)** | 90 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 100 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | **CuAlFe (Ampco)** | 35 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 45 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | **Titan** | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | | | | | | | |
| 8.2.8 | | | | | | | | |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | | | | | | | |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | | | | | | | |
| 8.4.1 | **Sandwich** | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | | |
| 9.1.2 | | | | | | | | |

# W0305-OLS, beschichtet

Schaftfräser





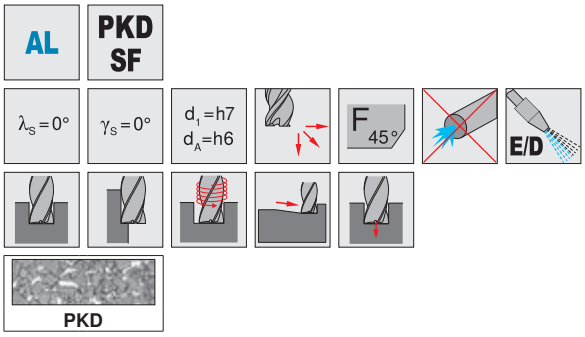

| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | R [mm] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 5,0 | SF.AL.0305.0500.OLS.Z3.R0015.HA | 6 | 4,7 | 80 | 8 | 30 | 0,15 | 3 | W0305050460 | |
| 6,0 | SF.AL.0305.0600.OLS.Z3.R0020.HA | 6 | 5,7 | 80 | 10 | 42 | 0,2 | 3 | W0305060460 | |
| 8,0 | SF.AL.0305.0800.OLS.Z3.R0025.HA | 8 | 7,4 | 100 | 13 | 62 | 0,25 | 3 | W0305080460 | |
| 10,0 | SF.AL.0305.1000.OLS.Z3.R0030.HA | 10 | 9,2 | 100 | 16 | 58 | 0,3 | 3 | W0305100460 | |
| 12,0 | SF.AL.0305.1200.OLS.Z3.R0035.HA | 12 | 11 | 120 | 19 | 73 | 0,35 | 3 | W0305120460 | |
| 16,0 | SF.AL.0305.1600.OLS.Z3.R0050.HB | 16 | 15 | 150 | 25 | 100 | 0,5 | 3 | | W0305160461 |
| 20,0 | SF.AL.0305.2000.OLS.Z3.R0060.HB | 20 | 19 | 150 | 32 | 98 | 0,6 | 3 | | W0305200461 |

# WP200-L, PKD bestückt

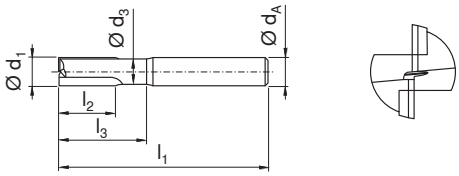
Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | $f_z$ [mm] > Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 10,0 |
|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 700 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.1.2 | | 600 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.1.3 | | 450 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.1.4 | | 500 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.1.5 | | 450 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.1.6 | | 250 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | 400 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |
| 8.1.1 | Thermoplast | 350 | 0,1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 8.1.2 | | 350 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.3 | | 350 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.4 | | 150 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.5 | | 120 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.6 | | 200 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.7 | | 350 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.8 | | 300 | 0,1xø | 1xø | 0,125 | 0,25 | 0,35 |
| 8.1.9 | | 80 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.1 | Duroplast | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.2 | | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.3 | | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.4 | | 150 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.5 | | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.6 | | 80 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.7 | | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.8 | | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.3.1 | faserverstärkter Kunststoff | 105 | 0,1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 8.3.2 | | 100 | 0,1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.3.3 | | 150 | 0,1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.3.4 | | 100 | 0,1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.3.5 | | | | | | | |
| 8.3.6 | | 120 | 0,1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.4.1 | Sandwich | | | | | | |
| 8.4.2 | | | | | | | |
| 8.4.3 | | | | | | | |
| 9.1.1 | Standard Graphit | 800 | 0,1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 9.1.2 | | 550 | 0,1xø | 1xø | 0,04 | 0,06 | 0,08 |






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|---|
| 3,0 | SF.AL.P200.0300.L.Z2.F0010A.HA | 6 | 2,8 | 57 | 6 | 11 | 0,1 | 2 | WP200030300 |
| 4,0 | SF.AL.P200.0400.L.Z2.F0010A.HA | 6 | 3,5 | 57 | 8 | 13 | 0,1 | 2 | WP200040300 |
| 5,0 | SF.AL.P200.0500.L.Z2.F0010A.HA | 6 | 4,4 | 57 | 10 | 15 | 0,1 | 2 | WP200050300 |
| 6,0 | SF.AL.P200.0600.L.Z2.F0010A.HA | 6 | 5,4 | 57 | 12 | 19 | 0,1 | 2 | WP200060300 |
| 8,0 | SF.AL.P200.0800.L.Z2.F0010A.HA | 8 | 7,2 | 64 | 16 | 26 | 0,1 | 2 | WP200080300 |
| 10,0 | SF.AL.P200.1000.L.Z2.F0010A.HA | 10 | 9 | 74 | 20 | 31 | 0,1 | 2 | WP200100300 |

# WP200-OL, PKD bestückt

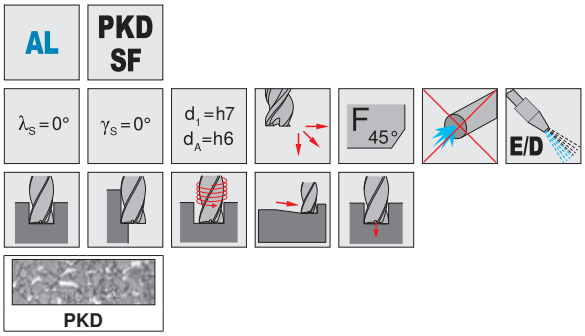
Schnittdatenempfehlung



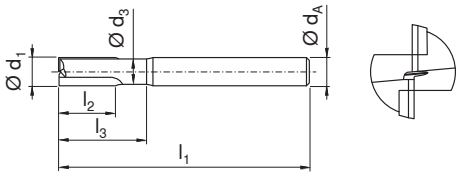
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | $f_z$ [mm] > Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 10,0 |
|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 700 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.1.2 | | 600 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.1.3 | | 450 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.1.4 | | 500 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.1.5 | | 450 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.1.6 | | 250 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | 400 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |
| 8.1.1 | Thermoplast | 350 | 0,1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 8.1.2 | | 350 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.3 | | 350 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.4 | | 150 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.5 | | 120 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.6 | | 200 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.7 | | 350 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.8 | | 300 | 0,1xø | 1xø | 0,125 | 0,25 | 0,35 |
| 8.1.9 | | 80 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.1 | Duroplast | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.2 | | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.3 | | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.4 | | 150 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.5 | | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.6 | | 80 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.7 | | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.8 | | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.3.1 | faserverstärkter Kunststoff | 105 | 0,1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 8.3.2 | | 100 | 0,1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.3.3 | | 150 | 0,1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.3.4 | | 100 | 0,1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.3.5 | | | | | | | |
| 8.3.6 | | 120 | 0,1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.4.1 | Sandwich | | | | | | |
| 8.4.2 | | | | | | | |
| 8.4.3 | | | | | | | |
| 9.1.1 | Standard Graphit | 800 | 0,1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 9.1.2 | | 550 | 0,1xø | 1xø | 0,04 | 0,06 | 0,08 |

# WP200-OL, PKD bestückt

Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | Material |
|---|---|---|---|---|---|---|---|---|---|
| 3,0 | SF.AL.P200.0300.OL.Z2.F0010A.HA | 6 | 2,8 | 100 | 6 | 11 | 0,1 | 2 | WP200030400 |
| 4,0 | SF.AL.P200.0400.OL.Z2.F0010A.HA | 6 | 3,5 | 100 | 8 | 13 | 0,1 | 2 | WP200040400 |
| 5,0 | SF.AL.P200.0500.OL.Z2.F0010A.HA | 6 | 4,4 | 100 | 10 | 15 | 0,1 | 2 | WP200050400 |
| 6,0 | SF.AL.P200.0600.OL.Z2.F0010A.HA | 6 | 5,4 | 100 | 12 | 19 | 0,1 | 2 | WP200060400 |
| 8,0 | SF.AL.P200.0800.OL.Z2.F0010A.HA | 8 | 7,2 | 100 | 16 | 26 | 0,1 | 2 | WP200080400 |
| 10,0 | SF.AL.P200.1000.OL.Z2.F0010A.HA | 10 | 9 | 100 | 20 | 31 | 0,1 | 2 | WP200100400 |

# WP201-L, PKD bestückt

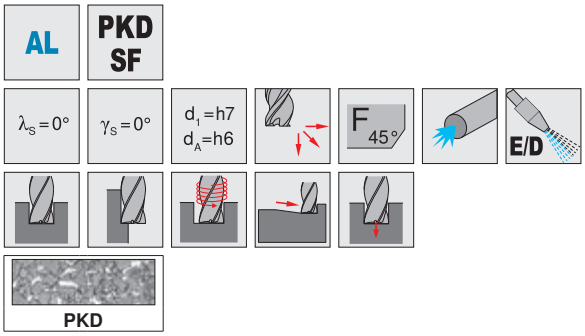
Schnittdatenempfehlung



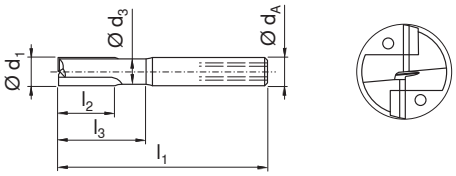
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | $f_z$ [mm] > Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 10,0 |
|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 700 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.1.2 | | 600 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.1.3 | | 450 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.1.4 | | 500 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.1.5 | | 450 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.1.6 | | 250 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | 400 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |
| 8.1.1 | Thermoplast | 350 | 0,1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 8.1.2 | | 350 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.3 | | 350 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.4 | | 150 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.5 | | 120 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.6 | | 200 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.7 | | 350 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.8 | | 300 | 0,1xø | 1xø | 0,125 | 0,25 | 0,35 |
| 8.1.9 | | 80 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.1 | Duroplast | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.2 | | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.3 | | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.4 | | 150 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.5 | | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.6 | | 80 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.7 | | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.8 | | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.3.1 | faserverstärkter Kunststoff | 105 | 0,1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 8.3.2 | | 100 | 0,1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.3.3 | | 150 | 0,1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.3.4 | | 100 | 0,1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.3.5 | | | | | | | |
| 8.3.6 | | 120 | 0,1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.4.1 | Sandwich | | | | | | |
| 8.4.2 | | | | | | | |
| 8.4.3 | | | | | | | |
| 9.1.1 | Standard Graphit | 800 | 0,1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 9.1.2 | | 550 | 0,1xø | 1xø | 0,04 | 0,06 | 0,08 |

# WP201-L, PKD bestückt

Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|---|
| 3,0 | SF.AL.P201.0300.L.Z2.F0010A.HA | 6 | 2,8 | 57 | 6 | 11 | 0,1 | 2 | WP201030300 |
| 4,0 | SF.AL.P201.0400.L.Z2.F0010A.HA | 6 | 3,5 | 57 | 8 | 13 | 0,1 | 2 | WP201040300 |
| 5,0 | SF.AL.P201.0500.L.Z2.F0010A.HA | 6 | 4,4 | 57 | 10 | 15 | 0,1 | 2 | WP201050300 |
| 6,0 | SF.AL.P201.0600.L.Z2.F0010A.HA | 6 | 5,4 | 57 | 12 | 19 | 0,1 | 2 | WP201060300 |
| 8,0 | SF.AL.P201.0800.L.Z2.F0010A.HA | 8 | 7,2 | 64 | 16 | 26 | 0,1 | 2 | WP201080300 |
| 10,0 | SF.AL.P201.1000.L.Z2.F0010A.HA | 10 | 9 | 74 | 20 | 31 | 0,1 | 2 | WP201100300 |

# WP201-OL, PKD bestückt

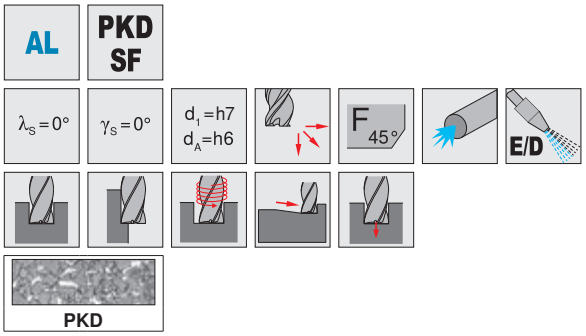
Schnittdatenempfehlung



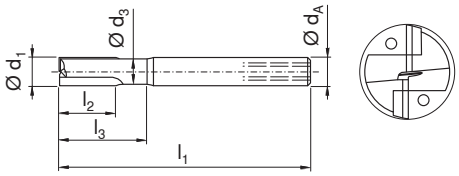
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | $f_z$ [mm] > Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 10,0 |
|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 700 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.1.2 | | 600 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.1.3 | | 450 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.1.4 | | 500 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.1.5 | | 450 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.1.6 | | 250 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | 400 | 0,1xø | 1xø | 0,035 | 0,06 | 0,07 |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |
| 8.1.1 | Thermoplast | 350 | 0,1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 8.1.2 | | 350 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.3 | | 350 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.4 | | 150 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.5 | | 120 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.6 | | 200 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.7 | | 350 | 0,1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.8 | | 300 | 0,1xø | 1xø | 0,125 | 0,25 | 0,35 |
| 8.1.9 | | 80 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.1 | Duroplast | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.2 | | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.3 | | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.4 | | 150 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.5 | | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.6 | | 80 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.7 | | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.8 | | 100 | 0,1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.3.1 | faserverstärkter Kunststoff | 105 | 0,1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 8.3.2 | | 100 | 0,1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.3.3 | | 150 | 0,1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.3.4 | | 100 | 0,1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.3.5 | | | | | | | |
| 8.3.6 | | 120 | 0,1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.4.1 | Sandwich | | | | | | |
| 8.4.2 | | | | | | | |
| 8.4.3 | | | | | | | |
| 9.1.1 | Standard Graphit | 800 | 0,1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 9.1.2 | | 550 | 0,1xø | 1xø | 0,04 | 0,06 | 0,08 |

# WP201-OL, PKD bestückt

Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|---|
| 3,0 | SF.AL.P201.0300.OL.Z2.F0010A.HA | 6 | 2,8 | 100 | 6 | 11 | 0,1 | 2 | WP201030400 |
| 4,0 | SF.AL.P201.0400.OL.Z2.F0010A.HA | 6 | 3,5 | 100 | 8 | 13 | 0,1 | 2 | WP201040400 |
| 5,0 | SF.AL.P201.0500.OL.Z2.F0010A.HA | 6 | 4,4 | 100 | 10 | 15 | 0,1 | 2 | WP201050400 |
| 6,0 | SF.AL.P201.0600.OL.Z2.F0010A.HA | 6 | 5,4 | 100 | 12 | 19 | 0,1 | 2 | WP201060400 |
| 8,0 | SF.AL.P201.0800.OL.Z2.F0010A.HA | 8 | 7,2 | 100 | 16 | 26 | 0,1 | 2 | WP201080400 |
| 10,0 | SF.AL.P201.1000.OL.Z2.F0010A.HA | 10 | 9 | 100 | 20 | 31 | 0,1 | 2 | WP201100400 |

# WP202-L, PKD bestückt

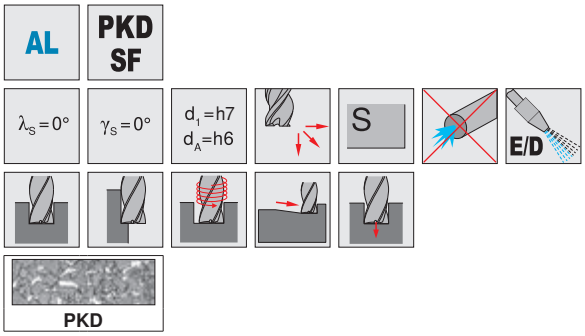
Schnittdatenempfehlung



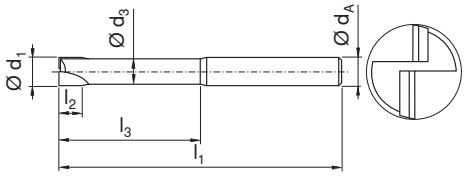
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 2,0 = Ø 4,0 | $f_z$ [mm] > Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | 700 | 1xø | 0,15xø | 0,035 | 0,06 | 0,07 |
| 7.1.2 | | 600 | 1xø | 0,15xø | 0,035 | 0,06 | 0,07 |
| 7.1.3 | | 450 | 1xø | 0,15xø | 0,035 | 0,06 | 0,07 |
| 7.1.4 | | 500 | 1xø | 0,15xø | 0,035 | 0,06 | 0,07 |
| 7.1.5 | | 450 | 1xø | 0,15xø | 0,035 | 0,06 | 0,07 |
| 7.1.6 | | 250 | 1xø | 0,15xø | 0,035 | 0,06 | 0,07 |
| 7.2.1 | **Magnesium** | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | **Kupfer** | 400 | 1xø | 0,15xø | 0,035 | 0,06 | 0,07 |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | **CuZn (Messing)** | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | **CuSn (Bronze)** | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | **CuAlFe (Ampco)** | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | **Titan** | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |
| 8.1.1 | **Thermoplast** | 350 | 1xø | 0,2xø | 0,04 | 0,06 | 0,08 |
| 8.1.2 | | 350 | 1xø | 0,2xø | 0,075 | 0,15 | 0,25 |
| 8.1.3 | | 350 | 1xø | 0,2xø | 0,075 | 0,15 | 0,25 |
| 8.1.4 | | 150 | 1xø | 0,2xø | 0,075 | 0,15 | 0,25 |
| 8.1.5 | | 120 | 1xø | 0,2xø | 0,075 | 0,15 | 0,25 |
| 8.1.6 | | 200 | 1xø | 0,2xø | 0,075 | 0,15 | 0,25 |
| 8.1.7 | | 350 | 1xø | 0,2xø | 0,075 | 0,15 | 0,25 |
| 8.1.8 | | 300 | 1xø | 0,2xø | 0,125 | 0,25 | 0,35 |
| 8.1.9 | | 80 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 |
| 8.2.1 | **Duroplast** | 100 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 |
| 8.2.2 | | 100 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 |
| 8.2.3 | | 100 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 |
| 8.2.4 | | 150 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 |
| 8.2.5 | | 100 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 |
| 8.2.6 | | 80 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 |
| 8.2.7 | | 100 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 |
| 8.2.8 | | 100 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 |
| 8.3.1 | **faserverstärkter Kunststoff** | 105 | 1xø | 0,2xø | 0,04 | 0,06 | 0,08 |
| 8.3.2 | | 100 | 1xø | 0,2xø | 0,03 | 0,05 | 0,06 |
| 8.3.3 | | 150 | 1xø | 0,2xø | 0,03 | 0,05 | 0,06 |
| 8.3.4 | | 100 | 1xø | 0,2xø | 0,03 | 0,05 | 0,06 |
| 8.3.5 | | | | | | | |
| 8.3.6 | | 120 | 1xø | 0,2xø | 0,03 | 0,05 | 0,06 |
| 8.4.1 | **Sandwich** | | | | | | |
| 8.4.2 | | | | | | | |
| 8.4.3 | | | | | | | |
| 9.1.1 | **Standard Graphit** | 800 | 1xø | 0,2xø | 0,04 | 0,06 | 0,08 |
| 9.1.2 | | 550 | 1xø | 0,2xø | 0,04 | 0,06 | 0,08 |

# WP202-L, PKD bestückt

Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|
| 2,0 | SF.AL.P202.0200.L.Z1.S.HA | 6 | 1,7 | 75 | 2 | 6 | 1 | WP202020100 |
| 2,0 | SF.AL.P202.0200.L.Z1.S.HA | 6 | 1,7 | 75 | 2 | 10 | 1 | WP202020200 |
| 2,0 | SF.AL.P202.0200.L.Z1.S.HA | 6 | 1,7 | 75 | 2 | 14 | 1 | WP202020300 |
| 3,0 | SF.AL.P202.0300.L.Z2.S.HA | 6 | 2,5 | 75 | 2,5 | 10 | 2 | WP202030100 |
| 3,0 | SF.AL.P202.0300.L.Z2.S.HA | 6 | 2,5 | 75 | 2,5 | 15 | 2 | WP202030200 |
| 3,0 | SF.AL.P202.0300.L.Z2.S.HA | 6 | 2,5 | 75 | 2,5 | 21 | 2 | WP202030300 |
| 4,0 | SF.AL.P202.0400.L.Z2.S.HA | 6 | 3,5 | 75 | 2,5 | 12 | 2 | WP202040100 |
| 4,0 | SF.AL.P202.0400.L.Z2.S.HA | 6 | 3,5 | 75 | 2,5 | 20 | 2 | WP202040200 |
| 4,0 | SF.AL.P202.0400.L.Z2.S.HA | 6 | 3,5 | 75 | 2,5 | 28 | 2 | WP202040300 |
| 5,0 | SF.AL.P202.0500.L.Z2.S.HA | 6 | 4,4 | 75 | 3 | 15 | 2 | WP202050100 |
| 5,0 | SF.AL.P202.0500.L.Z2.S.HA | 6 | 4,4 | 75 | 3 | 25 | 2 | WP202050200 |
| 5,0 | SF.AL.P202.0500.L.Z2.S.HA | 6 | 4,4 | 75 | 3 | 35 | 2 | WP202050300 |
| 6,0 | SF.AL.P202.0600.L.Z2.S.HA | 6 | 5,4 | 100 | 6 | 18 | 2 | WP202060100 |
| 6,0 | SF.AL.P202.0600.L.Z2.S.HA | 6 | 5,4 | 100 | 6 | 30 | 2 | WP202060200 |
| 6,0 | SF.AL.P202.0600.L.Z2.S.HA | 6 | 5,4 | 100 | 6 | 42 | 2 | WP202060300 |
| 8,0 | SF.AL.P202.0800.L.Z2.S.HA | 8 | 7,2 | 100 | 7 | 24 | 2 | WP202080100 |
| 8,0 | SF.AL.P202.0800.L.Z2.S.HA | 8 | 7,2 | 100 | 7 | 40 | 2 | WP202080200 |
| 10,0 | SF.AL.P202.1000.L.Z2.S.HA | 10 | 9 | 100 | 8 | 30 | 2 | WP202100100 |
| 10,0 | SF.AL.P202.1000.L.Z2.S.HA | 10 | 9 | 100 | 8 | 50 | 2 | WP202100200 |
| 12,0 | SF.AL.P202.1200.L.Z2.S.HA | 12 | 11 | 105 | 9 | 36 | 2 | WP202120100 |
| 12,0 | SF.AL.P202.1200.L.Z2.S.HA | 12 | 11 | 105 | 9 | 60 | 2 | WP202120200 |

# WP400-L, PKD bestückt

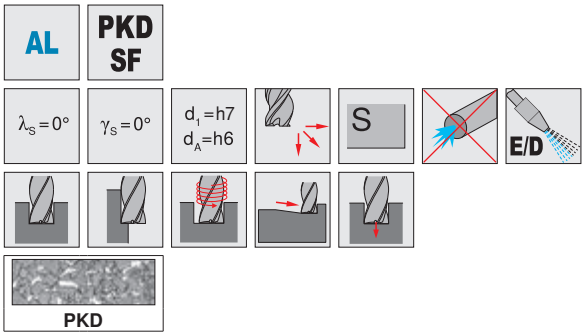
Schnittdatenempfehlung



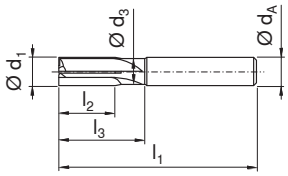
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 700 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 600 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 450 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 500 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 450 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.6 | | 250 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | 400 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | Thermoplast | 350 | 0,1xø | 1xø | 0,06 | 0,08 | 0,15 | 0,2 |
| 8.1.2 | | 350 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.3 | | 350 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.4 | | 150 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.5 | | 120 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.6 | | 200 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.7 | | 350 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.8 | | 300 | 0,1xø | 1xø | 0,25 | 0,35 | 0,45 | 0,55 |
| 8.1.9 | | 80 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.1 | Duroplast | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.2 | | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.3 | | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.4 | | 150 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.5 | | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.6 | | 80 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.7 | | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.8 | | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.1 | faserverstärkter Kunststoff | 105 | 0,1xø | 1xø | 0,06 | 0,08 | 0,15 | 0,2 |
| 8.3.2 | | 100 | 0,1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.3 | | 150 | 0,1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.4 | | 100 | 0,1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | 120 | 0,1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.4.1 | Sandwich | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | Standard Graphit | 800 | 0,1xø | 1xø | 0,06 | 0,08 | 0,15 | 0,2 |
| 9.1.2 | | 550 | 0,1xø | 1xø | 0,06 | 0,08 | 0,15 | 0,2 |

# WP400-L, PKD bestückt

Schaftfräser








| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|
| 6,0 | SF.AL.P400.0600.L.Z4.S.HA | 6 | 5,4 | 57 | 12 | 19 | 4 | WP400060300 |
| 8,0 | SF.AL.P400.0800.L.Z4.S.HA | 8 | 7,2 | 64 | 16 | 26 | 4 | WP400080300 |
| 10,0 | SF.AL.P400.1000.L.Z4.S.HA | 10 | 9 | 74 | 20 | 31 | 4 | WP400100300 |
| 12,0 | SF.AL.P400.1200.L.Z4.S.HA | 12 | 11 | 84 | 24 | 36,5 | 4 | WP400120300 |
| 16,0 | SF.AL.P400.1600.L.Z4.S.HA | 16 | 15 | 93 | 32 | 44 | 4 | WP400160300 |
| 20,0 | SF.AL.P400.2000.L.Z4.S.HA | 20 | 19 | 104 | 38 | 52,5 | 4 | WP400200300 |

# WP400-OL, PKD bestückt

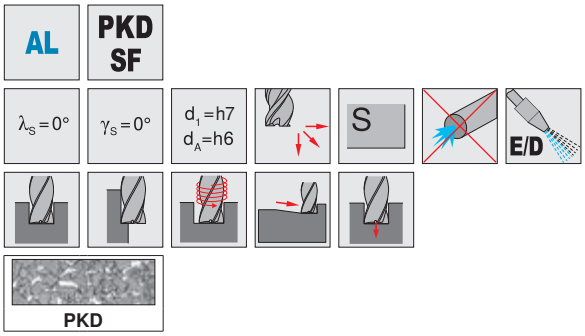
Schnittdatenempfehlung



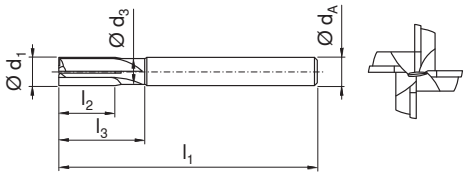
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 700 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 600 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 450 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 500 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 450 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.6 | | 250 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | 400 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | Thermoplast | 350 | 0,1xø | 1xø | 0,06 | 0,08 | 0,15 | 0,2 |
| 8.1.2 | | 350 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.3 | | 350 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.4 | | 150 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.5 | | 120 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.6 | | 200 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.7 | | 350 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.8 | | 300 | 0,1xø | 1xø | 0,25 | 0,35 | 0,45 | 0,55 |
| 8.1.9 | | 80 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.1 | Duroplast | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.2 | | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.3 | | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.4 | | 150 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.5 | | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.6 | | 80 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.7 | | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.8 | | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.1 | faserverstärkter Kunststoff | 105 | 0,1xø | 1xø | 0,06 | 0,08 | 0,15 | 0,2 |
| 8.3.2 | | 100 | 0,1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.3 | | 150 | 0,1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.4 | | 100 | 0,1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | 120 | 0,1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.4.1 | Sandwich | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | Standard Graphit | 800 | 0,1xø | 1xø | 0,06 | 0,08 | 0,15 | 0,2 |
| 9.1.2 | | 550 | 0,1xø | 1xø | 0,06 | 0,08 | 0,15 | 0,2 |

# WP400-OL, PKD bestückt

Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|
| 6,0 | SF.AL.P400.0600.OL.Z4.S.HA | 6 | 5,4 | 100 | 12 | 19 | 4 | WP400060400 |
| 8,0 | SF.AL.P400.0800.OL.Z4.S.HA | 8 | 7,2 | 100 | 16 | 26 | 4 | WP400080400 |
| 10,0 | SF.AL.P400.1000.OL.Z4.S.HA | 10 | 9 | 100 | 20 | 31 | 4 | WP400100400 |
| 12,0 | SF.AL.P400.1200.OL.Z4.S.HA | 12 | 11 | 115 | 24 | 36,5 | 4 | WP400120400 |
| 16,0 | SF.AL.P400.1600.OL.Z4.S.HA | 16 | 15 | 130 | 32 | 44 | 4 | WP400160400 |
| 20,0 | SF.AL.P400.2000.OL.Z4.S.HA | 20 | 19 | 160 | 38 | 52,5 | 4 | WP400200400 |

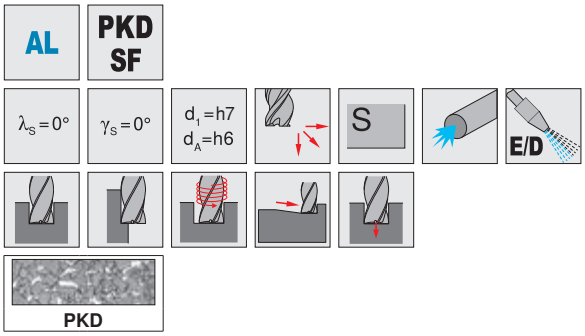
# WP401-L, PKD bestückt

Schnittdatenempfehlung

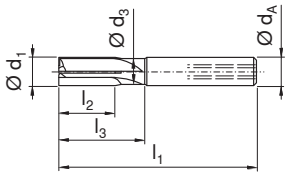
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 700 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 600 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 450 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 500 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 450 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.6 | | 250 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | 400 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | Thermoplast | 350 | 0,1xø | 1xø | 0,06 | 0,08 | 0,15 | 0,2 |
| 8.1.2 | | 350 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.3 | | 350 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.4 | | 150 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.5 | | 120 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.6 | | 200 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.7 | | 350 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.8 | | 300 | 0,1xø | 1xø | 0,25 | 0,35 | 0,45 | 0,55 |
| 8.1.9 | | 80 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.1 | Duroplast | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.2 | | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.3 | | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.4 | | 150 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.5 | | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.6 | | 80 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.7 | | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.8 | | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.1 | faserverstärkter Kunststoff | 105 | 0,1xø | 1xø | 0,06 | 0,08 | 0,15 | 0,2 |
| 8.3.2 | | 100 | 0,1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.3 | | 150 | 0,1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.4 | | 100 | 0,1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | 120 | 0,1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.4.1 | Sandwich | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | Standard Graphit | 800 | 0,1xø | 1xø | 0,06 | 0,08 | 0,15 | 0,2 |
| 9.1.2 | | 550 | 0,1xø | 1xø | 0,06 | 0,08 | 0,15 | 0,2 |

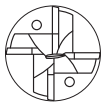
# WP401-L, PKD bestückt

Schaftfräser





| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|
| 6,0 | SF.AL.P401.0600.L.Z4.S.HA | 6 | 5,4 | 57 | 12 | 19 | 4 | WP401060300 |
| 8,0 | SF.AL.P401.0800.L.Z4.S.HA | 8 | 7,2 | 64 | 16 | 26 | 4 | WP401080300 |
| 10,0 | SF.AL.P401.1000.L.Z4.S.HA | 10 | 9 | 74 | 20 | 31 | 4 | WP401100300 |
| 12,0 | SF.AL.P401.1200.L.Z4.S.HA | 12 | 11 | 84 | 24 | 36,5 | 4 | WP401120300 |
| 16,0 | SF.AL.P401.1600.L.Z4.S.HA | 16 | 15 | 93 | 32 | 44 | 4 | WP401160300 |
| 20,0 | SF.AL.P401.2000.L.Z4.S.HA | 20 | 19 | 104 | 38 | 52,5 | 4 | WP401200300 |

# WP401-OL, PKD bestückt

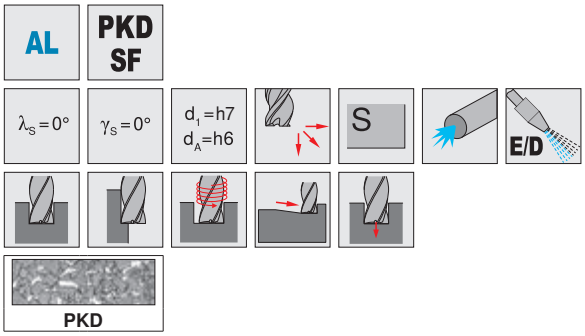
Schnittdatenempfehlung



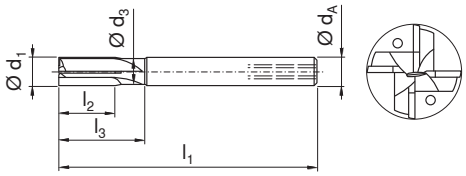
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 700 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 600 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 450 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 500 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 450 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.6 | | 250 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | 400 | 0,1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | Thermoplast | 350 | 0,1xø | 1xø | 0,06 | 0,08 | 0,15 | 0,2 |
| 8.1.2 | | 350 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.3 | | 350 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.4 | | 150 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.5 | | 120 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.6 | | 200 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.7 | | 350 | 0,1xø | 1xø | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.8 | | 300 | 0,1xø | 1xø | 0,25 | 0,35 | 0,45 | 0,55 |
| 8.1.9 | | 80 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.1 | Duroplast | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.2 | | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.3 | | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.4 | | 150 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.5 | | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.6 | | 80 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.7 | | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.8 | | 100 | 0,1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.1 | faserverstärkter Kunststoff | 105 | 0,1xø | 1xø | 0,06 | 0,08 | 0,15 | 0,2 |
| 8.3.2 | | 100 | 0,1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.3 | | 150 | 0,1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.4 | | 100 | 0,1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | 120 | 0,1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.4.1 | Sandwich | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | Standard Graphit | 800 | 0,1xø | 1xø | 0,06 | 0,08 | 0,15 | 0,2 |
| 9.1.2 | | 550 | 0,1xø | 1xø | 0,06 | 0,08 | 0,15 | 0,2 |

# WP401-OL, PKD bestückt

Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | z | Material |
|---|---|---|---|---|---|---|---|---|
| 6,0 | SF.AL.P401.0600.OL.Z4.S.HA | 6 | 5,4 | 100 | 12 | 19 | 4 | WP401060400 |
| 8,0 | SF.AL.P401.0800.OL.Z4.S.HA | 8 | 7,2 | 100 | 16 | 26 | 4 | WP401080400 |
| 10,0 | SF.AL.P401.1000.OL.Z4.S.HA | 10 | 9 | 100 | 20 | 31 | 4 | WP401100400 |
| 12,0 | SF.AL.P401.1200.OL.Z4.S.HA | 12 | 11 | 115 | 24 | 36,5 | 4 | WP401120400 |
| 16,0 | SF.AL.P401.1600.OL.Z4.S.HA | 16 | 15 | 130 | 32 | 44 | 4 | WP401160400 |
| 20,0 | SF.AL.P401.2000.OL.Z4.S.HA | 20 | 19 | 160 | 38 | 52,5 | 4 | WP401200400 |

# W0318-XS, unbeschichtet

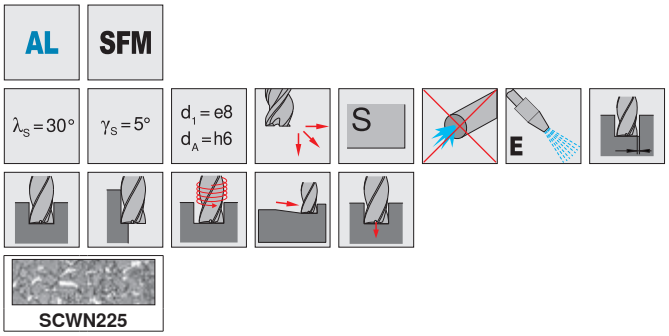
Schnittdatenempfehlung



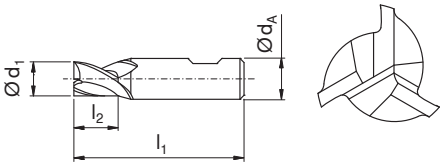
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 2,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 250 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.2 | | 250 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.3 | | 250 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.4 | | 200 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.5 | | 180 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 150 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | Magnesium | 180 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 160 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | Kupfer | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 100 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | CuZn (Messing) | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 200 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | CuSn (Bronze) | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 140 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | Titan | 50 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.2 | | 35 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.3 | | 20 | 1xø | 1xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 8.1.1 | Thermoplast | | | | | | | | |
| 8.1.2 | | | | | | | | | |
| 8.1.3 | | | | | | | | | |
| 8.1.4 | | | | | | | | | |
| 8.1.5 | | | | | | | | | |
| 8.1.6 | | | | | | | | | |
| 8.1.7 | | | | | | | | | |
| 8.1.8 | | | | | | | | | |
| 8.1.9 | | | | | | | | | |
| 8.2.1 | Duroplast | | | | | | | | |
| 8.2.2 | | | | | | | | | |
| 8.2.3 | | | | | | | | | |
| 8.2.4 | | | | | | | | | |
| 8.2.5 | | | | | | | | | |
| 8.2.6 | | | | | | | | | |
| 8.2.7 | | | | | | | | | |
| 8.2.8 | | | | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | | |
| 8.3.2 | | | | | | | | | |
| 8.3.3 | | | | | | | | | |
| 8.3.4 | | | | | | | | | |
| 8.3.5 | | | | | | | | | |
| 8.3.6 | | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | | |
| 8.4.2 | | | | | | | | | |
| 8.4.3 | | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | | |
| 9.1.2 | | | | | | | | | |

# W0318-XS, unbeschichtet

Mini-Schaftfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | z | HB Material |
|---|---|---|---|---|---|---|
| 2,0 | SFM.AL.0318.0200.XS.Z3.S.HB | 6 | 35 | 4 | 3 | W0318020001 |
| 2,5 | SFM.AL.0318.0250.XS.Z3.S.HB | 6 | 35 | 4 | 3 | W0318025001 |
| 3,0 | SFM.AL.0318.0300.XS.Z3.S.HB | 6 | 36 | 5 | 3 | W0318030001 |
| 3,5 | SFM.AL.0318.0350.XS.Z3.S.HB | 6 | 36 | 5 | 3 | W0318035001 |
| 4,0 | SFM.AL.0318.0400.XS.Z3.S.HB | 6 | 38 | 7 | 3 | W0318040001 |
| 4,5 | SFM.AL.0318.0450.XS.Z3.S.HB | 6 | 38 | 7 | 3 | W0318045001 |
| 5,0 | SFM.AL.0318.0500.XS.Z3.S.HB | 6 | 39 | 8 | 3 | W0318050001 |
| 5,5 | SFM.AL.0318.0550.XS.Z3.S.HB | 6 | 39 | 8 | 3 | W0318055001 |
| 5,75 | SFM.AL.0318.0575.XS.Z3.S.HB | 6 | 39 | 8 | 3 | W0318057001 |
| 6,0 | SFM.AL.0318.0600.XS.Z3.S.HB | 6 | 39 | 8 | 3 | W0318060001 |
| 6,75 | SFM.AL.0318.0675.XS.Z3.S.HB | 8 | 43 | 11 | 3 | W0318067001 |
| 7,0 | SFM.AL.0318.0700.XS.Z3.S.HB | 8 | 43 | 11 | 3 | W0318070001 |
| 7,75 | SFM.AL.0318.0775.XS.Z3.S.HB | 8 | 43 | 11 | 3 | W0318077001 |
| 8,0 | SFM.AL.0318.0800.XS.Z3.S.HB | 8 | 43 | 11 | 3 | W0318080001 |
| 8,7 | SFM.AL.0318.0870.XS.Z3.S.HB | 10 | 50 | 13 | 3 | W0318087001 |
| 9,0 | SFM.AL.0318.0900.XS.Z3.S.HB | 10 | 50 | 13 | 3 | W0318090001 |
| 9,7 | SFM.AL.0318.0970.XS.Z3.S.HB | 10 | 50 | 13 | 3 | W0318097001 |
| 10,0 | SFM.AL.0318.1000.XS.Z3.S.HB | 10 | 50 | 13 | 3 | W0318100001 |
| 12,0 | SFM.AL.0318.1200.XS.Z3.S.HB | 12 | 55 | 15 | 3 | W0318120001 |
| 14,0 | SFM.AL.0318.1400.XS.Z3.S.HB | 14 | 58 | 15 | 3 | W0318140001 |
| 16,0 | SFM.AL.0318.1600.XS.Z3.S.HB | 16 | 62 | 18 | 3 | W0318160001 |
| 18,0 | SFM.AL.0318.1800.XS.Z3.S.HB | 18 | 70 | 20 | 3 | W0318180001 |
| 20,0 | SFM.AL.0318.2000.XS.Z3.S.HB | 20 | 75 | 22 | 3 | W0318200001 |

# W0363-L, beschichtet

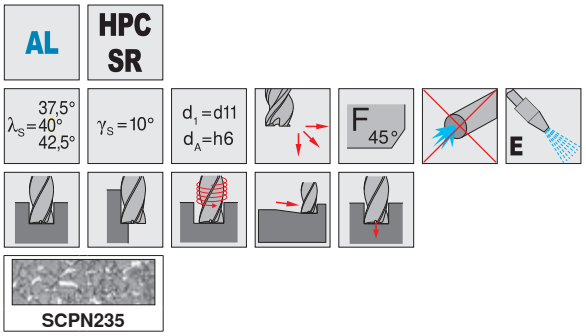
Schnittdatenempfehlung



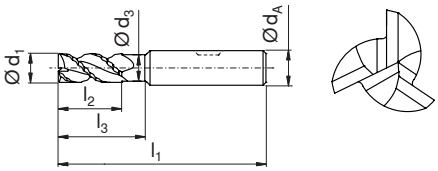
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 480 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 360 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 240 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | **Magnesium** | 220 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 200 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | **Kupfer** | 170 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 155 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | **CuZn (Messing)** | 180 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 240 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | **CuSn (Bronze)** | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 170 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | **CuAlFe (Ampco)** | 55 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 70 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | **Titan** | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | | | | | | | |
| 8.2.8 | | | | | | | | |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | | | | | | | |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | | | | | | | |
| 8.4.1 | **Sandwich** | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | | |
| 9.1.2 | | | | | | | | |

# W0363-L, beschichtet

HPC-Schruppfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 6,0 | HPC-SR.AL.0363.0600.L.Z3.F0040A.HA | 6 | 5,7 | 57 | 13 | 18 | 0,4 | 3 | W0363060360 | |
| 8,0 | HPC-SR.AL.0363.0800.L.Z3.F0040A.HA | 8 | 7,4 | 63 | 21 | 25 | 0,4 | 3 | W0363080360 | |
| 10,0 | HPC-SR.AL.0363.1000.L.Z3.F0040A.HA | 10 | 9,2 | 72 | 22 | 30 | 0,4 | 3 | W0363100360 | |
| 12,0 | HPC-SR.AL.0363.1200.L.Z3.F0040A.HA | 12 | 11 | 83 | 26 | 36 | 0,4 | 3 | W0363120360 | |
| 16,0 | HPC-SR.AL.0363.1600.L.Z3.F0040A.HB | 16 | 15 | 92 | 36 | 42 | 0,4 | 3 | | W0363160361 |
| 20,0 | HPC-SR.AL.0363.2000.L.Z3.F0040A.HB | 20 | 19 | 104 | 41 | 52 | 0,4 | 3 | | W0363200361 |

# W0369-L, beschichtet

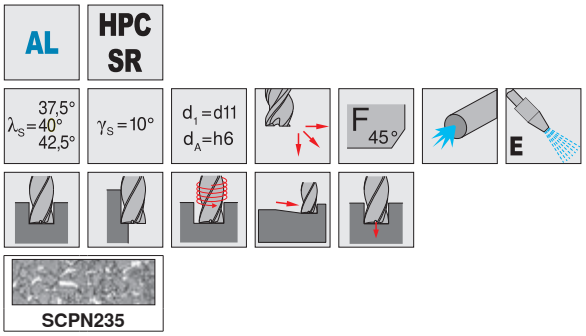
Schnittdatenempfehlung



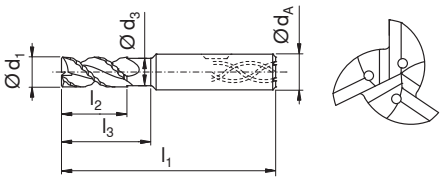
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 480 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 360 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 240 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | **Magnesium** | 220 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 200 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | **Kupfer** | 170 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 155 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | **CuZn (Messing)** | 180 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 240 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | **CuSn (Bronze)** | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 170 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | **CuAlFe (Ampco)** | 55 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 70 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | **Titan** | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | | | | | | | |
| 8.2.8 | | | | | | | | |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | | | | | | | |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | | | | | | | |
| 8.4.1 | **Sandwich** | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | | |
| 9.1.2 | | | | | | | | |

# W0369-L, beschichtet

HPC-Schruppfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 6,0 | HPC-SR.AL.0369.0600.L.Z3.F0040A.HA | 6 | 5,7 | 57 | 13 | 18 | 0,4 | 3 | W0369060360 | |
| 8,0 | HPC-SR.AL.0369.0800.L.Z3.F0040A.HA | 8 | 7,4 | 63 | 21 | 25 | 0,4 | 3 | W0369080360 | |
| 10,0 | HPC-SR.AL.0369.1000.L.Z3.F0040A.HA | 10 | 9,2 | 72 | 22 | 30 | 0,4 | 3 | W0369100360 | |
| 12,0 | HPC-SR.AL.0369.1200.L.Z3.F0040A.HA | 12 | 11 | 83 | 26 | 36 | 0,4 | 3 | W0369120360 | |
| 16,0 | HPC-SR.AL.0369.1600.L.Z3.F0040A.HA | 16 | 15 | 92 | 36 | 42 | 0,4 | 3 | W0369160360 | |
| 16,0 | HPC-SR.AL.0369.1600.L.Z3.F0040A.HB | 16 | 15 | 92 | 36 | 42 | 0,4 | 3 | | W0369160361 |
| 20,0 | HPC-SR.AL.0369.2000.L.Z3.F0040A.HA | 20 | 19 | 104 | 41 | 52 | 0,4 | 3 | W0369200360 | |
| 20,0 | HPC-SR.AL.0369.2000.L.Z3.F0040A.HB | 20 | 19 | 104 | 41 | 52 | 0,4 | 3 | | W0369200361 |

# W0216-S, unbeschichtet

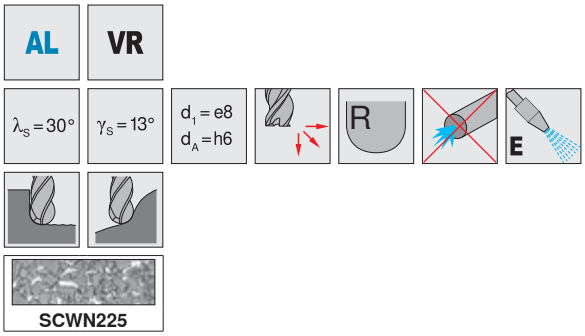
Schnittdatenempfehlung



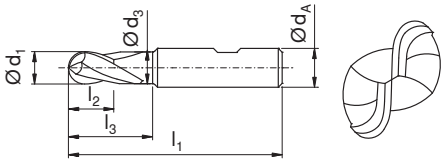
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 250 | 1xø | 0,03xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.2 | | 250 | 1xø | 0,03xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.3 | | 250 | 1xø | 0,03xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.4 | | 200 | 1xø | 0,03xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.5 | | 180 | 1xø | 0,03xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 150 | 1xø | 0,03xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | Magnesium | 180 | 1xø | 0,03xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 160 | 1xø | 0,03xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | Kupfer | 140 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 120 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 100 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 120 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 100 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 120 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | CuZn (Messing) | 150 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 200 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | CuSn (Bronze) | 120 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 140 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | 120 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 140 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | Titan | 50 | 1xø | 0,03xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.2 | | 35 | 1xø | 0,03xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 7.8.3 | | 20 | 1xø | 0,03xø | 0,01 | 0,02 | 0,03 | 0,04 | 0,05 |
| 8.1.1 | Thermoplast | | | | | | | | |
| 8.1.2 | | | | | | | | | |
| 8.1.3 | | | | | | | | | |
| 8.1.4 | | | | | | | | | |
| 8.1.5 | | | | | | | | | |
| 8.1.6 | | | | | | | | | |
| 8.1.7 | | | | | | | | | |
| 8.1.8 | | | | | | | | | |
| 8.1.9 | | | | | | | | | |
| 8.2.1 | Duroplast | | | | | | | | |
| 8.2.2 | | | | | | | | | |
| 8.2.3 | | | | | | | | | |
| 8.2.4 | | | | | | | | | |
| 8.2.5 | | | | | | | | | |
| 8.2.6 | | | | | | | | | |
| 8.2.7 | | | | | | | | | |
| 8.2.8 | | | | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | | |
| 8.3.2 | | | | | | | | | |
| 8.3.3 | | | | | | | | | |
| 8.3.4 | | | | | | | | | |
| 8.3.5 | | | | | | | | | |
| 8.3.6 | | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | | |
| 8.4.2 | | | | | | | | | |
| 8.4.3 | | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | | |
| 9.1.2 | | | | | | | | | |

# W0216-S, unbeschichtet

Vollradiusfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | R [mm] | z | HB Material |
|---|---|---|---|---|---|---|---|---|---|
| 3,0 | VR.AL.0216.0300.S.Z2.R0150.HB | 6 | 2,9 | 50 | 5 | 9 | 1,5 | 2 | W0216030101 |
| 4,0 | VR.AL.0216.0400.S.Z2.R0200.HB | 6 | 3,9 | 54 | 8 | 12 | 2 | 2 | W0216040101 |
| 5,0 | VR.AL.0216.0500.S.Z2.R0250.HB | 6 | 4,9 | 54 | 9 | 15 | 2,5 | 2 | W0216050101 |
| 6,0 | VR.AL.0216.0600.S.Z2.R0300.HB | 6 | 5,9 | 54 | 10 | 17 | 3 | 2 | W0216060101 |
| 7,0 | VR.AL.0216.0700.S.Z2.R0350.HB | 8 | 6,8 | 58 | 11 | 19 | 3,5 | 2 | W0216070101 |
| 8,0 | VR.AL.0216.0800.S.Z2.R0400.HB | 8 | 7,8 | 58 | 12 | 20 | 4 | 2 | W0216080101 |
| 9,0 | VR.AL.0216.0900.S.Z2.R0450.HB | 10 | 8,8 | 66 | 13 | 23 | 4,5 | 2 | W0216090101 |
| 10,0 | VR.AL.0216.1000.S.Z2.R0500.HB | 10 | 9,8 | 66 | 14 | 26 | 5 | 2 | W0216100101 |
| 12,0 | VR.AL.0216.1200.S.Z2.R0600.HB | 12 | 11,8 | 73 | 16 | 28 | 6 | 2 | W0216120101 |
| 14,0 | VR.AL.0216.1400.S.Z2.R0700.HB | 14 | 13,8 | 75 | 18 | 30 | 7 | 2 | W0216140101 |
| 16,0 | VR.AL.0216.1600.S.Z2.R0800.HB | 16 | 15,7 | 82 | 22 | 32 | 8 | 2 | W0216160101 |
| 18,0 | VR.AL.0216.1800.S.Z2.R0900.HB | 18 | 17,7 | 84 | 24 | 35 | 9 | 2 | W0216180101 |
| 20,0 | VR.AL.0216.2000.S.Z2.R1000.HB | 20 | 19,7 | 92 | 26 | 40 | 10 | 2 | W0216200101 |

# W0238-S und W0238-L, beschichtet

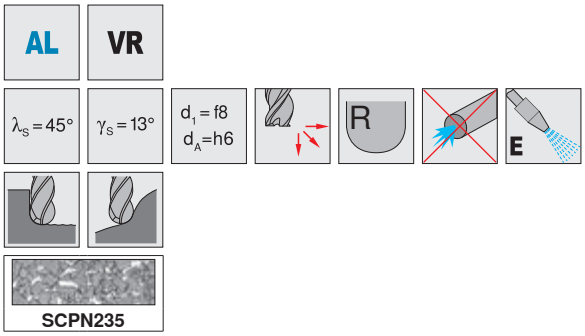
Schnittdatenempfehlung

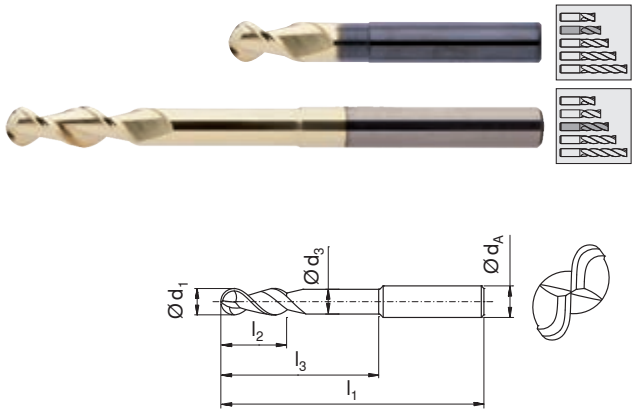


| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 750 | 1xø | 0,03xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.2 | | 750 | 1xø | 0,03xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.3 | | 750 | 1xø | 0,03xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.4 | | 670 | 1xø | 0,03xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.5 | | 600 | 1xø | 0,03xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 400 | 1xø | 0,03xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | Magnesium | 350 | 1xø | 0,03xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 315 | 1xø | 0,03xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | Kupfer | 230 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 190 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 155 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 190 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 155 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 190 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | CuZn (Messing) | 135 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 180 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | CuSn (Bronze) | 120 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 145 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | 80 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 95 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |
| 8.1.1 | Thermoplast | 240 | 1xø | 0,03xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.2 | | 240 | 1xø | 0,03xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.3 | | 240 | 1xø | 0,03xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.4 | | 110 | 1xø | 0,03xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.5 | | 140 | 1xø | 0,03xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.6 | | 140 | 1xø | 0,03xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.7 | | 240 | 1xø | 0,03xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.8 | | 210 | 1xø | 0,03xø | 0,125 | 0,25 | 0,35 | 0,45 | 0,55 |
| 8.1.9 | | 65 | 1xø | 0,03xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.1 | Duroplast | 65 | 1xø | 0,03xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.2 | | 65 | 1xø | 0,03xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.3 | | 65 | 1xø | 0,03xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.4 | | 110 | 1xø | 0,03xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.5 | | 65 | 1xø | 0,03xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.6 | | 60 | 1xø | 0,03xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.7 | | 65 | 1xø | 0,03xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.8 | | 65 | 1xø | 0,03xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | | |
| 8.3.2 | | | | | | | | | |
| 8.3.3 | | | | | | | | | |
| 8.3.4 | | | | | | | | | |
| 8.3.5 | | | | | | | | | |
| 8.3.6 | | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | | |
| 8.4.2 | | | | | | | | | |
| 8.4.3 | | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | | |
| 9.1.2 | | | | | | | | | |

# W0238-S und W0238-L, beschichtet

Vollradiusfräser




| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | R [mm] | z | HA Material | HA Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 3,0 | VR.AL.0238.0300.L.Z2.R0150.HA | 3 | 2,7 | 75 | 10 | 32 | 1,5 | 2 | | W0238030340 |
| 3,0 | VR.AL.0238.0300.S.Z2.R0150.HA | 3 | 2,7 | 50 | 6 | 16 | 1,5 | 2 | W0238030240 | |
| 4,0 | VR.AL.0238.0400.L.Z2.R0200.HA | 4 | 3,7 | 75 | 13 | 36 | 2 | 2 | | W0238040340 |
| 4,0 | VR.AL.0238.0400.S.Z2.R0200.HA | 4 | 3,7 | 54 | 7 | 17 | 2 | 2 | W0238040240 | |
| 5,0 | VR.AL.0238.0500.L.Z2.R0250.HA | 5 | 4,6 | 75 | 15 | 40 | 2,5 | 2 | | W0238050340 |
| 5,0 | VR.AL.0238.0500.S.Z2.R0250.HA | 5 | 4,6 | 54 | 8 | 18 | 2,5 | 2 | W0238050240 | |
| 6,0 | VR.AL.0238.0600.L.Z2.R0300.HA | 6 | 5,5 | 100 | 16 | 44 | 3 | 2 | | W0238060340 |
| 6,0 | VR.AL.0238.0600.S.Z2.R0300.HA | 6 | 5,5 | 54 | 10 | 21 | 3 | 2 | W0238060240 | |
| 8,0 | VR.AL.0238.0800.L.Z2.R0400.HA | 8 | 7,5 | 100 | 22 | 54 | 4 | 2 | | W0238080340 |
| 8,0 | VR.AL.0238.0800.S.Z2.R0400.HA | 8 | 7,5 | 59 | 12 | 27 | 4 | 2 | W0238080240 | |
| 10,0 | VR.AL.0238.1000.L.Z2.R0500.HA | 10 | 9,4 | 100 | 25 | 60 | 5 | 2 | | W0238100340 |
| 10,0 | VR.AL.0238.1000.S.Z2.R0500.HA | 10 | 9,4 | 67 | 13 | 32 | 5 | 2 | W0238100240 | |
| 12,0 | VR.AL.0238.1200.L.Z2.R0600.HA | 12 | 11,4 | 100 | 26 | 60 | 6 | 2 | | W0238120340 |
| 12,0 | VR.AL.0238.1200.S.Z2.R0600.HA | 12 | 11,4 | 73 | 16 | 38 | 6 | 2 | W0238120240 | |
| 14,0 | VR.AL.0238.1400.L.Z2.R0700.HA | 14 | 13,2 | 100 | 26 | 60 | 7 | 2 | | W0238140340 |
| 14,0 | VR.AL.0238.1400.S.Z2.R0700.HA | 14 | 13,2 | 75 | 16 | 38 | 7 | 2 | W0238140240 | |
| 16,0 | VR.AL.0238.1600.L.Z2.R0800.HA | 16 | 15 | 150 | 30 | 92 | 8 | 2 | | W0238160340 |
| 16,0 | VR.AL.0238.1600.S.Z2.R0800.HA | 16 | 15 | 83 | 20 | 44 | 8 | 2 | W0238160240 | |
| 20,0 | VR.AL.0238.2000.L.Z2.R1000.HA | 20 | 19 | 150 | 40 | 92 | 10 | 2 | | W0238200340 |
| 20,0 | VR.AL.0238.2000.S.Z2.R1000.HA | 20 | 19 | 93 | 25 | 50 | 10 | 2 | W0238200240 | |

# W0238-OL, beschichtet

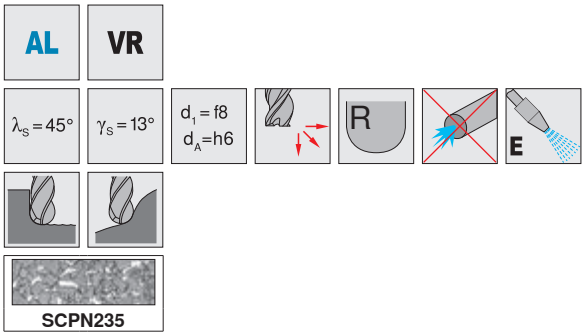
Schnittdatenempfehlung



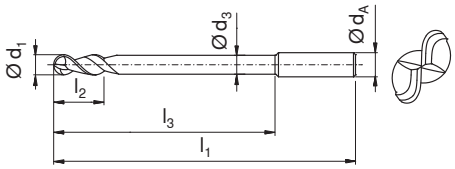
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | $f_z$ [mm] > Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 450 | 1xø | 0,03xø | 0,04 | 0,06 | 0,08 | 0,15 |
| 7.1.2 | | 450 | 1xø | 0,03xø | 0,04 | 0,06 | 0,08 | 0,15 |
| 7.1.3 | | 450 | 1xø | 0,03xø | 0,04 | 0,06 | 0,08 | 0,15 |
| 7.1.4 | | 400 | 1xø | 0,03xø | 0,04 | 0,06 | 0,08 | 0,15 |
| 7.1.5 | | 360 | 1xø | 0,03xø | 0,03 | 0,05 | 0,07 | 0,12 |
| 7.1.6 | | 240 | 1xø | 0,03xø | 0,03 | 0,05 | 0,07 | 0,12 |
| 7.2.1 | Magnesium | 210 | 1xø | 0,03xø | 0,03 | 0,05 | 0,07 | 0,12 |
| 7.2.2 | | 190 | 1xø | 0,03xø | 0,03 | 0,05 | 0,07 | 0,12 |
| 7.3.1 | Kupfer | 170 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 |
| 7.3.2 | | 145 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 |
| 7.3.3 | | 120 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 |
| 7.3.4 | | 145 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 |
| 7.3.5 | | 120 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 |
| 7.3.6 | | 145 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 |
| 7.4.1 | CuZn (Messing) | 105 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 |
| 7.4.2 | | 140 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 |
| 7.5.1 | CuSn (Bronze) | 70 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 |
| 7.5.2 | | 85 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 |
| 7.6.1 | CuAlFe (Ampco) | 55 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 |
| 7.6.2 | | 65 | 1xø | 0,03xø | 0,02 | 0,04 | 0,06 | 0,08 |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | Thermoplast | 145 | 1xø | 0,03xø | 0,075 | 0,15 | 0,25 | 0,35 |
| 8.1.2 | | 145 | 1xø | 0,03xø | 0,075 | 0,15 | 0,25 | 0,35 |
| 8.1.3 | | 145 | 1xø | 0,03xø | 0,075 | 0,15 | 0,25 | 0,35 |
| 8.1.4 | | 65 | 1xø | 0,03xø | 0,075 | 0,15 | 0,25 | 0,35 |
| 8.1.5 | | 50 | 1xø | 0,03xø | 0,075 | 0,15 | 0,25 | 0,35 |
| 8.1.6 | | 85 | 1xø | 0,03xø | 0,075 | 0,15 | 0,25 | 0,35 |
| 8.1.7 | | 145 | 1xø | 0,03xø | 0,075 | 0,15 | 0,25 | 0,35 |
| 8.1.8 | | 125 | 1xø | 0,03xø | 0,125 | 0,25 | 0,35 | 0,45 |
| 8.1.9 | | 35 | 1xø | 0,03xø | 0,05 | 0,1 | 0,2 | 0,3 |
| 8.2.1 | Duroplast | 40 | 1xø | 0,03xø | 0,05 | 0,1 | 0,2 | 0,3 |
| 8.2.2 | | 40 | 1xø | 0,03xø | 0,05 | 0,1 | 0,2 | 0,3 |
| 8.2.3 | | 40 | 1xø | 0,03xø | 0,05 | 0,1 | 0,2 | 0,3 |
| 8.2.4 | | 65 | 1xø | 0,03xø | 0,05 | 0,1 | 0,2 | 0,3 |
| 8.2.5 | | 40 | 1xø | 0,03xø | 0,05 | 0,1 | 0,2 | 0,3 |
| 8.2.6 | | 35 | 1xø | 0,03xø | 0,05 | 0,1 | 0,2 | 0,3 |
| 8.2.7 | | 40 | 1xø | 0,03xø | 0,05 | 0,1 | 0,2 | 0,3 |
| 8.2.8 | | 40 | 1xø | 0,03xø | 0,05 | 0,1 | 0,2 | 0,3 |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | | | | | | | |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | |
| 9.1.2 | | | | | | | | |

# W0238-OL, beschichtet

Vollradiusfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | R [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|---|
| 3,0 | VR.AL.0238.0300.OL.Z2.R0150.HA | 3 | 2,7 | 125 | 10 | 82 | 1,5 | 2 | W0238030440 |
| 4,0 | VR.AL.0238.0400.OL.Z2.R0200.HA | 4 | 3,7 | 125 | 13 | 86 | 2 | 2 | W0238040440 |
| 6,0 | VR.AL.0238.0600.OL.Z2.R0300.HA | 6 | 5,5 | 150 | 16 | 94 | 3 | 2 | W0238060440 |
| 8,0 | VR.AL.0238.0800.OL.Z2.R0400.HA | 8 | 7,5 | 150 | 22 | 104 | 4 | 2 | W0238080440 |
| 10,0 | VR.AL.0238.1000.OL.Z2.R0500.HA | 10 | 9,4 | 150 | 25 | 110 | 5 | 2 | W0238100440 |
| 12,0 | VR.AL.0238.1200.OL.Z2.R0600.HA | 12 | 11,4 | 150 | 26 | 105 | 6 | 2 | W0238120440 |
| 16,0 | VR.AL.0238.1600.OL.Z2.R0800.HA | 16 | 15 | 250 | 30 | 192 | 8 | 2 | W0238160440 |

# WP488-XL, PKD bestückt

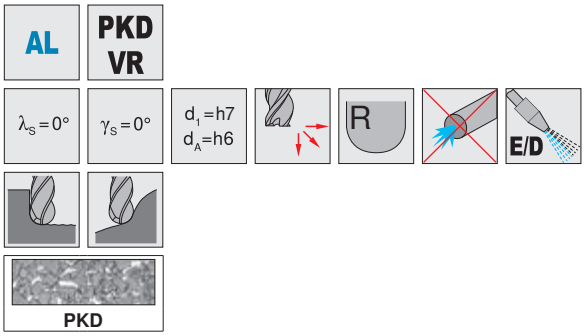
Schnittdatenempfehlung



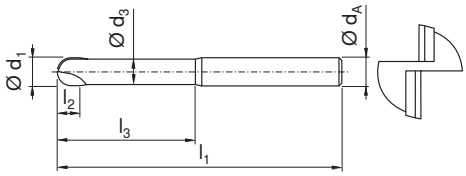
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 2,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 700 | 0,1xø | 0,15xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 600 | 0,1xø | 0,15xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 450 | 0,1xø | 0,15xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 500 | 0,1xø | 0,15xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 450 | 0,1xø | 0,15xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.6 | | 250 | 0,1xø | 0,15xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | 400 | 0,1xø | 0,15xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |
| 8.1.1 | Thermoplast | 350 | 0,1xø | 0,2xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 8.1.2 | | 350 | 0,1xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.3 | | 350 | 0,1xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.4 | | 150 | 0,1xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.5 | | 120 | 0,1xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.6 | | 200 | 0,1xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.7 | | 350 | 0,1xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.8 | | 300 | 0,1xø | 0,2xø | 0,125 | 0,25 | 0,35 | 0,45 | 0,55 |
| 8.1.9 | | 80 | 0,1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.1 | Duroplast | 100 | 0,1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.2 | | 100 | 0,1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.3 | | 100 | 0,1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.4 | | 150 | 0,1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.5 | | 100 | 0,1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.6 | | 80 | 0,1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.7 | | 100 | 0,1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.8 | | 100 | 0,1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.1 | faserverstärkter Kunststoff | 105 | 0,1xø | 0,2xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 8.3.2 | | 100 | 0,1xø | 0,2xø | 0,03 | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.3 | | 150 | 0,1xø | 0,2xø | 0,03 | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.4 | | 100 | 0,1xø | 0,2xø | 0,03 | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.5 | | | | | | | | | |
| 8.3.6 | | 120 | 0,1xø | 0,2xø | 0,03 | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.4.1 | Sandwich | | | | | | | | |
| 8.4.2 | | | | | | | | | |
| 8.4.3 | | | | | | | | | |
| 9.1.1 | Standard Graphit | 800 | 0,1xø | 0,2xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 9.1.2 | | 550 | 0,1xø | 0,2xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |

# WP488-XL, PKD bestückt

Vollradiusfräser





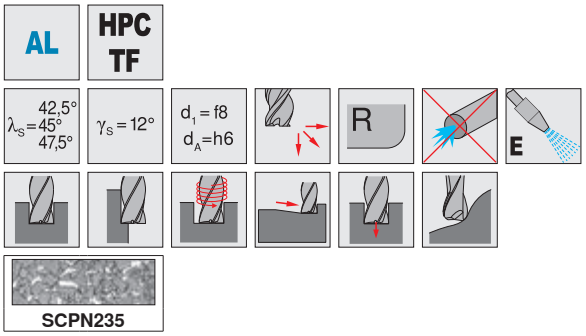

| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | R [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|---|
| 2,0 | VR.AL.P488.0200.XL.Z2.R0100.HA | 6 | 1,7 | 75 | 2 | 35 | 1 | 1 | WP488020300 |
| 2,0 | VR.AL.P488.0200.XL.Z2.R0100.HA | 6 | 1,7 | 75 | 2 | 6 | 1 | 1 | WP488020400 |
| 2,0 | VR.AL.P488.0200.XL.Z2.R0100.HA | 6 | 1,7 | 75 | 2 | 10 | 1 | 1 | WP488020500 |
| 2,0 | VR.AL.P488.0200.XL.Z2.R0100.HA | 6 | 1,7 | 75 | 2 | 14 | 1 | 1 | WP488020600 |
| 3,0 | VR.AL.P488.0300.XL.Z2.R0150.HA | 6 | 2,5 | 75 | 2,5 | 35 | 1,5 | 2 | WP488030300 |
| 3,0 | VR.AL.P488.0300.XL.Z2.R0150.HA | 6 | 2,5 | 75 | 2,5 | 9 | 1,5 | 2 | WP488030400 |
| 3,0 | VR.AL.P488.0300.XL.Z2.R0150.HA | 6 | 2,5 | 75 | 2,5 | 15 | 1,5 | 2 | WP488030500 |
| 3,0 | VR.AL.P488.0300.XL.Z2.R0150.HA | 6 | 2,5 | 75 | 2,5 | 21 | 1,5 | 2 | WP488030600 |
| 4,0 | VR.AL.P488.0400.XL.Z2.R0200.HA | 6 | 3,5 | 75 | 2,5 | 35 | 2 | 2 | WP488040300 |
| 4,0 | VR.AL.P488.0400.XL.Z2.R0200.HA | 6 | 3,5 | 75 | 2,5 | 12 | 2 | 2 | WP488040400 |
| 4,0 | VR.AL.P488.0400.XL.Z2.R0200.HA | 6 | 3,5 | 75 | 2,5 | 20 | 2 | 2 | WP488040500 |
| 4,0 | VR.AL.P488.0400.XL.Z2.R0200.HA | 6 | 3,5 | 75 | 2,5 | 28 | 2 | 2 | WP488040600 |
| 5,0 | VR.AL.P488.0500.XL.Z2.R0250.HA | 6 | 4,4 | 75 | 3 | 35 | 2,5 | 2 | WP488050300 |
| 5,0 | VR.AL.P488.0500.XL.Z2.R0250.HA | 6 | 4,4 | 75 | 3 | 15 | 2,5 | 2 | WP488050400 |
| 5,0 | VR.AL.P488.0500.XL.Z2.R0250.HA | 6 | 4,4 | 75 | 3 | 25 | 2,5 | 2 | WP488050500 |
| 6,0 | VR.AL.P488.0600.XL.Z2.R0300.HA | 8 | 5,4 | 100 | 6 | 40 | 3 | 2 | WP488060300 |
| 6,0 | VR.AL.P488.0600.XL.Z2.R0300.HA | 6 | 5,4 | 100 | 6 | 18 | 3 | 2 | WP488060400 |
| 6,0 | VR.AL.P488.0600.XL.Z2.R0300.HA | 6 | 5,4 | 100 | 6 | 30 | 3 | 2 | WP488060500 |
| 6,0 | VR.AL.P488.0600.XL.Z2.R0300.HA | 6 | 5,4 | 100 | 6 | 42 | 3 | 2 | WP488060600 |
| 8,0 | VR.AL.P488.0800.XL.Z2.R0400.HA | 10 | 7,2 | 100 | 7 | 40 | 4 | 2 | WP488080300 |
| 8,0 | VR.AL.P488.0800.XL.Z2.R0400.HA | 8 | 7,2 | 100 | 7 | 24 | 4 | 2 | WP488080400 |
| 8,0 | VR.AL.P488.0800.XL.Z2.R0400.HA | 8 | 7,2 | 100 | 7 | 40 | 4 | 2 | WP488080500 |
| 10,0 | VR.AL.P488.1000.XL.Z2.R0500.HA | 12 | 9 | 100 | 8 | 40 | 5 | 2 | WP488100300 |
| 10,0 | VR.AL.P488.1000.XL.Z2.R0500.HA | 10 | 9 | 100 | 8 | 30 | 5 | 2 | WP488100400 |
| 10,0 | VR.AL.P488.1000.XL.Z2.R0500.HA | 10 | 9 | 100 | 8 | 50 | 5 | 2 | WP488100500 |
| 12,0 | VR.AL.P488.1200.XL.Z2.R0600.HA | 16 | 11 | 105 | 9 | 40 | 6 | 2 | WP488120300 |
| 12,0 | VR.AL.P488.1200.XL.Z2.R0600.HA | 12 | 11 | 105 | 9 | 36 | 6 | 2 | WP488120400 |
| 12,0 | VR.AL.P488.1200.XL.Z2.R0600.HA | 12 | 11 | 105 | 9 | 60 | 6 | 2 | WP488120500 |
| 16,0 | VR.AL.P488.1600.XL.Z2.R0800.HA | 16 | 15 | 130 | 11 | 45 | 8 | 2 | WP488160200 |
| 16,0 | VR.AL.P488.1600.XL.Z2.R0800.HA | 16 | 15 | 130 | 11 | 50 | 8 | 2 | WP488160300 |
| 20,0 | VR.AL.P488.2000.XL.Z2.R1000.HA | 20 | 19 | 160 | 13 | 60 | 10 | 2 | WP488200300 |

# W0362-L, beschichtet

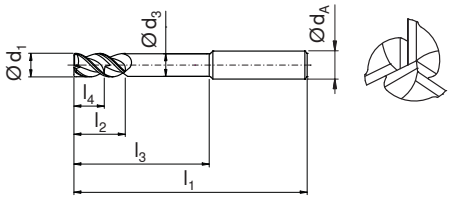
Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 600 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 600 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 600 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 480 | 1xø | 1xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 360 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 240 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | Magnesium | 220 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 200 | 1xø | 1xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | Kupfer | 170 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 155 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 120 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | CuZn (Messing) | 180 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 240 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | CuSn (Bronze) | 150 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 170 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | 55 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 70 | 1xø | 1xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |
| 8.1.1 | Thermoplast | | | | | | | | |
| 8.1.2 | | | | | | | | | |
| 8.1.3 | | | | | | | | | |
| 8.1.4 | | | | | | | | | |
| 8.1.5 | | | | | | | | | |
| 8.1.6 | | | | | | | | | |
| 8.1.7 | | | | | | | | | |
| 8.1.8 | | | | | | | | | |
| 8.1.9 | | | | | | | | | |
| 8.2.1 | Duroplast | | | | | | | | |
| 8.2.2 | | | | | | | | | |
| 8.2.3 | | | | | | | | | |
| 8.2.4 | | | | | | | | | |
| 8.2.5 | | | | | | | | | |
| 8.2.6 | | | | | | | | | |
| 8.2.7 | | | | | | | | | |
| 8.2.8 | | | | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | | |
| 8.3.2 | | | | | | | | | |
| 8.3.3 | | | | | | | | | |
| 8.3.4 | | | | | | | | | |
| 8.3.5 | | | | | | | | | |
| 8.3.6 | | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | | |
| 8.4.2 | | | | | | | | | |
| 8.4.3 | | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | | |
| 9.1.2 | | | | | | | | | |






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | $l_4$ [mm] | R [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 3,0 | HPC-TF.AL.0362.0300.L.Z3.R0040.HA | 6 | 2,7 | 57 | 8 | 12 | 3,9 | 0,4 | 3 | W0362030260 |
| 3,0 | HPC-TF.AL.0362.0300.L.Z3.R0050.HA | 6 | 2,7 | 57 | 8 | 12 | 3,9 | 0,5 | 3 | W0362030360 |
| 3,0 | HPC-TF.AL.0362.0300.L.Z3.R0100.HA | 6 | 2,7 | 57 | 8 | 12 | 3,9 | 1 | 3 | W0362030460 |
| 4,0 | HPC-TF.AL.0362.0400.L.Z3.R0040.HA | 6 | 3,7 | 57 | 11 | 18 | 5,2 | 0,4 | 3 | W0362040260 |
| 4,0 | HPC-TF.AL.0362.0400.L.Z3.R0050.HA | 6 | 3,7 | 57 | 11 | 18 | 5,2 | 0,5 | 3 | W0362040360 |
| 4,0 | HPC-TF.AL.0362.0400.L.Z3.R0100.HA | 6 | 3,7 | 57 | 11 | 18 | 5,2 | 1 | 3 | W0362040460 |
| 5,0 | HPC-TF.AL.0362.0500.L.Z3.R0050.HA | 6 | 4,7 | 57 | 13 | 18 | 6,5 | 0,5 | 3 | W0362050360 |
| 5,0 | HPC-TF.AL.0362.0500.L.Z3.R0100.HA | 6 | 4,7 | 57 | 13 | 18 | 6,5 | 1 | 3 | W0362050460 |
| 6,0 | HPC-TF.AL.0362.0600.L.Z3.R0050.HA | 6 | 5,7 | 57 | 13 | 18 | 7,8 | 0,5 | 3 | W0362060360 |
| 6,0 | HPC-TF.AL.0362.0600.L.Z3.R0100.HA | 6 | 5,7 | 57 | 13 | 18 | 7,8 | 1 | 3 | W0362060460 |
| 6,0 | HPC-TF.AL.0362.0600.L.Z3.R0150.HA | 6 | 5,7 | 57 | 13 | 18 | 7,8 | 1,5 | 3 | W0362060560 |
| 8,0 | HPC-TF.AL.0362.0800.L.Z3.R0050.HA | 8 | 7,4 | 63 | 21 | 25 | 10,4 | 0,5 | 3 | W0362080360 |
| 8,0 | HPC-TF.AL.0362.0800.L.Z3.R0100.HA | 8 | 7,4 | 63 | 21 | 25 | 10,4 | 1 | 3 | W0362080460 |
| 8,0 | HPC-TF.AL.0362.0800.L.Z3.R0150.HA | 8 | 7,4 | 63 | 21 | 25 | 10,4 | 1,5 | 3 | W0362080560 |
| 8,0 | HPC-TF.AL.0362.0800.L.Z3.R0200.HA | 8 | 7,4 | 63 | 21 | 25 | 10,4 | 2 | 3 | W0362080660 |
| 10,0 | HPC-TF.AL.0362.1000.L.Z3.R0050.HA | 10 | 9,2 | 72 | 22 | 30 | 13,0 | 0,5 | 3 | W0362100360 |
| 10,0 | HPC-TF.AL.0362.1000.L.Z3.R0100.HA | 10 | 9,2 | 72 | 22 | 30 | 13,0 | 1 | 3 | W0362100460 |
| 10,0 | HPC-TF.AL.0362.1000.L.Z3.R0150.HA | 10 | 9,2 | 72 | 22 | 30 | 13,0 | 1,5 | 3 | W0362100560 |
| 10,0 | HPC-TF.AL.0362.1000.L.Z3.R0200.HA | 10 | 9,2 | 72 | 22 | 30 | 13,0 | 2 | 3 | W0362100660 |
| 12,0 | HPC-TF.AL.0362.1200.L.Z3.R0050.HA | 12 | 11 | 83 | 26 | 36 | 15,6 | 0,5 | 3 | W0362120360 |
| 12,0 | HPC-TF.AL.0362.1200.L.Z3.R0100.HA | 12 | 11 | 83 | 26 | 36 | 15,6 | 1 | 3 | W0362120460 |
| 12,0 | HPC-TF.AL.0362.1200.L.Z3.R0150.HA | 12 | 11 | 83 | 26 | 36 | 15,6 | 1,5 | 3 | W0362120560 |
| 12,0 | HPC-TF.AL.0362.1200.L.Z3.R0200.HA | 12 | 11 | 83 | 26 | 36 | 15,6 | 2 | 3 | W0362120660 |
| 12,0 | HPC-TF.AL.0362.1200.L.Z3.R0400.HA | 12 | 11 | 83 | 26 | 36 | 15,6 | 4 | 3 | W0362120760 |
| 16,0 | HPC-TF.AL.0362.1600.L.Z3.R0100.HA | 16 | 15 | 92 | 36 | 42 | 20,8 | 1 | 3 | W0362160460 |
| 16,0 | HPC-TF.AL.0362.1600.L.Z3.R0200.HA | 16 | 15 | 92 | 36 | 42 | 20,8 | 2 | 3 | W0362160660 |
| 16,0 | HPC-TF.AL.0362.1600.L.Z3.R0400.HA | 16 | 15 | 92 | 36 | 42 | 20,8 | 4 | 3 | W0362160760 |
| 20,0 | HPC-TF.AL.0362.2000.L.Z3.R0100.HA | 20 | 19 | 104 | 41 | 52 | 26,0 | 1 | 3 | W0362200460 |
| 20,0 | HPC-TF.AL.0362.2000.L.Z3.R0200.HA | 20 | 19 | 104 | 41 | 52 | 26,0 | 2 | 3 | W0362200660 |
| 20,0 | HPC-TF.AL.0362.2000.L.Z3.R0400.HA | 20 | 19 | 104 | 41 | 52 | 26,0 | 4 | 3 | W0362200760 |

# W0362-OL und W0362-OLS, beschichtet

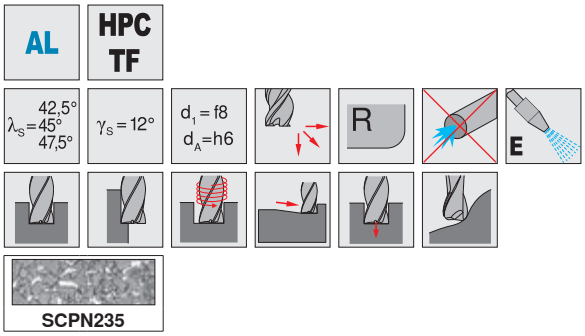
Schnittdatenempfehlung



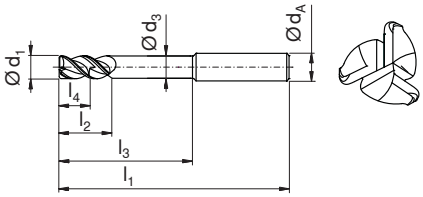
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | 300 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 300 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 300 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 260 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 200 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 140 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | **Magnesium** | 130 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 120 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | **Kupfer** | 110 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 100 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 80 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 90 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 80 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 90 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | **CuZn (Messing)** | 100 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 140 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | **CuSn (Bronze)** | 90 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 100 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | **CuAlFe (Ampco)** | 35 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 45 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | **Titan** | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | | | | | | | |
| 8.2.8 | | | | | | | | |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | | | | | | | |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | | | | | | | |
| 8.4.1 | **Sandwich** | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | | |
| 9.1.2 | | | | | | | | |

# W0362-OL und W0362-OLS, beschichtet

HPC-Torusfräser






| d1 [mm] | Type, Bezeichnung | dA [mm] | d3 [mm] | l1 [mm] | l2 [mm] | l3 [mm] | l4 [mm] | R [mm] | z | HA Material | HA Material |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6,0 | HPC-TF.AL.0362.0600.OLS.Z3.R0050.HA | 6 | 5,7 | 80 | 10 | 42 | | 0,5 | 3 | | W0362060R60 |
| 6,0 | HPC-TF.AL.0362.0600.OLS.Z3.R0100.HA | 6 | 5,7 | 80 | 10 | 42 | | 1 | 3 | | W0362060S60 |
| 6,0 | HPC-TF.AL.0362.0600.OLS.Z3.R0150.HA | 6 | 5,7 | 80 | 10 | 42 | | 1,5 | 3 | | W0362060T60 |
| 6,0 | HPC-TF.AL.0362.0600.OL.Z3.R0050.HA | 6 | 5,7 | 80 | 13 | 42 | 7,8 | 0,5 | 3 | W0362060B60 | |
| 6,0 | HPC-TF.AL.0362.0600.OL.Z3.R0100.HA | 6 | 5,7 | 80 | 13 | 42 | 7,8 | 1 | 3 | W0362060C60 | |
| 6,0 | HPC-TF.AL.0362.0600.OL.Z3.R0150.HA | 6 | 5,7 | 80 | 13 | 42 | 7,8 | 1,5 | 3 | W0362060D60 | |
| 8,0 | HPC-TF.AL.0362.0800.OLS.Z3.R0050.HA | 8 | 7,4 | 100 | 13 | 62 | | 0,5 | 3 | | W0362080R60 |
| 8,0 | HPC-TF.AL.0362.0800.OLS.Z3.R0100.HA | 8 | 7,4 | 100 | 13 | 62 | | 1 | 3 | | W0362080S60 |
| 8,0 | HPC-TF.AL.0362.0800.OLS.Z3.R0150.HA | 8 | 7,4 | 100 | 13 | 62 | | 1,5 | 3 | | W0362080T60 |
| 8,0 | HPC-TF.AL.0362.0800.OLS.Z3.R0200.HA | 8 | 7,4 | 100 | 13 | 62 | | 2 | 3 | | W0362080U60 |
| 8,0 | HPC-TF.AL.0362.0800.OL.Z3.R0050.HA | 8 | 7,4 | 100 | 21 | 62 | 10,4 | 0,5 | 3 | W0362080B60 | |
| 8,0 | HPC-TF.AL.0362.0800.OL.Z3.R0100.HA | 8 | 7,4 | 100 | 21 | 62 | 10,4 | 1 | 3 | W0362080C60 | |
| 8,0 | HPC-TF.AL.0362.0800.OL.Z3.R0150.HA | 8 | 7,4 | 100 | 21 | 62 | 10,4 | 1,5 | 3 | W0362080D60 | |
| 8,0 | HPC-TF.AL.0362.0800.OL.Z3.R0200.HA | 8 | 7,4 | 100 | 21 | 62 | 10,4 | 2 | 3 | W0362080E60 | |
| 10,0 | HPC-TF.AL.0362.1000.OLS.Z3.R0050.HA | 10 | 9,2 | 100 | 16 | 58 | | 0,5 | 3 | | W0362100R60 |
| 10,0 | HPC-TF.AL.0362.1000.OLS.Z3.R0100.HA | 10 | 9,2 | 100 | 16 | 58 | | 1 | 3 | | W0362100S60 |
| 10,0 | HPC-TF.AL.0362.1000.OLS.Z3.R0150.HA | 10 | 9,2 | 100 | 16 | 58 | | 1,5 | 3 | | W0362100T60 |
| 10,0 | HPC-TF.AL.0362.1000.OLS.Z3.R0200.HA | 10 | 9,2 | 100 | 16 | 58 | | 2 | 3 | | W0362100U60 |
| 10,0 | HPC-TF.AL.0362.1000.OL.Z3.R0050.HA | 10 | 9,2 | 100 | 22 | 58 | 13,0 | 0,5 | 3 | W0362100B60 | |
| 10,0 | HPC-TF.AL.0362.1000.OL.Z3.R0100.HA | 10 | 9,2 | 100 | 22 | 58 | 13,0 | 1 | 3 | W0362100C60 | |
| 10,0 | HPC-TF.AL.0362.1000.OL.Z3.R0150.HA | 10 | 9,2 | 100 | 22 | 58 | 13,0 | 1,5 | 3 | W0362100D60 | |
| 10,0 | HPC-TF.AL.0362.1000.OL.Z3.R0200.HA | 10 | 9,2 | 100 | 22 | 58 | 13,0 | 2 | 3 | W0362100E60 | |
| 12,0 | HPC-TF.AL.0362.1200.OLS.Z3.R0050.HA | 12 | 11 | 120 | 19 | 73 | | 0,5 | 3 | | W0362120R60 |
| 12,0 | HPC-TF.AL.0362.1200.OLS.Z3.R0100.HA | 12 | 11 | 120 | 19 | 73 | | 1 | 3 | | W0362120S60 |
| 12,0 | HPC-TF.AL.0362.1200.OLS.Z3.R0150.HA | 12 | 11 | 120 | 19 | 73 | | 1,5 | 3 | | W0362120T60 |
| 12,0 | HPC-TF.AL.0362.1200.OLS.Z3.R0200.HA | 12 | 11 | 120 | 19 | 73 | | 2 | 3 | | W0362120U60 |
| 12,0 | HPC-TF.AL.0362.1200.OLS.Z3.R0400.HA | 12 | 11 | 120 | 19 | 73 | | 4 | 3 | | W0362120V60 |
| 12,0 | HPC-TF.AL.0362.1200.OL.Z3.R0050.HA | 12 | 11 | 120 | 26 | 73 | 15,6 | 0,5 | 3 | W0362120B60 | |
| 12,0 | HPC-TF.AL.0362.1200.OL.Z3.R0100.HA | 12 | 11 | 120 | 26 | 73 | 15,6 | 1 | 3 | W0362120C60 | |
| 12,0 | HPC-TF.AL.0362.1200.OL.Z3.R0150.HA | 12 | 11 | 120 | 26 | 73 | 15,6 | 1,5 | 3 | W0362120D60 | |
| 12,0 | HPC-TF.AL.0362.1200.OL.Z3.R0200.HA | 12 | 11 | 120 | 26 | 73 | 15,6 | 2 | 3 | W0362120E60 | |
| 12,0 | HPC-TF.AL.0362.1200.OL.Z3.R0400.HA | 12 | 11 | 120 | 26 | 73 | 15,6 | 4 | 3 | W0362120F60 | |
| 16,0 | HPC-TF.AL.0362.1600.OLS.Z3.R0100.HA | 16 | 15 | 150 | 25 | 100 | | 1 | 3 | | W0362160S60 |
| 16,0 | HPC-TF.AL.0362.1600.OLS.Z3.R0200.HA | 16 | 15 | 150 | 25 | 100 | | 2 | 3 | | W0362160U60 |
| 16,0 | HPC-TF.AL.0362.1600.OLS.Z3.R0400.HA | 16 | 15 | 150 | 25 | 100 | | 4 | 3 | | W0362160V60 |
| 16,0 | HPC-TF.AL.0362.1600.OL.Z3.R0100.HA | 16 | 15 | 150 | 36 | 100 | 20,8 | 1 | 3 | W0362160C60 | |
| 16,0 | HPC-TF.AL.0362.1600.OL.Z3.R0200.HA | 16 | 15 | 150 | 36 | 100 | 20,8 | 2 | 3 | W0362160E60 | |
| 16,0 | HPC-TF.AL.0362.1600.OL.Z3.R0400.HA | 16 | 15 | 150 | 36 | 100 | 20,8 | 4 | 3 | W0362160F60 | |
| 20,0 | HPC-TF.AL.0362.2000.OLS.Z3.R0100.HA | 20 | 19 | 150 | 32 | 98 | | 1 | 3 | | W0362200S60 |
| 20,0 | HPC-TF.AL.0362.2000.OLS.Z3.R0200.HA | 20 | 19 | 150 | 32 | 98 | | 2 | 3 | | W0362200U60 |
| 20,0 | HPC-TF.AL.0362.2000.OLS.Z3.R0400.HA | 20 | 19 | 150 | 32 | 98 | | 4 | 3 | | W0362200V60 |
| 20,0 | HPC-TF.AL.0362.2000.OL.Z3.R0100.HA | 20 | 19 | 150 | 41 | 98 | 26,0 | 1 | 3 | W0362200C60 | |
| 20,0 | HPC-TF.AL.0362.2000.OL.Z3.R0200.HA | 20 | 19 | 150 | 41 | 98 | 26,0 | 2 | 3 | W0362200E60 | |
| 20,0 | HPC-TF.AL.0362.2000.OL.Z3.R0400.HA | 20 | 19 | 150 | 41 | 98 | 26,0 | 4 | 3 | W0362200F60 | |

# W0321-L, unbeschichtet

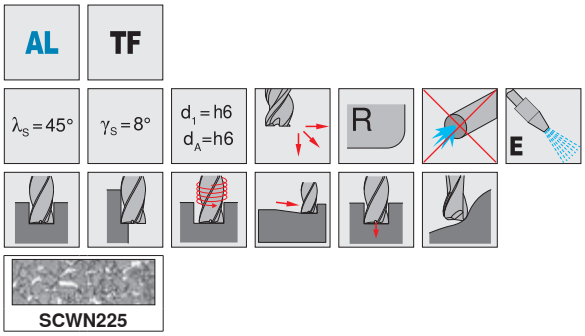
Schnittdatenempfehlung



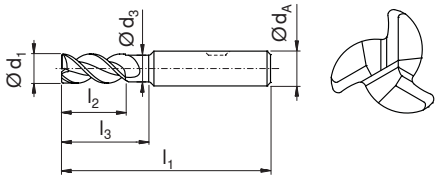
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 5,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 600 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 480 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 360 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 240 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | **Magnesium** | 220 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 200 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | **Kupfer** | 170 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 155 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 120 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | **CuZn (Messing)** | 180 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 240 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | **CuSn (Bronze)** | 150 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 170 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | **CuAlFe (Ampco)** | 55 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 70 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | **Titan** | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | | | | | | | |
| 8.2.8 | | | | | | | | |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | | | | | | | |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | | | | | | | |
| 8.4.1 | **Sandwich** | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | | |
| 9.1.2 | | | | | | | | |

# W0321-L, unbeschichtet

Torusfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | R [mm] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 5,0 | TF.AL.0321.0500.L.Z3.R0050.HA | 6 | 4,7 | 57 | 13 | 19 | 0,5 | 3 | W0321050300 | |
| 5,0 | TF.AL.0321.0500.L.Z3.R0100.HA | 6 | 4,7 | 57 | 13 | 19 | 1 | 3 | W0321050400 | |
| 6,0 | TF.AL.0321.0600.L.Z3.R0050.HA | 6 | 5,7 | 57 | 13 | 19 | 0,5 | 3 | W0321060300 | |
| 6,0 | TF.AL.0321.0600.L.Z3.R0100.HA | 6 | 5,7 | 57 | 13 | 19 | 1 | 3 | W0321060400 | |
| 8,0 | TF.AL.0321.0800.L.Z3.R0050.HA | 8 | 7,4 | 63 | 21 | 25 | 0,5 | 3 | W0321080300 | |
| 8,0 | TF.AL.0321.0800.L.Z3.R0100.HA | 8 | 7,4 | 63 | 21 | 25 | 1 | 3 | W0321080400 | |
| 10,0 | TF.AL.0321.1000.L.Z3.R0050.HA | 10 | 9,2 | 72 | 22 | 30 | 0,5 | 3 | W0321100300 | |
| 10,0 | TF.AL.0321.1000.L.Z3.R0100.HA | 10 | 9,2 | 72 | 22 | 30 | 1 | 3 | W0321100400 | |
| 12,0 | TF.AL.0321.1200.L.Z3.R0050.HA | 12 | 11 | 83 | 26 | 36 | 0,5 | 3 | W0321120300 | |
| 12,0 | TF.AL.0321.1200.L.Z3.R0100.HA | 12 | 11 | 83 | 26 | 36 | 1 | 3 | W0321120400 | |
| 16,0 | TF.AL.0321.1600.L.Z3.R0200.HA | 16 | 15 | 92 | 36 | 42 | 2 | 3 | W0321160600 | |
| 16,0 | TF.AL.0321.1600.L.Z3.R0200.HB | 16 | 15 | 92 | 36 | 42 | 2 | 3 | | W0321160601 |
| 16,0 | TF.AL.0321.1600.L.Z3.R0400.HA | 16 | 15 | 92 | 36 | 42 | 4 | 3 | W0321160700 | |
| 16,0 | TF.AL.0321.1600.L.Z3.R0400.HB | 16 | 15 | 92 | 36 | 42 | 4 | 3 | | W0321160701 |
| 20,0 | TF.AL.0321.2000.L.Z3.R0400.HA | 20 | 19 | 104 | 41 | 52 | 4 | 3 | W0321200700 | |
| 20,0 | TF.AL.0321.2000.L.Z3.R0400.HB | 20 | 19 | 104 | 41 | 52 | 4 | 3 | | W0321200701 |

# W0321-OLS, unbeschichtet

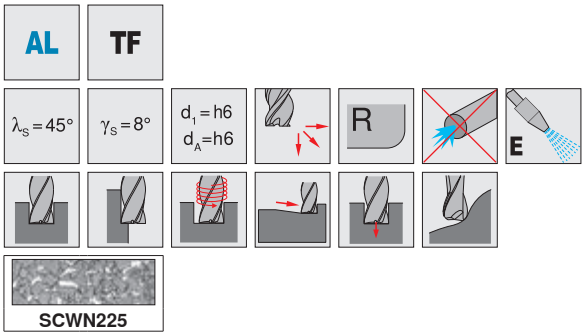
Schnittdatenempfehlung



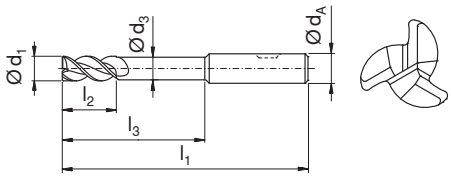
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | 300 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 300 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 300 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 260 | 1xø | 1xø | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 200 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 140 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | **Magnesium** | 130 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 120 | 1xø | 1xø | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | **Kupfer** | 110 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 100 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 80 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 90 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 80 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 90 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | **CuZn (Messing)** | 100 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 140 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | **CuSn (Bronze)** | 90 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 100 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | **CuAlFe (Ampco)** | 35 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 45 | 1xø | 1xø | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | **Titan** | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | | | | | | | |
| 8.2.8 | | | | | | | | |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | | | | | | | |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | | | | | | | |
| 8.4.1 | **Sandwich** | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | | |
| 9.1.2 | | | | | | | | |

# W0321-OLS, unbeschichtet

Torusfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | R [mm] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 6,0 | TF.AL.0321.0600.OLS.Z3.R0050.HA | 6 | 5,7 | 80 | 10 | 42 | 0,5 | 3 | W0321060R00 | |
| 6,0 | TF.AL.0321.0600.OLS.Z3.R0100.HA | 6 | 5,7 | 80 | 10 | 42 | 1 | 3 | W0321060S00 | |
| 8,0 | TF.AL.0321.0800.OLS.Z3.R0050.HA | 8 | 7,4 | 100 | 13 | 62 | 0,5 | 3 | W0321080R00 | |
| 8,0 | TF.AL.0321.0800.OLS.Z3.R0100.HA | 8 | 7,4 | 100 | 13 | 62 | 1 | 3 | W0321080S00 | |
| 10,0 | TF.AL.0321.1000.OLS.Z3.R0050.HA | 10 | 9,2 | 100 | 16 | 58 | 0,5 | 3 | W0321100R00 | |
| 10,0 | TF.AL.0321.1000.OLS.Z3.R0100.HA | 10 | 9,2 | 100 | 16 | 58 | 1 | 3 | W0321100S00 | |
| 12,0 | TF.AL.0321.1200.OLS.Z3.R0050.HA | 12 | 11 | 120 | 19 | 73 | 0,5 | 3 | W0321120R00 | |
| 12,0 | TF.AL.0321.1200.OLS.Z3.R0100.HA | 12 | 11 | 120 | 19 | 73 | 1 | 3 | W0321120S00 | |
| 16,0 | TF.AL.0321.1600.OLS.Z3.R0200.HA | 16 | 15 | 150 | 25 | 100 | 2 | 3 | W0321160U00 | |
| 16,0 | TF.AL.0321.1600.OLS.Z3.R0200.HB | 16 | 15 | 150 | 25 | 100 | 2 | 3 | | W0321160U01 |
| 16,0 | TF.AL.0321.1600.OLS.Z3.R0400.HA | 16 | 15 | 150 | 25 | 100 | 4 | 3 | W0321160V00 | |
| 16,0 | TF.AL.0321.1600.OLS.Z3.R0400.HB | 16 | 15 | 150 | 25 | 100 | 4 | 3 | | W0321160V01 |
| 20,0 | TF.AL.0321.2000.OLS.Z3.R0400.HA | 20 | 19 | 150 | 32 | 98 | 4 | 3 | W0321200V00 | |
| 20,0 | TF.AL.0321.2000.OLS.Z3.R0400.HB | 20 | 19 | 150 | 32 | 98 | 4 | 3 | | W0321200V01 |

# WP288-XL, PKD bestückt

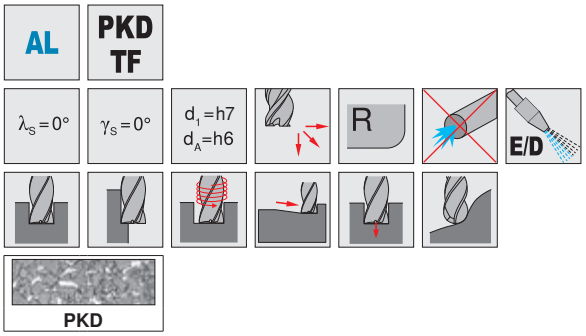
Schnittdatenempfehlung



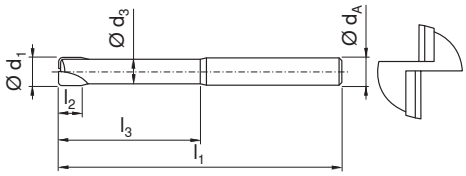
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 2,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 700 | 1xø | 0,15xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 600 | 1xø | 0,15xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 450 | 1xø | 0,15xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 500 | 1xø | 0,15xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 450 | 1xø | 0,15xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.6 | | 250 | 1xø | 0,15xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | 400 | 1xø | 0,15xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |
| 8.1.1 | Thermoplast | 350 | 1xø | 0,2xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 8.1.2 | | 350 | 1xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.3 | | 350 | 1xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.4 | | 150 | 1xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.5 | | 120 | 1xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.6 | | 200 | 1xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.7 | | 350 | 1xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.8 | | 300 | 1xø | 0,2xø | 0,125 | 0,25 | 0,35 | 0,45 | 0,55 |
| 8.1.9 | | 80 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.1 | Duroplast | 100 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.2 | | 100 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.3 | | 100 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.4 | | 150 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.5 | | 100 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.6 | | 80 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.7 | | 100 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.8 | | 100 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.1 | faserverstärkter Kunststoff | 105 | 1xø | 0,2xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 8.3.2 | | 100 | 1xø | 0,2xø | 0,03 | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.3 | | 150 | 1xø | 0,2xø | 0,03 | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.4 | | 100 | 1xø | 0,2xø | 0,03 | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.5 | | | | | | | | | |
| 8.3.6 | | 120 | 1xø | 0,2xø | 0,03 | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.4.1 | Sandwich | | | | | | | | |
| 8.4.2 | | | | | | | | | |
| 8.4.3 | | | | | | | | | |
| 9.1.1 | Standard Graphit | 800 | 1xø | 0,2xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 9.1.2 | | 550 | 1xø | 0,2xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |

# WP288-XL, PKD bestückt

Torusfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | R [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|---|
| 2,0 | TF.AL.P288.0200.XL.Z1.R0030.HA | 6 | 1,7 | 75 | 2 | 6 | 0,3 | 1 | WP288020100 |
| 2,0 | TF.AL.P288.0200.XL.Z1.R0030.HA | 6 | 1,7 | 75 | 2 | 10 | 0,3 | 1 | WP288020200 |
| 2,0 | TF.AL.P288.0200.XL.Z1.R0030.HA | 6 | 1,7 | 75 | 2 | 35 | 0,3 | 1 | WP288020300 |
| 2,0 | TF.AL.P288.0200.XL.Z1.R0030.HA | 6 | 1,7 | 75 | 2 | 14 | 0,3 | 1 | WP288020400 |
| 3,0 | TF.AL.P288.0300.XL.Z2.R0030.HA | 6 | 2,5 | 75 | 2,5 | 9 | 0,3 | 2 | WP288030100 |
| 3,0 | TF.AL.P288.0300.XL.Z2.R0030.HA | 6 | 2,5 | 75 | 2,5 | 15 | 0,3 | 2 | WP288030200 |
| 3,0 | TF.AL.P288.0300.XL.Z2.R0030.HA | 6 | 2,5 | 75 | 2,5 | 35 | 0,3 | 2 | WP288030300 |
| 3,0 | TF.AL.P288.0300.XL.Z2.R0030.HA | 6 | 2,5 | 75 | 2,5 | 21 | 0,3 | 2 | WP288030400 |
| 4,0 | TF.AL.P288.0400.XL.Z2.R0030.HA | 6 | 3,5 | 75 | 2,5 | 12 | 0,3 | 2 | WP288040100 |
| 4,0 | TF.AL.P288.0400.XL.Z2.R0030.HA | 6 | 3,5 | 75 | 2,5 | 20 | 0,3 | 2 | WP288040200 |
| 4,0 | TF.AL.P288.0400.XL.Z2.R0030.HA | 6 | 3,5 | 75 | 2,5 | 35 | 0,3 | 2 | WP288040300 |
| 4,0 | TF.AL.P288.0400.XL.Z2.R0030.HA | 6 | 3,5 | 75 | 2,5 | 28 | 0,3 | 2 | WP288040400 |
| 5,0 | TF.AL.P288.0500.XL.Z2.R0030.HA | 6 | 4,4 | 75 | 3 | 15 | 0,3 | 2 | WP288050100 |
| 5,0 | TF.AL.P288.0500.XL.Z2.R0030.HA | 6 | 4,4 | 75 | 3 | 25 | 0,3 | 2 | WP288050200 |
| 5,0 | TF.AL.P288.0500.XL.Z2.R0030.HA | 6 | 4,4 | 75 | 3 | 35 | 0,3 | 2 | WP288050300 |
| 6,0 | TF.AL.P288.0600.XL.Z2.R0030.HA | 6 | 5,4 | 100 | 6 | 18 | 0,3 | 2 | WP288060000 |
| 6,0 | TF.AL.P288.0600.XL.Z2.R0030.HA | 6 | 5,4 | 100 | 6 | 30 | 0,3 | 2 | WP288060100 |
| 6,0 | TF.AL.P288.0600.XL.Z2.R0030.HA | 6 | 5,4 | 100 | 6 | 42 | 0,3 | 2 | WP288060200 |
| 6,0 | TF.AL.P288.0600.XL.Z2.R0050.HA | 6 | 5,4 | 100 | 6 | 18 | 0,5 | 2 | WP288060400 |
| 6,0 | TF.AL.P288.0600.XL.Z2.R0050.HA | 6 | 5,4 | 100 | 6 | 30 | 0,5 | 2 | WP288060500 |
| 6,0 | TF.AL.P288.0600.XL.Z2.R0050.HA | 6 | 5,4 | 100 | 6 | 42 | 0,5 | 2 | WP288060600 |
| 6,0 | TF.AL.P288.0600.XL.Z2.R0100.HA | 8 | 5,4 | 100 | 6 | 40 | 1 | 2 | WP288060300 |
| 6,0 | TF.AL.P288.0600.XL.Z2.R0100.HA | 6 | 5,4 | 100 | 6 | 18 | 1 | 2 | WP288060700 |
| 6,0 | TF.AL.P288.0600.XL.Z2.R0100.HA | 6 | 5,4 | 100 | 6 | 42 | 1 | 2 | WP288060900 |
| 8,0 | TF.AL.P288.0800.XL.Z2.R0030.HA | 8 | 7,2 | 100 | 7 | 24 | 0,3 | 2 | WP288080000 |
| 8,0 | TF.AL.P288.0800.XL.Z2.R0030.HA | 8 | 7,2 | 100 | 7 | 40 | 0,3 | 2 | WP288080500 |
| 8,0 | TF.AL.P288.0800.XL.Z2.R0050.HA | 8 | 7,2 | 100 | 7 | 24 | 0,5 | 2 | WP288080100 |
| 8,0 | TF.AL.P288.0800.XL.Z2.R0050.HA | 8 | 7,2 | 100 | 7 | 40 | 0,5 | 2 | WP288080600 |
| 8,0 | TF.AL.P288.0800.XL.Z2.R0100.HA | 8 | 7,2 | 100 | 7 | 24 | 1 | 2 | WP288080200 |
| 8,0 | TF.AL.P288.0800.XL.Z2.R0100.HA | 8 | 7,2 | 100 | 7 | 40 | 1 | 2 | WP288080700 |
| 8,0 | TF.AL.P288.0800.XL.Z2.R0200.HA | 10 | 7,2 | 100 | 7 | 40 | 2 | 2 | WP288080300 |
| 8,0 | TF.AL.P288.0800.XL.Z2.R0200.HA | 8 | 7,2 | 100 | 7 | 24 | 2 | 2 | WP288080400 |
| 8,0 | TF.AL.P288.0800.XL.Z2.R0200.HA | 8 | 7,2 | 100 | 7 | 40 | 2 | 2 | WP288080800 |
| 10,0 | TF.AL.P288.1000.XL.Z2.R0050.HA | 10 | 9 | 100 | 8 | 30 | 0,5 | 2 | WP288100000 |
| 10,0 | TF.AL.P288.1000.XL.Z2.R0050.HA | 10 | 9 | 100 | 8 | 50 | 0,5 | 2 | WP288100500 |
| 10,0 | TF.AL.P288.1000.XL.Z2.R0100.HA | 10 | 9 | 100 | 8 | 30 | 1 | 2 | WP288100100 |
| 10,0 | TF.AL.P288.1000.XL.Z2.R0100.HA | 10 | 9 | 100 | 8 | 50 | 1 | 2 | WP288100600 |
| 10,0 | TF.AL.P288.1000.XL.Z2.R0150.HA | 10 | 9 | 100 | 8 | 30 | 1,5 | 2 | WP288100200 |
| 10,0 | TF.AL.P288.1000.XL.Z2.R0150.HA | 10 | 9 | 100 | 8 | 50 | 1,5 | 2 | WP288100700 |
| 10,0 | TF.AL.P288.1000.XL.Z2.R0200.HA | 10 | 9 | 100 | 8 | 30 | 2 | 2 | WP288100A00 |
| 10,0 | TF.AL.P288.1000.XL.Z2.R0200.HA | 10 | 9 | 100 | 8 | 50 | 2 | 2 | WP288100800 |
| 10,0 | TF.AL.P288.1000.XL.Z2.R0300.HA | 12 | 9 | 100 | 8 | 40 | 3 | 2 | WP288100300 |
| 10,0 | TF.AL.P288.1000.XL.Z2.R0300.HA | 10 | 9 | 100 | 8 | 30 | 3 | 2 | WP288100400 |
| 10,0 | TF.AL.P288.1000.XL.Z2.R0300.HA | 10 | 9 | 100 | 8 | 50 | 3 | 2 | WP288100900 |
| 12,0 | TF.AL.P288.1200.XL.Z2.R0050.HA | 12 | 11 | 105 | 9 | 36 | 0,5 | 2 | WP288120000 |
| 12,0 | TF.AL.P288.1200.XL.Z2.R0050.HA | 12 | 11 | 105 | 9 | 60 | 0,5 | 2 | WP288120600 |
| 12,0 | TF.AL.P288.1200.XL.Z2.R0100.HA | 12 | 11 | 105 | 9 | 36 | 1 | 2 | WP288120100 |
| 12,0 | TF.AL.P288.1200.XL.Z2.R0100.HA | 12 | 11 | 105 | 9 | 60 | 1 | 2 | WP288120700 |

# WP288-XL, PKD bestückt

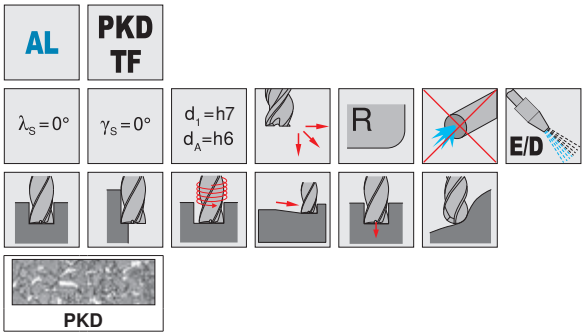
Schnittdatenempfehlung



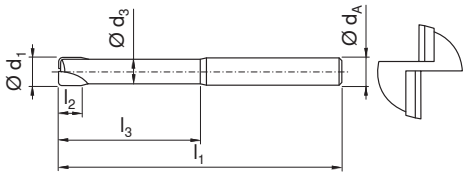
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 2,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 700 | 1xø | 0,15xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.2 | | 600 | 1xø | 0,15xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.3 | | 450 | 1xø | 0,15xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.4 | | 500 | 1xø | 0,15xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.5 | | 450 | 1xø | 0,15xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.1.6 | | 250 | 1xø | 0,15xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | 400 | 1xø | 0,15xø | 0,035 | 0,06 | 0,07 | 0,09 | 0,12 |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |
| 8.1.1 | Thermoplast | 350 | 1xø | 0,2xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 8.1.2 | | 350 | 1xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.3 | | 350 | 1xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.4 | | 150 | 1xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.5 | | 120 | 1xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.6 | | 200 | 1xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.7 | | 350 | 1xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.8 | | 300 | 1xø | 0,2xø | 0,125 | 0,25 | 0,35 | 0,45 | 0,55 |
| 8.1.9 | | 80 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.1 | Duroplast | 100 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.2 | | 100 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.3 | | 100 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.4 | | 150 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.5 | | 100 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.6 | | 80 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.7 | | 100 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.8 | | 100 | 1xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.1 | faserverstärkter Kunststoff | 105 | 1xø | 0,2xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 8.3.2 | | 100 | 1xø | 0,2xø | 0,03 | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.3 | | 150 | 1xø | 0,2xø | 0,03 | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.4 | | 100 | 1xø | 0,2xø | 0,03 | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.5 | | | | | | | | | |
| 8.3.6 | | 120 | 1xø | 0,2xø | 0,03 | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.4.1 | Sandwich | | | | | | | | |
| 8.4.2 | | | | | | | | | |
| 8.4.3 | | | | | | | | | |
| 9.1.1 | Standard Graphit | 800 | 1xø | 0,2xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 9.1.2 | | 550 | 1xø | 0,2xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |

# WP288-XL, PKD bestückt

Torusfräser





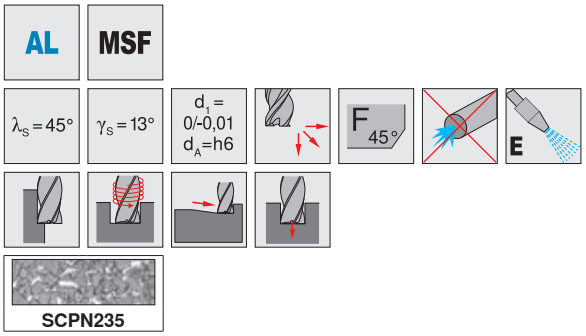

| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | R [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|---|
| 12,0 | TF.AL.P288.1200.XL.Z2.R0150.HA | 12 | 11 | 105 | 9 | 36 | 1,5 | 2 | WP288120200 |
| 12,0 | TF.AL.P288.1200.XL.Z2.R0150.HA | 12 | 11 | 105 | 9 | 60 | 1,5 | 2 | WP288120800 |
| 12,0 | TF.AL.P288.1200.XL.Z2.R0400.HA | 16 | 11 | 100 | 9 | 40 | 4 | 2 | WP288120300 |
| 16,0 | TF.AL.P288.1600.XL.Z2.R0300.HA | 16 | 15 | 130 | 11 | 45 | 3 | 2 | WP288160200 |
| 16,0 | TF.AL.P288.1600.XL.Z2.R0500.HA | 16 | 15 | 130 | 11 | 50 | 5 | 2 | WP288160300 |
| 20,0 | TF.AL.P288.2000.XL.Z2.R0600.HA | 20 | 19 | 160 | 13 | 60 | 6 | 2 | WP288200300 |

# W0242-L und W0242-OL, beschichtet

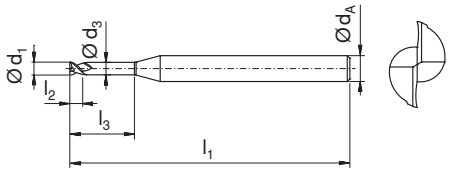
Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 0,5 = Ø 0,6 | > Ø 0,6 = Ø 0,8 | > Ø 0,8 = Ø 1,0 | > Ø 1,0 = Ø 1,2 | > Ø 1,2 = Ø 1,5 | > Ø 1,5 = Ø 2,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 400 | 1xø | 0,15xø | 0,012 | 0,016 | 0,02 | 0,024 | 0,03 | 0,04 |
| 7.1.2 | | 400 | 1xø | 0,15xø | 0,012 | 0,016 | 0,02 | 0,024 | 0,03 | 0,04 |
| 7.1.3 | | 400 | 1xø | 0,15xø | 0,012 | 0,016 | 0,02 | 0,024 | 0,03 | 0,04 |
| 7.1.4 | | 400 | 1xø | 0,15xø | 0,012 | 0,016 | 0,02 | 0,024 | 0,03 | 0,04 |
| 7.1.5 | | 300 | 1xø | 0,15xø | 0,012 | 0,016 | 0,02 | 0,024 | 0,03 | 0,04 |
| 7.1.6 | | 200 | 1xø | 0,15xø | 0,012 | 0,016 | 0,02 | 0,024 | 0,03 | 0,04 |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | 140 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.3.2 | | 120 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.3.3 | | 100 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.3.4 | | 120 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.3.5 | | 100 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.3.6 | | 120 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.4.1 | CuZn (Messing) | 150 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.4.2 | | 200 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.5.1 | CuSn (Bronze) | 120 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.5.2 | | 140 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.6.1 | CuAlFe (Ampco) | 120 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.6.2 | | 140 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.8.1 | Titan | | | | | | | | | |
| 7.8.2 | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | |
| 8.1.1 | Thermoplast | | | | | | | | | |
| 8.1.2 | | | | | | | | | | |
| 8.1.3 | | | | | | | | | | |
| 8.1.4 | | | | | | | | | | |
| 8.1.5 | | | | | | | | | | |
| 8.1.6 | | | | | | | | | | |
| 8.1.7 | | | | | | | | | | |
| 8.1.8 | | | | | | | | | | |
| 8.1.9 | | | | | | | | | | |
| 8.2.1 | Duroplast | | | | | | | | | |
| 8.2.2 | | | | | | | | | | |
| 8.2.3 | | | | | | | | | | |
| 8.2.4 | | | | | | | | | | |
| 8.2.5 | | | | | | | | | | |
| 8.2.6 | | | | | | | | | | |
| 8.2.7 | | | | | | | | | | |
| 8.2.8 | | | | | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | | | |
| 8.3.2 | | | | | | | | | | |
| 8.3.3 | | | | | | | | | | |
| 8.3.4 | | | | | | | | | | |
| 8.3.5 | | | | | | | | | | |
| 8.3.6 | | | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | | | |
| 8.4.2 | | | | | | | | | | |
| 8.4.3 | | | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | | | |
| 9.1.2 | | | | | | | | | | |






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | F [mm] | z | HA Material | HA Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,5 | MSF.AL.0242.0050.L03D.Z2.F0005A.HA | 3 | 0,45 | 55 | 0,5 | 1,5 | 0,05 | 2 | W0242005140 | |
| 0,5 | MSF.AL.0242.0050.L05D.Z2.F0005A.HA | 3 | 0,45 | 55 | 1,2 | 2,5 | 0,05 | 2 | W0242005340 | |
| 0,5 | MSF.AL.0242.0050.L08D.Z2.F0005A.HA | 3 | 0,45 | 55 | 1,2 | 4 | 0,05 | 2 | W0242005540 | |
| 0,5 | MSF.AL.0242.0050.L10D.Z2.F0005A.HA | 3 | 0,45 | 55 | 1,2 | 5 | 0,05 | 2 | W0242005740 | |
| 1,0 | MSF.AL.0242.0100.L03D.Z2.F0010A.HA | 3 | 0,95 | 55 | 1,5 | 3 | 0,1 | 2 | W0242010140 | |
| 1,0 | MSF.AL.0242.0100.L05D.Z2.F0010A.HA | 3 | 0,95 | 55 | 1,5 | 5 | 0,1 | 2 | W0242010640 | |
| 1,0 | MSF.AL.0242.0100.OL08D.Z2.F0010A.HA | 3 | 0,95 | 65 | 1,5 | 8 | 0,1 | 2 | | W0242010D40 |
| 1,0 | MSF.AL.0242.0100.OL10D.Z2.F0010A.HA | 3 | 0,95 | 65 | 1,5 | 10 | 0,1 | 2 | | W0242010740 |
| 1,0 | MSF.AL.0242.0100.OL12D.Z2.F0010A.HA | 3 | 0,95 | 65 | 1,5 | 12 | 0,1 | 2 | | W0242010840 |
| 1,5 | MSF.AL.0242.0150.L03D.Z2.F0010A.HA | 3 | 1,44 | 55 | 1,8 | 5 | 0,1 | 2 | W0242015140 | |
| 1,5 | MSF.AL.0242.0150.L05D.Z2.F0010A.HA | 3 | 1,44 | 55 | 1,8 | 7,5 | 0,1 | 2 | W0242015640 | |
| 1,5 | MSF.AL.0242.0150.OL08D.Z2.F0010A.HA | 3 | 1,44 | 65 | 1,8 | 12 | 0,1 | 2 | | W0242015D40 |
| 1,5 | MSF.AL.0242.0150.OL10D.Z2.F0010A.HA | 3 | 1,44 | 65 | 1,8 | 15 | 0,1 | 2 | | W0242015740 |
| 2,0 | MSF.AL.0242.0200.L03D.Z2.F0010A.HA | 3 | 1,92 | 55 | 2 | 6 | 0,1 | 2 | W0242020140 | |
| 2,0 | MSF.AL.0242.0200.L05D.Z2.F0010A.HA | 3 | 1,92 | 55 | 2 | 10 | 0,1 | 2 | W0242020640 | |
| 2,0 | MSF.AL.0242.0200.OL07D.Z2.F0010A.HA | 3 | 1,92 | 55 | 2 | 14 | 0,1 | 2 | | W0242020D40 |
| 2,0 | MSF.AL.0242.0200.OL08D.Z2.F0010A.HA | 3 | 1,92 | 65 | 2 | 16 | 0,1 | 2 | | W0242020G40 |
| 2,0 | MSF.AL.0242.0200.OL10D.Z2.F0010A.HA | 3 | 1,92 | 65 | 2 | 20 | 0,1 | 2 | | W0242020740 |

# W0239-L und W0239-OL, beschichtet

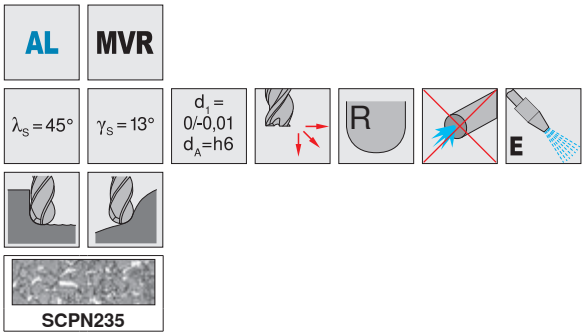
Schnittdatenempfehlung



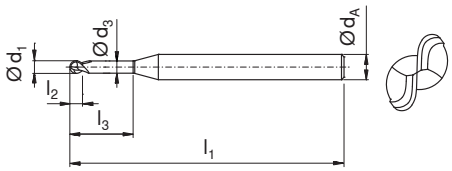
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 0,5 = Ø 0,6 | > Ø 0,6 = Ø 0,8 | > Ø 0,8 = Ø 1,0 | > Ø 1,0 = Ø 1,2 | > Ø 1,2 = Ø 1,5 | > Ø 1,5 = Ø 2,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 400 | 1xø | 0,15xø | 0,012 | 0,016 | 0,02 | 0,024 | 0,03 | 0,04 |
| 7.1.2 | | 400 | 1xø | 0,15xø | 0,012 | 0,016 | 0,02 | 0,024 | 0,03 | 0,04 |
| 7.1.3 | | 400 | 1xø | 0,15xø | 0,012 | 0,016 | 0,02 | 0,024 | 0,03 | 0,04 |
| 7.1.4 | | 400 | 1xø | 0,15xø | 0,012 | 0,016 | 0,02 | 0,024 | 0,03 | 0,04 |
| 7.1.5 | | 300 | 1xø | 0,15xø | 0,012 | 0,016 | 0,02 | 0,024 | 0,03 | 0,04 |
| 7.1.6 | | 200 | 1xø | 0,15xø | 0,012 | 0,016 | 0,02 | 0,024 | 0,03 | 0,04 |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | 140 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.3.2 | | 120 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.3.3 | | 100 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.3.4 | | 120 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.3.5 | | 100 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.3.6 | | 120 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.4.1 | CuZn (Messing) | 150 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.4.2 | | 200 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.5.1 | CuSn (Bronze) | 120 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.5.2 | | 140 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.6.1 | CuAlFe (Ampco) | 120 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.6.2 | | 140 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.8.1 | Titan | | | | | | | | | |
| 7.8.2 | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | |
| 8.1.1 | Thermoplast | | | | | | | | | |
| 8.1.2 | | | | | | | | | | |
| 8.1.3 | | | | | | | | | | |
| 8.1.4 | | | | | | | | | | |
| 8.1.5 | | | | | | | | | | |
| 8.1.6 | | | | | | | | | | |
| 8.1.7 | | | | | | | | | | |
| 8.1.8 | | | | | | | | | | |
| 8.1.9 | | | | | | | | | | |
| 8.2.1 | Duroplast | | | | | | | | | |
| 8.2.2 | | | | | | | | | | |
| 8.2.3 | | | | | | | | | | |
| 8.2.4 | | | | | | | | | | |
| 8.2.5 | | | | | | | | | | |
| 8.2.6 | | | | | | | | | | |
| 8.2.7 | | | | | | | | | | |
| 8.2.8 | | | | | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | | | |
| 8.3.2 | | | | | | | | | | |
| 8.3.3 | | | | | | | | | | |
| 8.3.4 | | | | | | | | | | |
| 8.3.5 | | | | | | | | | | |
| 8.3.6 | | | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | | | |
| 8.4.2 | | | | | | | | | | |
| 8.4.3 | | | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | | | |
| 9.1.2 | | | | | | | | | | |

# W0239-L und W0239-OL, beschichtet

Micro-Vollradiusfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | R [mm] | z | HA Material | HA Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,5 | MVR.AL.0239.0050.L03D.Z2.R0025.HA | 3 | 0,45 | 55 | 0,5 | 1,5 | 0,25 | 2 | W0239005140 | |
| 0,5 | MVR.AL.0239.0050.L05D.Z2.R0025.HA | 3 | 0,45 | 55 | 1,2 | 2,5 | 0,25 | 2 | W0239005340 | |
| 0,5 | MVR.AL.0239.0050.L08D.Z2.R0025.HA | 3 | 0,45 | 55 | 1,2 | 4 | 0,25 | 2 | W0239005540 | |
| 0,5 | MVR.AL.0239.0050.L10D.Z2.R0025.HA | 3 | 0,45 | 55 | 1,2 | 5 | 0,25 | 2 | W0239005740 | |
| 1,0 | MVR.AL.0239.0100.L03D.Z2.R0050.HA | 3 | 0,95 | 55 | 1,5 | 3 | 0,5 | 2 | W0239010140 | |
| 1,0 | MVR.AL.0239.0100.L05D.Z2.R0050.HA | 3 | 0,95 | 55 | 1,5 | 5 | 0,5 | 2 | W0239010640 | |
| 1,0 | MVR.AL.0239.0100.OL08D.Z2.R0050.HA | 3 | 0,95 | 65 | 1,5 | 8 | 0,5 | 2 | | W0239010D40 |
| 1,0 | MVR.AL.0239.0100.OL10D.Z2.R0050.HA | 3 | 0,95 | 65 | 1,5 | 10 | 0,5 | 2 | | W0239010740 |
| 1,0 | MVR.AL.0239.0100.OL12D.Z2.R0050.HA | 3 | 0,95 | 65 | 1,5 | 12 | 0,5 | 2 | | W0239010840 |
| 1,5 | MVR.AL.0239.0150.L03D.Z2.R0075.HA | 3 | 1,44 | 55 | 1,8 | 5 | 0,75 | 2 | W0239015140 | |
| 1,5 | MVR.AL.0239.0150.L05D.Z2.R0075.HA | 3 | 1,44 | 55 | 1,8 | 7,5 | 0,75 | 2 | W0239015640 | |
| 1,5 | MVR.AL.0239.0150.OL08D.Z2.R0075.HA | 3 | 1,44 | 65 | 1,8 | 12 | 0,75 | 2 | | W0239015D40 |
| 1,5 | MVR.AL.0239.0150.OL10D.Z2.R0075.HA | 3 | 1,44 | 65 | 1,8 | 15 | 0,75 | 2 | | W0239015740 |
| 2,0 | MVR.AL.0239.0200.L03D.Z2.R0100.HA | 3 | 1,92 | 55 | 2 | 6 | 1 | 2 | W0239020140 | |
| 2,0 | MVR.AL.0239.0200.L05D.Z2.R0100.HA | 3 | 1,92 | 55 | 2 | 10 | 1 | 2 | W0239020640 | |
| 2,0 | MVR.AL.0239.0200.L07D.Z2.R0100.HA | 3 | 1,92 | 55 | 2 | 14 | 1 | 2 | W0239020D40 | |
| 2,0 | MVR.AL.0239.0200.OL08D.Z2.R0100.HA | 3 | 1,92 | 65 | 2 | 16 | 1 | 2 | | W0239020G40 |
| 2,0 | MVR.AL.0239.0200.OL10D.Z2.R0100.HA | 3 | 1,92 | 65 | 2 | 20 | 1 | 2 | | W0239020740 |

# W0249-L und W0249-OL, beschichtet

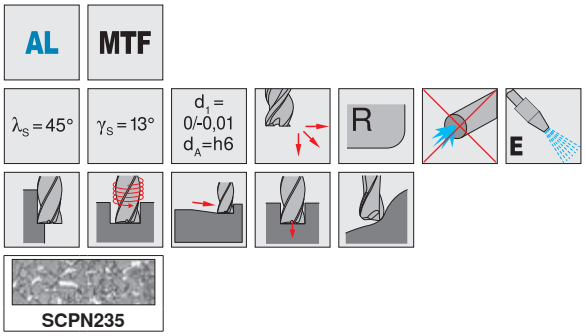
Schnittdatenempfehlung



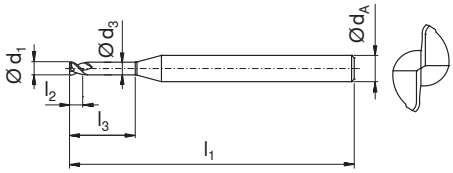
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 0,5 = Ø 0,6 | > Ø 0,6 = Ø 0,8 | > Ø 0,8 = Ø 1,0 | > Ø 1,0 = Ø 1,2 | > Ø 1,2 = Ø 1,5 | > Ø 1,5 = Ø 2,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 400 | 1xø | 0,15xø | 0,012 | 0,016 | 0,02 | 0,024 | 0,03 | 0,04 |
| 7.1.2 | | 400 | 1xø | 0,15xø | 0,012 | 0,016 | 0,02 | 0,024 | 0,03 | 0,04 |
| 7.1.3 | | 400 | 1xø | 0,15xø | 0,012 | 0,016 | 0,02 | 0,024 | 0,03 | 0,04 |
| 7.1.4 | | 400 | 1xø | 0,15xø | 0,012 | 0,016 | 0,02 | 0,024 | 0,03 | 0,04 |
| 7.1.5 | | 300 | 1xø | 0,15xø | 0,012 | 0,016 | 0,02 | 0,024 | 0,03 | 0,04 |
| 7.1.6 | | 200 | 1xø | 0,15xø | 0,012 | 0,016 | 0,02 | 0,024 | 0,03 | 0,04 |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | 140 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.3.2 | | 120 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.3.3 | | 100 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.3.4 | | 120 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.3.5 | | 100 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.3.6 | | 120 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.4.1 | CuZn (Messing) | 150 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.4.2 | | 200 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.5.1 | CuSn (Bronze) | 120 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.5.2 | | 140 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.6.1 | CuAlFe (Ampco) | 120 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.6.2 | | 140 | 1xø | 0,08xø | 0,006 | 0,008 | 0,011 | 0,013 | 0,016 | 0,021 |
| 7.8.1 | Titan | | | | | | | | | |
| 7.8.2 | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | |
| 8.1.1 | Thermoplast | | | | | | | | | |
| 8.1.2 | | | | | | | | | | |
| 8.1.3 | | | | | | | | | | |
| 8.1.4 | | | | | | | | | | |
| 8.1.5 | | | | | | | | | | |
| 8.1.6 | | | | | | | | | | |
| 8.1.7 | | | | | | | | | | |
| 8.1.8 | | | | | | | | | | |
| 8.1.9 | | | | | | | | | | |
| 8.2.1 | Duroplast | | | | | | | | | |
| 8.2.2 | | | | | | | | | | |
| 8.2.3 | | | | | | | | | | |
| 8.2.4 | | | | | | | | | | |
| 8.2.5 | | | | | | | | | | |
| 8.2.6 | | | | | | | | | | |
| 8.2.7 | | | | | | | | | | |
| 8.2.8 | | | | | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | | | |
| 8.3.2 | | | | | | | | | | |
| 8.3.3 | | | | | | | | | | |
| 8.3.4 | | | | | | | | | | |
| 8.3.5 | | | | | | | | | | |
| 8.3.6 | | | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | | | |
| 8.4.2 | | | | | | | | | | |
| 8.4.3 | | | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | | | |
| 9.1.2 | | | | | | | | | | |

# W0249-L und W0249-OL, beschichtet

Micro-Torusfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | R [mm] | z | HA Material | HA Material |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,5 | MTF.AL.0249.0050.L03D.Z2.R0005.HA | 3 | 0,45 | 55 | 0,5 | 1,5 | 0,05 | 2 | W0249005140 | |
| 0,5 | MTF.AL.0249.0050.L05D.Z2.R0005.HA | 3 | 0,45 | 55 | 1,2 | 2,5 | 0,05 | 2 | W0249005340 | |
| 0,5 | MTF.AL.0249.0050.L08D.Z2.R0005.HA | 3 | 0,45 | 55 | 1,2 | 4 | 0,05 | 2 | W0249005540 | |
| 0,5 | MTF.AL.0249.0050.L10D.Z2.R0005.HA | 3 | 0,45 | 55 | 1,2 | 5 | 0,05 | 2 | W0249005740 | |
| 1,0 | MTF.AL.0249.0100.L03D.Z2.R0010.HA | 3 | 0,95 | 55 | 1,5 | 3 | 0,1 | 2 | W0249010140 | |
| 1,0 | MTF.AL.0249.0100.L05D.Z2.R0010.HA | 3 | 0,95 | 55 | 1,5 | 5 | 0,1 | 2 | W0249010640 | |
| 1,0 | MTF.AL.0249.0100.OL08D.Z2.R0010.HA | 3 | 0,95 | 65 | 1,5 | 8 | 0,1 | 2 | | W0249010D40 |
| 1,0 | MTF.AL.0249.0100.OL10D.Z2.R0010.HA | 3 | 0,95 | 65 | 1,5 | 10 | 0,1 | 2 | | W0249010740 |
| 1,0 | MTF.AL.0249.0100.OL12D.Z2.R0010.HA | 3 | 0,95 | 65 | 1,5 | 12 | 0,1 | 2 | | W0249010840 |
| 1,5 | MTF.AL.0249.0150.L03D.Z2.R0015.HA | 3 | 1,44 | 55 | 1,8 | 5 | 0,15 | 2 | W0249015140 | |
| 1,5 | MTF.AL.0249.0150.L05D.Z2.R0015.HA | 3 | 1,44 | 55 | 1,8 | 7,5 | 0,15 | 2 | W0249015640 | |
| 1,5 | MTF.AL.0249.0150.OL08D.Z2.R0015.HA | 3 | 1,44 | 65 | 1,8 | 12 | 0,15 | 2 | | W0249015D40 |
| 1,5 | MTF.AL.0249.0150.OL10D.Z2.R0015.HA | 3 | 1,44 | 65 | 1,8 | 15 | 0,15 | 2 | | W0249015740 |
| 2,0 | MTF.AL.0249.0200.L03D.Z2.R0020.HA | 3 | 1,92 | 55 | 2 | 6 | 0,2 | 2 | W0249020140 | |
| 2,0 | MTF.AL.0249.0200.L05D.Z2.R0020.HA | 3 | 1,92 | 55 | 2 | 10 | 0,2 | 2 | W0249020240 | |
| 2,0 | MTF.AL.0249.0200.L07D.Z2.R0020.HA | 3 | 1,92 | 55 | 2 | 14 | 0,2 | 2 | W0249020640 | |
| 2,0 | MTF.AL.0249.0200.OL08D.Z2.R0020.HA | 3 | 1,92 | 65 | 2 | 16 | 0,2 | 2 | | W0249020D40 |
| 2,0 | MTF.AL.0249.0200.OL10D.Z2.R0020.HA | 3 | 1,92 | 65 | 2 | 20 | 0,2 | 2 | | W0249020740 |

# W0376-L, beschichtet

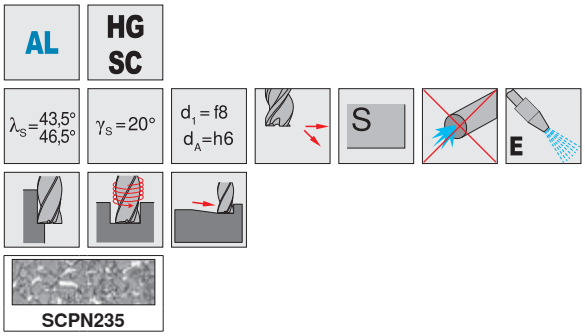
Schnittdatenempfehlung



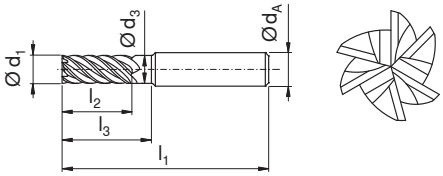
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 500 | 0,05xø | 2xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 7.1.2 | | 500 | 0,05xø | 2xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 7.1.3 | | 500 | 0,05xø | 2xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 7.1.4 | | 400 | 0,05xø | 2xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 7.1.5 | | 300 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.1.6 | | 210 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.2.1 | Magnesium | 200 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.2.2 | | 170 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.3.1 | Kupfer | 150 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.3.2 | | 140 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.3.3 | | 110 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.3.4 | | 130 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.3.5 | | 110 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.3.6 | | 130 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.4.1 | CuZn (Messing) | 150 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.4.2 | | 210 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.5.1 | CuSn (Bronze) | 130 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.5.2 | | 140 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.6.1 | CuAlFe (Ampco) | 60 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.6.2 | | 70 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | Thermoplast | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | Duroplast | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | | | | | | | |
| 8.2.8 | | | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | | | | | | | |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | |
| 9.1.2 | | | | | | | | |

# W0376-L, beschichtet

Hochgenauigkeits-Schlichtfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|
| 6,0 | HG-SC.AL.0376.0600.L.Z6.S.HA | 6 | 5,7 | 58 | 16 | 20 | 6 | W0376060360 |
| 8,0 | HG-SC.AL.0376.0800.L.Z6.S.HA | 8 | 7,4 | 64 | 19 | 26 | 6 | W0376080360 |
| 10,0 | HG-SC.AL.0376.1000.L.Z6.S.HA | 10 | 9,2 | 74 | 25 | 32 | 6 | W0376100360 |
| 12,0 | HG-SC.AL.0376.1200.L.Z6.S.HA | 12 | 11 | 84 | 30 | 37 | 6 | W0376120360 |
| 16,0 | HG-SC.AL.0376.1600.L.Z6.S.HA | 16 | 15 | 93 | 40 | 44 | 6 | W0376160360 |
| 20,0 | HG-SC.AL.0376.2000.L.Z6.S.HA | 20 | 19 | 104 | 50 | 53 | 6 | W0376200360 |

# W0376-OL und W0376-OLS, beschichtet

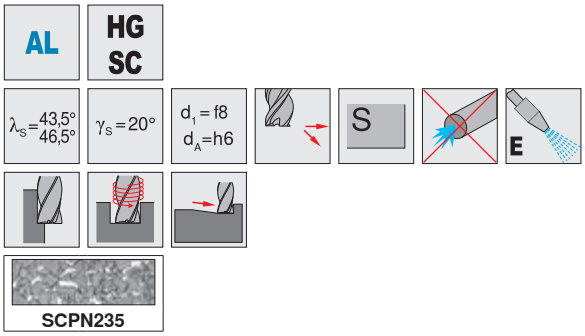
Schnittdatenempfehlung



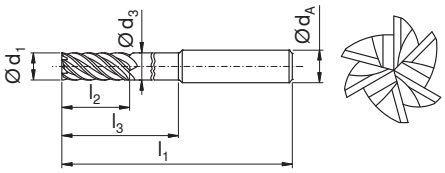
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 360 | 0,05xø | 2xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 7.1.2 | | 360 | 0,05xø | 2xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 7.1.3 | | 360 | 0,05xø | 2xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 7.1.4 | | 290 | 0,05xø | 2xø | 0,04 | 0,05 | 0,06 | 0,07 |
| 7.1.5 | | 220 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.1.6 | | 150 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.2.1 | Magnesium | 140 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.2.2 | | 120 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.3.1 | Kupfer | 110 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.3.2 | | 100 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.3.3 | | 80 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.3.4 | | 90 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.3.5 | | 80 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.3.6 | | 90 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.4.1 | CuZn (Messing) | 110 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.4.2 | | 150 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.5.1 | CuSn (Bronze) | 90 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.5.2 | | 100 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.6.1 | CuAlFe (Ampco) | 40 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.6.2 | | 50 | 0,05xø | 2xø | 0,02 | 0,03 | 0,05 | 0,06 |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | Thermoplast | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | Duroplast | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | | | | | | | |
| 8.2.8 | | | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | | | | | | | |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | |
| 9.1.2 | | | | | | | | |

# W0376-OL und W0376-OLS, beschichtet

Hochgenauigkeits-Schlichtfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | z | HA Material | HA Material |
|---|---|---|---|---|---|---|---|---|---|
| 6,0 | HG-SC.AL.0376.0600.OLS.Z6.S.HA | 6 | 5,7 | 80 | 16 | 42 | 6 | | W0376060460 |
| 8,0 | HG-SC.AL.0376.0800.OLS.Z6.S.HA | 8 | 7,4 | 100 | 19 | 62 | 6 | | W0376080460 |
| 10,0 | HG-SC.AL.0376.1000.OLS.Z6.S.HA | 10 | 9,2 | 100 | 25 | 58 | 6 | | W0376100460 |
| 12,0 | HG-SC.AL.0376.1200.OLS.Z6.S.HA | 12 | 11 | 120 | 30 | 73 | 6 | | W0376120460 |
| 12,0 | HG-SC.AL.0376.1200.OL.Z6.S.HA | 12 | | 120 | 45 | | 6 | W0376120560 | |
| 16,0 | HG-SC.AL.0376.1600.OLS.Z6.S.HA | 16 | 15 | 150 | 40 | 100 | 6 | | W0376160460 |
| 16,0 | HG-SC.AL.0376.1600.OL.Z6.S.HA | 16 | | 150 | 65 | | 6 | W0376160560 | |
| 20,0 | HG-SC.AL.0376.2000.OLS.Z6.S.HA | 20 | 19 | 150 | 50 | 98 | 6 | | W0376200460 |
| 20,0 | HG-SC.AL.0376.2000.OL.Z6.S.HA | 20 | | 150 | 75 | | 6 | W0376200560 | |

# W0228-L, unbeschichtet

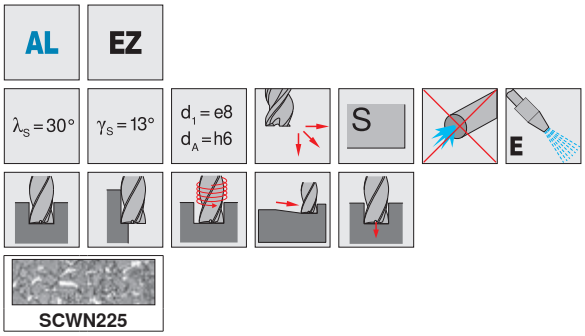
Schnittdatenempfehlung



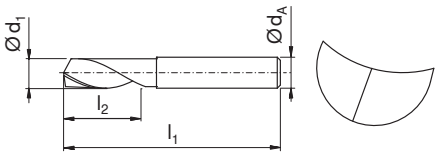
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | $f_z$ [mm] > Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 300 | 1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 7.1.2 | | 300 | 1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 7.1.3 | | 300 | 1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 7.1.4 | | 250 | 1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 7.1.5 | | 200 | 1xø | 1xø | 0,03 | 0,05 | 0,07 |
| 7.1.6 | | 150 | 1xø | 1xø | 0,03 | 0,05 | 0,07 |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |
| 8.1.1 | Thermoplast | 210 | 1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.2 | | 210 | 1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.3 | | 210 | 1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.4 | | 90 | 1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.5 | | 70 | 1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.6 | | 120 | 1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.7 | | 210 | 1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.8 | | 180 | 1xø | 1xø | 0,125 | 0,25 | 0,35 |
| 8.1.9 | | 50 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.1 | Duroplast | 60 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.2 | | 60 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.3 | | 60 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.4 | | 90 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.5 | | 60 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.6 | | 50 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.7 | | 60 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.8 | | 60 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | |
| 8.3.2 | | | | | | | |
| 8.3.3 | | | | | | | |
| 8.3.4 | | | | | | | |
| 8.3.5 | | | | | | | |
| 8.3.6 | | | | | | | |
| 8.4.1 | Sandwich | | | | | | |
| 8.4.2 | | | | | | | |
| 8.4.3 | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | |
| 9.1.2 | | | | | | | |

# W0228-L, unbeschichtet

Einzahnfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | z | HA Material |
|---|---|---|---|---|---|---|
| 3,0 | EZ.AL.0228.0300.L.Z1.S.HA | 3 | 50 | 8 | 1 | W0228030300 |
| 4,0 | EZ.AL.0228.0400.L.Z1.S.HA | 4 | 60 | 10 | 1 | W0228040300 |
| 5,0 | EZ.AL.0228.0500.L.Z1.S.HA | 5 | 60 | 15 | 1 | W0228050300 |
| 6,0 | EZ.AL.0228.0600.L.Z1.S.HA | 6 | 60 | 20 | 1 | W0228060300 |
| 8,0 | EZ.AL.0228.0800.L.Z1.S.HA | 8 | 70 | 25 | 1 | W0228080300 |
| 10,0 | EZ.AL.0228.1000.L.Z1.S.HA | 10 | 70 | 25 | 1 | W0228100300 |
| 12,0 | EZ.AL.0228.1200.L.Z1.S.HA | 12 | 70 | 25 | 1 | W0228120300 |

# W0740-S, unbeschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 300 | 0,2xø | 0,2xø | 0,06 | 0,08 |
| 7.1.2 | | 300 | 0,2xø | 0,2xø | 0,06 | 0,08 |
| 7.1.3 | | 300 | 0,2xø | 0,2xø | 0,06 | 0,08 |
| 7.1.4 | | 250 | 0,2xø | 0,2xø | 0,06 | 0,08 |
| 7.1.5 | | 200 | 0,2xø | 0,2xø | 0,05 | 0,07 |
| 7.1.6 | | 160 | 0,2xø | 0,2xø | 0,05 | 0,07 |
| 7.2.1 | Magnesium | 180 | 0,2xø | 0,2xø | 0,05 | 0,07 |
| 7.2.2 | | 160 | 0,2xø | 0,2xø | 0,05 | 0,07 |
| 7.3.1 | Kupfer | 140 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.3.2 | | 120 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.3.3 | | 100 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.3.4 | | 120 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.3.5 | | 100 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.3.6 | | 120 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.4.1 | CuZn (Messing) | 150 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.4.2 | | 200 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.5.1 | CuSn (Bronze) | 120 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.5.2 | | 140 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.6.1 | CuAlFe (Ampco) | 120 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.6.2 | | 140 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.8.1 | Titan | | | | | |
| 7.8.2 | | | | | | |
| 7.8.3 | | | | | | |
| 8.1.1 | Thermoplast | 210 | 0,2xø | 0,2xø | 0,15 | 0,25 |
| 8.1.2 | | 210 | 0,2xø | 0,2xø | 0,15 | 0,25 |
| 8.1.3 | | 210 | 0,2xø | 0,2xø | 0,15 | 0,25 |
| 8.1.4 | | 90 | 0,2xø | 0,2xø | 0,15 | 0,25 |
| 8.1.5 | | 70 | 0,2xø | 0,2xø | 0,15 | 0,25 |
| 8.1.6 | | 120 | 0,2xø | 0,2xø | 0,15 | 0,25 |
| 8.1.7 | | 210 | 0,2xø | 0,2xø | 0,15 | 0,25 |
| 8.1.8 | | 180 | 0,2xø | 0,2xø | 0,25 | 0,35 |
| 8.1.9 | | 50 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.1 | Duroplast | 60 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.2 | | 60 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.3 | | 60 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.4 | | 90 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.5 | | 60 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.6 | | 50 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.7 | | 60 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.8 | | 60 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.3.1 | faserverstärkter Kunststoff | | | | | |
| 8.3.2 | | | | | | |
| 8.3.3 | | | | | | |
| 8.3.4 | | | | | | |
| 8.3.5 | | | | | | |
| 8.3.6 | | | | | | |
| 8.4.1 | Sandwich | | | | | |
| 8.4.2 | | | | | | |
| 8.4.3 | | | | | | |
| 9.1.1 | Standard Graphit | | | | | |
| 9.1.2 | | | | | | |

# W0740-S, unbeschichtet

Entgrater



AL | E

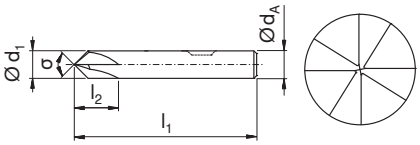
$\lambda_S = 0°$ | $\gamma_S = 0°$ | $d_1 = h6$ $d_A = h6$ | σ 90° | E/D





SCWN225






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | σ [°] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|
| 4,0 | E.AL.0740.0400.S.Z4.HA | 4 | 54 | 9 | 90 | 4 | W0740040300 | |
| 6,0 | E.AL.0740.0600.S.Z4.HA | 6 | 54 | 12 | 90 | 4 | W0740060300 | |
| 6,0 | E.AL.0740.0600.S.Z4.HB | 6 | 54 | 12 | 90 | 4 | | W0740060301 |
| 8,0 | E.AL.0740.0800.S.Z4.HA | 8 | 58 | 15 | 90 | 4 | W0740080300 | |
| 8,0 | E.AL.0740.0800.S.Z4.HB | 8 | 58 | 15 | 90 | 4 | | W0740080301 |
| 10,0 | E.AL.0740.1000.S.Z4.HA | 10 | 66 | 16 | 90 | 4 | W0740100300 | |
| 10,0 | E.AL.0740.1000.S.Z4.HB | 10 | 66 | 16 | 90 | 4 | | W0740100301 |
| 12,0 | E.AL.0740.1200.S.Z4.HA | 12 | 73 | 18 | 90 | 4 | W0740120300 | |
| 12,0 | E.AL.0740.1200.S.Z4.HB | 12 | 73 | 18 | 90 | 4 | | W0740120301 |

# W0741-S, unbeschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 300 | 0,2xø | 0,2xø | 0,06 | 0,08 |
| 7.1.2 | | 300 | 0,2xø | 0,2xø | 0,06 | 0,08 |
| 7.1.3 | | 300 | 0,2xø | 0,2xø | 0,06 | 0,08 |
| 7.1.4 | | 250 | 0,2xø | 0,2xø | 0,06 | 0,08 |
| 7.1.5 | | 200 | 0,2xø | 0,2xø | 0,05 | 0,07 |
| 7.1.6 | | 160 | 0,2xø | 0,2xø | 0,05 | 0,07 |
| 7.2.1 | Magnesium | 180 | 0,2xø | 0,2xø | 0,05 | 0,07 |
| 7.2.2 | | 160 | 0,2xø | 0,2xø | 0,05 | 0,07 |
| 7.3.1 | Kupfer | 140 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.3.2 | | 120 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.3.3 | | 100 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.3.4 | | 120 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.3.5 | | 100 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.3.6 | | 120 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.4.1 | CuZn (Messing) | 150 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.4.2 | | 200 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.5.1 | CuSn (Bronze) | 120 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.5.2 | | 140 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.6.1 | CuAlFe (Ampco) | 120 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.6.2 | | 140 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.8.1 | Titan | | | | | |
| 7.8.2 | | | | | | |
| 7.8.3 | | | | | | |
| 8.1.1 | Thermoplast | 210 | 0,2xø | 0,2xø | 0,15 | 0,25 |
| 8.1.2 | | 210 | 0,2xø | 0,2xø | 0,15 | 0,25 |
| 8.1.3 | | 210 | 0,2xø | 0,2xø | 0,15 | 0,25 |
| 8.1.4 | | 90 | 0,2xø | 0,2xø | 0,15 | 0,25 |
| 8.1.5 | | 70 | 0,2xø | 0,2xø | 0,15 | 0,25 |
| 8.1.6 | | 120 | 0,2xø | 0,2xø | 0,15 | 0,25 |
| 8.1.7 | | 210 | 0,2xø | 0,2xø | 0,15 | 0,25 |
| 8.1.8 | | 180 | 0,2xø | 0,2xø | 0,25 | 0,35 |
| 8.1.9 | | 50 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.1 | Duroplast | 60 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.2 | | 60 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.3 | | 60 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.4 | | 90 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.5 | | 60 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.6 | | 50 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.7 | | 60 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.8 | | 60 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.3.1 | faserverstärkter Kunststoff | | | | | |
| 8.3.2 | | | | | | |
| 8.3.3 | | | | | | |
| 8.3.4 | | | | | | |
| 8.3.5 | | | | | | |
| 8.3.6 | | | | | | |
| 8.4.1 | Sandwich | | | | | |
| 8.4.2 | | | | | | |
| 8.4.3 | | | | | | |
| 9.1.1 | Standard Graphit | | | | | |
| 9.1.2 | | | | | | |

# W0741-S, unbeschichtet

Entgrater



AL | E

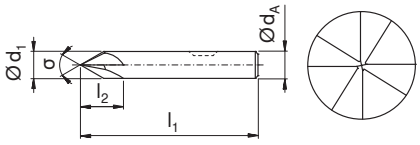
$\lambda_S = 0°$ | $\gamma_S = 0°$ | $d_1 = h6$ $d_A = h6$ | σ 60° | E/D





SCWN225






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | σ [°] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|
| 4,0 | E.AL.0741.0400.S.Z4.HA | 4 | 54 | 9 | 60 | 4 | W0741040300 | |
| 6,0 | E.AL.0741.0600.S.Z4.HB | 6 | 54 | 12 | 60 | 4 | | W0741060301 |
| 8,0 | E.AL.0741.0800.S.Z4.HB | 8 | 58 | 15 | 60 | 4 | | W0741080301 |
| 10,0 | E.AL.0741.1000.S.Z4.HB | 10 | 66 | 16 | 60 | 4 | | W0741100301 |
| 12,0 | E.AL.0741.1200.S.Z4.HB | 12 | 73 | 18 | 60 | 4 | | W0741120301 |

# W0742-S, unbeschichtet

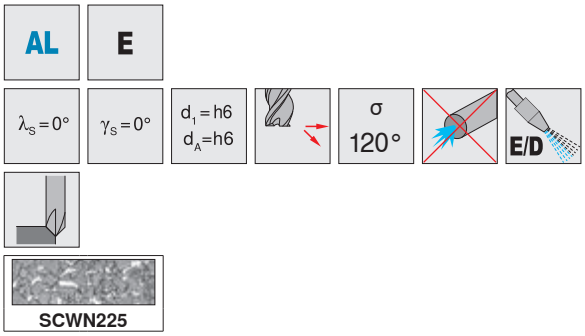
Schnittdatenempfehlung



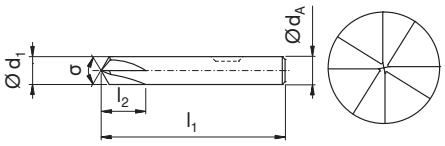
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 300 | 0,2xø | 0,2xø | 0,06 | 0,08 |
| 7.1.2 | | 300 | 0,2xø | 0,2xø | 0,06 | 0,08 |
| 7.1.3 | | 300 | 0,2xø | 0,2xø | 0,06 | 0,08 |
| 7.1.4 | | 250 | 0,2xø | 0,2xø | 0,06 | 0,08 |
| 7.1.5 | | 200 | 0,2xø | 0,2xø | 0,05 | 0,07 |
| 7.1.6 | | 160 | 0,2xø | 0,2xø | 0,05 | 0,07 |
| 7.2.1 | Magnesium | 180 | 0,2xø | 0,2xø | 0,05 | 0,07 |
| 7.2.2 | | 160 | 0,2xø | 0,2xø | 0,05 | 0,07 |
| 7.3.1 | Kupfer | 140 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.3.2 | | 120 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.3.3 | | 100 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.3.4 | | 120 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.3.5 | | 100 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.3.6 | | 120 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.4.1 | CuZn (Messing) | 150 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.4.2 | | 200 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.5.1 | CuSn (Bronze) | 120 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.5.2 | | 140 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.6.1 | CuAlFe (Ampco) | 120 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.6.2 | | 140 | 0,2xø | 0,2xø | 0,04 | 0,06 |
| 7.8.1 | Titan | | | | | |
| 7.8.2 | | | | | | |
| 7.8.3 | | | | | | |
| 8.1.1 | Thermoplast | 210 | 0,2xø | 0,2xø | 0,15 | 0,25 |
| 8.1.2 | | 210 | 0,2xø | 0,2xø | 0,15 | 0,25 |
| 8.1.3 | | 210 | 0,2xø | 0,2xø | 0,15 | 0,25 |
| 8.1.4 | | 90 | 0,2xø | 0,2xø | 0,15 | 0,25 |
| 8.1.5 | | 70 | 0,2xø | 0,2xø | 0,15 | 0,25 |
| 8.1.6 | | 120 | 0,2xø | 0,2xø | 0,15 | 0,25 |
| 8.1.7 | | 210 | 0,2xø | 0,2xø | 0,15 | 0,25 |
| 8.1.8 | | 180 | 0,2xø | 0,2xø | 0,25 | 0,35 |
| 8.1.9 | | 50 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.1 | Duroplast | 60 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.2 | | 60 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.3 | | 60 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.4 | | 90 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.5 | | 60 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.6 | | 50 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.7 | | 60 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.2.8 | | 60 | 0,2xø | 0,2xø | 0,1 | 0,2 |
| 8.3.1 | faserverstärkter Kunststoff | | | | | |
| 8.3.2 | | | | | | |
| 8.3.3 | | | | | | |
| 8.3.4 | | | | | | |
| 8.3.5 | | | | | | |
| 8.3.6 | | | | | | |
| 8.4.1 | Sandwich | | | | | |
| 8.4.2 | | | | | | |
| 8.4.3 | | | | | | |
| 9.1.1 | Standard Graphit | | | | | |
| 9.1.2 | | | | | | |

# W0742-S, unbeschichtet

Entgrater






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | σ [°] | z | HA Material | HB Material |
|---|---|---|---|---|---|---|---|---|
| 4,0 | E.AL.0742.0400.S.Z4.HA | 4 | 54 | 9 | 120 | 4 | W0742040300 | |
| 6,0 | E.AL.0742.0600.S.Z4.HB | 6 | 54 | 12 | 120 | 4 | | W0742060301 |
| 8,0 | E.AL.0742.0800.S.Z4.HB | 8 | 58 | 15 | 120 | 4 | | W0742080301 |
| 10,0 | E.AL.0742.1000.S.Z4.HB | 10 | 66 | 16 | 120 | 4 | | W0742100301 |
| 12,0 | E.AL.0742.1200.S.Z4.HB | 12 | 73 | 18 | 120 | 4 | | W0742120301 |

# W0750-L, unbeschichtet

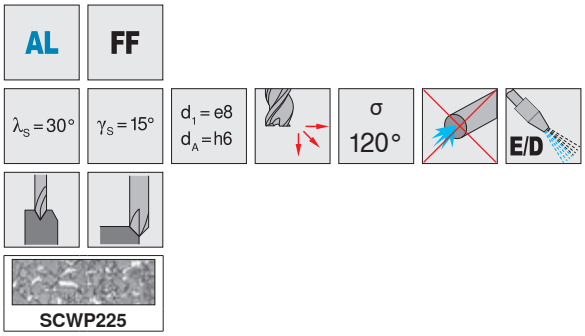
Schnittdatenempfehlung



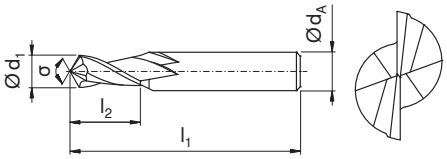
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 300 | 0,2xø | 0,2xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.2 | | 300 | 0,2xø | 0,2xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.3 | | 300 | 0,2xø | 0,2xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.4 | | 250 | 0,2xø | 0,2xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.5 | | 200 | 0,2xø | 0,2xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 160 | 0,2xø | 0,2xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | Magnesium | 180 | 0,2xø | 0,2xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 160 | 0,2xø | 0,2xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | Kupfer | 140 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 120 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 100 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 120 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 100 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 120 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | CuZn (Messing) | 150 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 200 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | CuSn (Bronze) | 120 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 140 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | 120 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 140 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |
| 8.1.1 | Thermoplast | 210 | 0,2xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.2 | | 210 | 0,2xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.3 | | 210 | 0,2xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.4 | | 90 | 0,2xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.5 | | 70 | 0,2xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.6 | | 120 | 0,2xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.7 | | 210 | 0,2xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.8 | | 180 | 0,2xø | 0,2xø | 0,125 | 0,25 | 0,35 | 0,45 | 0,55 |
| 8.1.9 | | 50 | 0,2xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.1 | Duroplast | 60 | 0,2xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.2 | | 60 | 0,2xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.3 | | 60 | 0,2xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.4 | | 90 | 0,2xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.5 | | 60 | 0,2xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.6 | | 50 | 0,2xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.7 | | 60 | 0,2xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.8 | | 60 | 0,2xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | | |
| 8.3.2 | | | | | | | | | |
| 8.3.3 | | | | | | | | | |
| 8.3.4 | | | | | | | | | |
| 8.3.5 | | | | | | | | | |
| 8.3.6 | | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | | |
| 8.4.2 | | | | | | | | | |
| 8.4.3 | | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | | |
| 9.1.2 | | | | | | | | | |

# W0750-L, unbeschichtet

Fasenfräser






| d1 [mm] | Type, Bezeichnung | dA [mm] | l1 [mm] | l2 [mm] | σ [°] | z | HA Material |
|---|---|---|---|---|---|---|---|
| 3,0 | FF.AL.0750.0300.L.Z2.HA | 6 | 57 | 8 | 120 | 2 | W0750030300 |
| 4,0 | FF.AL.0750.0400.L.Z2.HA | 6 | 57 | 11 | 120 | 2 | W0750040300 |
| 5,0 | FF.AL.0750.0500.L.Z2.HA | 6 | 57 | 13 | 120 | 2 | W0750050300 |
| 6,0 | FF.AL.0750.0600.L.Z2.HA | 6 | 57 | 13 | 120 | 2 | W0750060300 |
| 8,0 | FF.AL.0750.0800.L.Z2.HA | 8 | 63 | 19 | 120 | 2 | W0750080300 |
| 10,0 | FF.AL.0750.1000.L.Z2.HA | 10 | 72 | 22 | 120 | 2 | W0750100300 |
| 12,0 | FF.AL.0750.1200.L.Z2.HA | 12 | 83 | 26 | 120 | 2 | W0750120300 |
| 16,0 | FF.AL.0750.1600.L.Z2.HA | 16 | 92 | 32 | 120 | 2 | W0750160300 |
| 20,0 | FF.AL.0750.2000.L.Z2.HA | 20 | 104 | 38 | 120 | 2 | W0750200300 |

# W0751-L, unbeschichtet

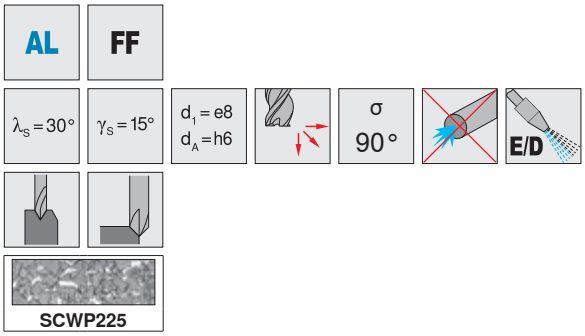
Schnittdatenempfehlung



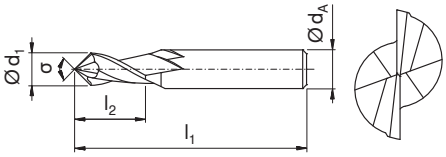
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 300 | 0,2xø | 0,2xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.2 | | 300 | 0,2xø | 0,2xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.3 | | 300 | 0,2xø | 0,2xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.4 | | 250 | 0,2xø | 0,2xø | 0,04 | 0,06 | 0,08 | 0,15 | 0,2 |
| 7.1.5 | | 200 | 0,2xø | 0,2xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.1.6 | | 160 | 0,2xø | 0,2xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.1 | Magnesium | 180 | 0,2xø | 0,2xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.2.2 | | 160 | 0,2xø | 0,2xø | 0,03 | 0,05 | 0,07 | 0,12 | 0,17 |
| 7.3.1 | Kupfer | 140 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.2 | | 120 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.3 | | 100 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.4 | | 120 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.5 | | 100 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.3.6 | | 120 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.1 | CuZn (Messing) | 150 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.4.2 | | 200 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.1 | CuSn (Bronze) | 120 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.5.2 | | 140 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | 120 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.6.2 | | 140 | 0,2xø | 0,2xø | 0,02 | 0,04 | 0,06 | 0,08 | 0,12 |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |
| 8.1.1 | Thermoplast | 210 | 0,2xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.2 | | 210 | 0,2xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.3 | | 210 | 0,2xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.4 | | 90 | 0,2xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.5 | | 70 | 0,2xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.6 | | 120 | 0,2xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.7 | | 210 | 0,2xø | 0,2xø | 0,075 | 0,15 | 0,25 | 0,35 | 0,45 |
| 8.1.8 | | 180 | 0,2xø | 0,2xø | 0,125 | 0,25 | 0,35 | 0,45 | 0,55 |
| 8.1.9 | | 50 | 0,2xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.1 | Duroplast | 60 | 0,2xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.2 | | 60 | 0,2xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.3 | | 60 | 0,2xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.4 | | 90 | 0,2xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.5 | | 60 | 0,2xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.6 | | 50 | 0,2xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.7 | | 60 | 0,2xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.8 | | 60 | 0,2xø | 0,2xø | 0,05 | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | | |
| 8.3.2 | | | | | | | | | |
| 8.3.3 | | | | | | | | | |
| 8.3.4 | | | | | | | | | |
| 8.3.5 | | | | | | | | | |
| 8.3.6 | | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | | |
| 8.4.2 | | | | | | | | | |
| 8.4.3 | | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | | |
| 9.1.2 | | | | | | | | | |

# W0751-L, unbeschichtet

Fasenfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | σ [°] | z | HA Material |
|---|---|---|---|---|---|---|---|
| 3,0 | FF.AL.0751.0300.L.Z2.HA | 3 | 57 | 8 | 90 | 2 | W0751030300 |
| 4,0 | FF.AL.0751.0400.L.Z2.HA | 4 | 57 | 11 | 90 | 2 | W0751040300 |
| 5,0 | FF.AL.0751.0500.L.Z2.HA | 5 | 57 | 13 | 90 | 2 | W0751050300 |
| 6,0 | FF.AL.0751.0600.L.Z2.HA | 6 | 57 | 13 | 90 | 2 | W0751060300 |
| 8,0 | FF.AL.0751.0800.L.Z2.HA | 8 | 63 | 19 | 90 | 2 | W0751080300 |
| 10,0 | FF.AL.0751.1000.L.Z2.HA | 10 | 72 | 22 | 90 | 2 | W0751100300 |
| 12,0 | FF.AL.0751.1200.L.Z2.HA | 12 | 83 | 26 | 90 | 2 | W0751120300 |
| 16,0 | FF.AL.0751.1600.L.Z2.HA | 16 | 92 | 32 | 90 | 2 | W0751160300 |
| 20,0 | FF.AL.0751.2000.L.Z2.HA | 20 | 104 | 38 | 90 | 2 | W0751200300 |

# W0451-L, beschichtet

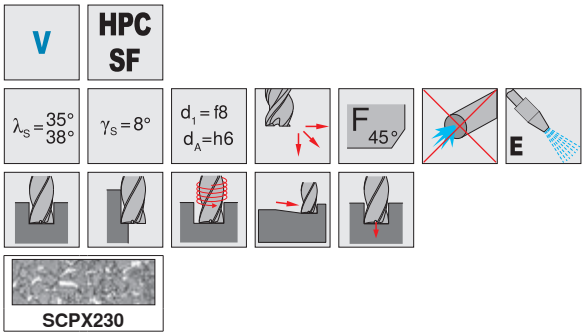
Schnittdatenempfehlung



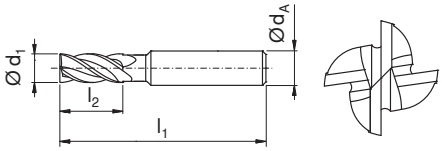
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | $f_z$ [mm] > Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | 280 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.2 | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.3 | | 200 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.4 | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.5 | | 200 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.3.6 | | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.1 | CuZn (Messing) | 300 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.4.2 | | 350 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.1 | CuSn (Bronze) | 240 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.5.2 | | 280 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.1 | CuAlFe (Ampco) | 140 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.6.2 | | 160 | 1xø | 1xø | 0,025 | 0,045 | 0,07 | 0,1 | 0,12 |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |
| 8.1.1 | Thermoplast | | | | | | | | |
| 8.1.2 | | | | | | | | | |
| 8.1.3 | | | | | | | | | |
| 8.1.4 | | | | | | | | | |
| 8.1.5 | | | | | | | | | |
| 8.1.6 | | | | | | | | | |
| 8.1.7 | | | | | | | | | |
| 8.1.8 | | | | | | | | | |
| 8.1.9 | | | | | | | | | |
| 8.2.1 | Duroplast | | | | | | | | |
| 8.2.2 | | | | | | | | | |
| 8.2.3 | | | | | | | | | |
| 8.2.4 | | | | | | | | | |
| 8.2.5 | | | | | | | | | |
| 8.2.6 | | | | | | | | | |
| 8.2.7 | | | | | | | | | |
| 8.2.8 | | | | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | | |
| 8.3.2 | | | | | | | | | |
| 8.3.3 | | 180 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.4 | | 180 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.5 | | | | | | | | | |
| 8.3.6 | | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | | |
| 8.4.2 | | | | | | | | | |
| 8.4.3 | | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | | |
| 9.1.2 | | | | | | | | | |

# W0451-L, beschichtet

HPC-Schaftfräser






| d1 [mm] | Type, Bezeichnung | dA [mm] | l1 [mm] | l2 [mm] | F [mm] | z | Material |
|---|---|---|---|---|---|---|---|
| 3,0 | HPC-SF.V.0451.0300.L.Z4.F0010A.HA | 6 | 57 | 8 | 0,1 | 4 | W0451030330 |
| 4,0 | HPC-SF.V.0451.0400.L.Z4.F0010A.HA | 6 | 57 | 11 | 0,1 | 4 | W0451040330 |
| 5,0 | HPC-SF.V.0451.0500.L.Z4.F0010A.HA | 6 | 57 | 13 | 0,1 | 4 | W0451050330 |
| 6,0 | HPC-SF.V.0451.0600.L.Z4.F0010A.HA | 6 | 57 | 13 | 0,1 | 4 | W0451060330 |
| 8,0 | HPC-SF.V.0451.0800.L.Z4.F0020A.HA | 8 | 63 | 21 | 0,2 | 4 | W0451080330 |
| 10,0 | HPC-SF.V.0451.1000.L.Z4.F0020A.HA | 10 | 72 | 22 | 0,2 | 4 | W0451100330 |
| 12,0 | HPC-SF.V.0451.1200.L.Z4.F0030A.HA | 12 | 83 | 26 | 0,3 | 4 | W0451120330 |
| 16,0 | HPC-SF.V.0451.1600.L.Z4.F0030A.HA | 16 | 92 | 36 | 0,3 | 4 | W0451160330 |
| 20,0 | HPC-SF.V.0451.2000.L.Z4.F0030A.HA | 20 | 104 | 41 | 0,3 | 4 | W0451200330 |

# WD451-L, beschichtet

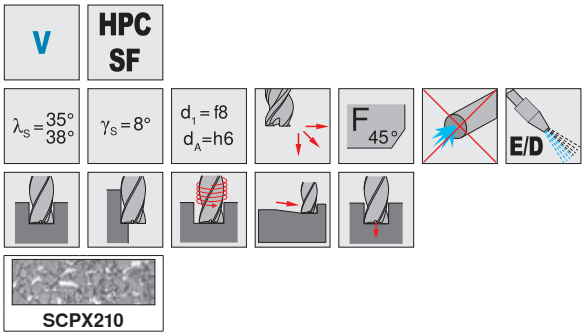
Schnittdatenempfehlung



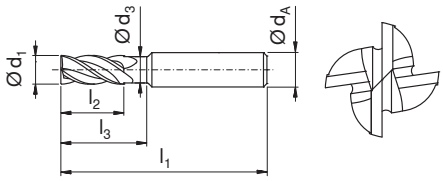
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | **Magnesium** | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | **Kupfer** | | | | | | | | |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | **CuZn (Messing)** | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | **CuSn (Bronze)** | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | **CuAlFe (Ampco)** | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | **Titan** | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | | | |
| 8.1.2 | | | | | | | | | |
| 8.1.3 | | | | | | | | | |
| 8.1.4 | | | | | | | | | |
| 8.1.5 | | | | | | | | | |
| 8.1.6 | | | | | | | | | |
| 8.1.7 | | | | | | | | | |
| 8.1.8 | | | | | | | | | |
| 8.1.9 | | | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | | | |
| 8.2.2 | | | | | | | | | |
| 8.2.3 | | | | | | | | | |
| 8.2.4 | | | | | | | | | |
| 8.2.5 | | | | | | | | | |
| 8.2.6 | | | | | | | | | |
| 8.2.7 | | | | | | | | | |
| 8.2.8 | | | | | | | | | |
| 8.3.1 | **faserverstärkter Kunststoff** | 105 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.2 | | 100 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.3 | | 150 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.4 | | 100 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.5 | | 100 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.6 | | 120 | 1xø | 1xø | 0,03 | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.4.1 | **Sandwich** | | | | | | | | |
| 8.4.2 | | | | | | | | | |
| 8.4.3 | | | | | | | | | |
| 9.1.1 | **Standard Graphit** | 300 | 1xø | 1xø | 0,04 | 0,08 | 0,12 | 0,2 | 0,25 |
| 9.1.2 | | 220 | 1xø | 1xø | 0,04 | 0,08 | 0,12 | 0,2 | 0,25 |

# WD451-L, beschichtet

HPC-Schaftfräser






| d1 [mm] | Type, Bezeichnung | dA [mm] | d3 [mm] | l1 [mm] | l2 [mm] | l3 [mm] | F [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|---|
| 3,0 | HPC-SF.V.D451.0300.L.Z4.F0010A.HA | 6 | 3,9 | 57 | 8 | 15 | 0,1 | 4 | WD451030360 |
| 4,0 | HPC-SF.V.D451.0400.L.Z4.F0010A.HA | 6 | 3,9 | 57 | 11 | 16 | 0,1 | 4 | WD451040360 |
| 5,0 | HPC-SF.V.D451.0500.L.Z4.F0010A.HA | 6 | 4,9 | 57 | 13 | 19 | 0,1 | 4 | WD451050360 |
| 6,0 | HPC-SF.V.D451.0600.L.Z4.F0010A.HA | 6 | 5,9 | 57 | 13 | 19 | 0,1 | 4 | WD451060360 |
| 8,0 | HPC-SF.V.D451.0800.L.Z4.F0020A.HA | 8 | 7,8 | 63 | 19 | 25 | 0,2 | 4 | WD451080360 |
| 10,0 | HPC-SF.V.D451.1000.L.Z4.F0020A.HA | 10 | 9,7 | 72 | 22 | 30 | 0,2 | 4 | WD451100360 |
| 12,0 | HPC-SF.V.D451.1200.L.Z4.F0030A.HA | 12 | 11,7 | 83 | 26 | 36 | 0,3 | 4 | WD451120360 |
| 16,0 | HPC-SF.V.D451.1600.L.Z4.F0030A.HA | 16 | 15,5 | 92 | 32 | 42 | 0,3 | 4 | WD451160360 |
| 20,0 | HPC-SF.V.D451.2000.L.Z4.F0030A.HA | 20 | 19,5 | 104 | 38 | 52 | 0,3 | 4 | WD451200360 |

# W0860-L, unbeschichtet

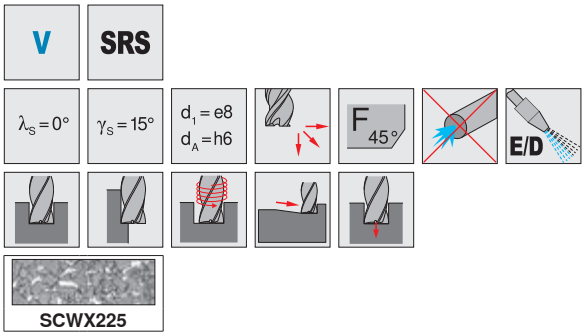
Schnittdatenempfehlung



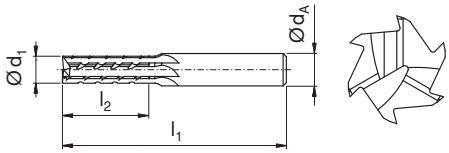
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | **Magnesium** | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | **Kupfer** | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | **CuZn (Messing)** | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | **CuSn (Bronze)** | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | **CuAlFe (Ampco)** | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | **Titan** | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | | | | | | | |
| 8.2.8 | | | | | | | | |
| 8.3.1 | **faserverstärkter Kunststoff** | 105 | 1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.2 | | 100 | 1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.3 | | 150 | 1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.4 | | | | | | | | |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | | | | | | | |
| 8.4.1 | **Sandwich** | | | | | | | |
| 8.4.2 | | 250 | 1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.4.3 | | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | | |
| 9.1.2 | | | | | | | | |

# W0860-L, unbeschichtet

Schrupp-Schlichtfräser






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | F [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|
| 4,0 | SRS.V.0860.0400.L.Z6.F0010A.HA | 6 | 60 | 16 | 0,1 | 6 | W0860040300 |
| 5,0 | SRS.V.0860.0500.L.Z6.F0010A.HA | 6 | 60 | 18 | 0,1 | 6 | W0860050300 |
| 6,0 | SRS.V.0860.0600.L.Z6.F0010A.HA | 6 | 75 | 28 | 0,1 | 6 | W0860060300 |
| 8,0 | SRS.V.0860.0800.L.Z6.F0010A.HA | 8 | 75 | 32 | 0,1 | 6 | W0860080300 |
| 10,0 | SRS.V.0860.1000.L.Z6.F0010A.HA | 10 | 83 | 32 | 0,1 | 6 | W0860100300 |
| 12,0 | SRS.V.0860.1200.L.Z6.F0010A.HA | 12 | 83 | 32 | 0,1 | 6 | W0860120300 |
| 16,0 | SRS.V.0860.1600.L.Z6.F0010A.HA | 16 | 92 | 36 | 0,1 | 6 | W0860160300 |
| 20,0 | SRS.V.0860.2000.L.Z6.F0010A.HA | 20 | 104 | 45 | 0,1 | 6 | W0860200300 |

# WD860-L, beschichtet

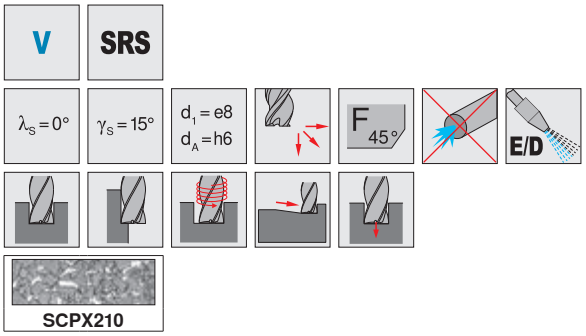
Schnittdatenempfehlung



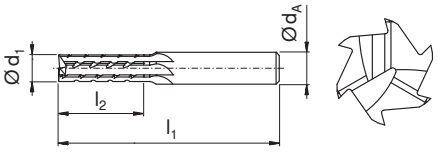
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 | $f_z$ [mm] > Ø 12,0 = Ø 16,0 | $f_z$ [mm] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | **Magnesium** | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | **Kupfer** | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | **CuZn (Messing)** | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | **CuSn (Bronze)** | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | **CuAlFe (Ampco)** | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | **Titan** | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | | | | | | | |
| 8.2.8 | | | | | | | | |
| 8.3.1 | **faserverstärkter Kunststoff** | 105 | 1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.2 | | 100 | 1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.3 | | 150 | 1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.3.4 | | | | | | | | |
| 8.3.5 | | | | | | | | |
| 8.3.6 | | | | | | | | |
| 8.4.1 | **Sandwich** | | | | | | | |
| 8.4.2 | | 250 | 1xø | 1xø | 0,05 | 0,06 | 0,08 | 0,1 |
| 8.4.3 | | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | | |
| 9.1.2 | | | | | | | | |

# WD860-L, beschichtet

Schrupp-Schlichtfräser





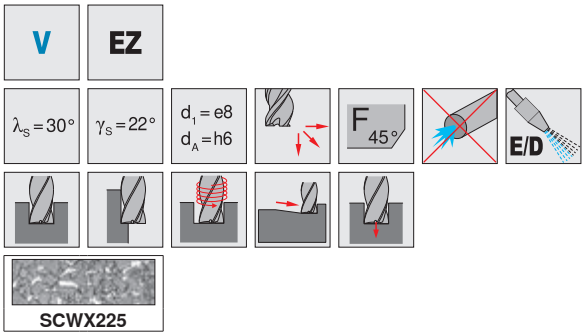

| d1 [mm] | Type, Bezeichnung | dA [mm] | l1 [mm] | l2 [mm] | F [mm] | z | Material |
|---|---|---|---|---|---|---|---|
| 4,0 | SRS.V.D860.0400.L.Z6.F0010A.HA | 6 | 60 | 16 | 0,1 | 6 | WD860040360 |
| 5,0 | SRS.V.D860.0500.L.Z6.F0010A.HA | 6 | 60 | 18 | 0,1 | 6 | WD860050360 |
| 6,0 | SRS.V.D860.0600.L.Z6.F0010A.HA | 6 | 75 | 28 | 0,1 | 6 | WD860060360 |
| 8,0 | SRS.V.D860.0800.L.Z6.F0010A.HA | 8 | 75 | 32 | 0,1 | 6 | WD860080360 |
| 10,0 | SRS.V.D860.1000.L.Z6.F0010A.HA | 10 | 83 | 32 | 0,1 | 6 | WD860100360 |
| 12,0 | SRS.V.D860.1200.L.Z6.F0010A.HA | 12 | 83 | 32 | 0,1 | 6 | WD860120360 |
| 16,0 | SRS.V.D860.1600.L.Z6.F0010A.HA | 16 | 92 | 36 | 0,1 | 6 | WD860160360 |
| 20,0 | SRS.V.D860.2000.L.Z6.F0010A.HA | 20 | 104 | 45 | 0,1 | 6 | WD860200360 |

# W0810-S, unbeschichtet

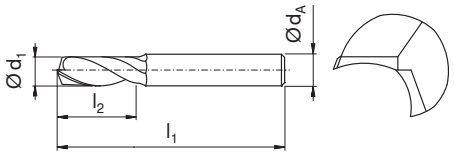
Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | $f_z$ [mm] > Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 10,0 |
|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 500 | 1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 7.1.2 | | 500 | 1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 7.1.3 | | 500 | 1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 7.1.4 | | 500 | 1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 7.1.5 | | 400 | 1xø | 1xø | 0,03 | 0,05 | 0,07 |
| 7.1.6 | | 300 | 1xø | 1xø | 0,03 | 0,05 | 0,07 |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |
| 8.1.1 | Thermoplast | 350 | 1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.2 | | 350 | 1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.3 | | 350 | 1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.4 | | 150 | 1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.5 | | 120 | 1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.6 | | 200 | 1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.7 | | 350 | 1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.8 | | 300 | 1xø | 1xø | 0,125 | 0,25 | 0,35 |
| 8.1.9 | | 80 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.1 | Duroplast | 100 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.2 | | 100 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.3 | | 100 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.4 | | 150 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.5 | | 100 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.6 | | 80 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.7 | | 100 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.8 | | 100 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | |
| 8.3.2 | | | | | | | |
| 8.3.3 | | | | | | | |
| 8.3.4 | | | | | | | |
| 8.3.5 | | | | | | | |
| 8.3.6 | | | | | | | |
| 8.4.1 | Sandwich | | | | | | |
| 8.4.2 | | | | | | | |
| 8.4.3 | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | |
| 9.1.2 | | | | | | | |






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | F [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|
| 3,0 | EZ.V.0810.0300.S.Z1.F0020A.HA | 3 | 50 | 4 | 0,2 | 1 | W0810030200 |
| 4,0 | EZ.V.0810.0400.S.Z1.F0020A.HA | 4 | 50 | 5 | 0,2 | 1 | W0810040200 |
| 5,0 | EZ.V.0810.0500.S.Z1.F0020A.HA | 5 | 50 | 16 | 0,2 | 1 | W0810050200 |
| 6,0 | EZ.V.0810.0600.S.Z1.F0020A.HA | 6 | 50 | 16 | 0,2 | 1 | W0810060200 |
| 8,0 | EZ.V.0810.0800.S.Z1.F0020A.HA | 8 | 50 | 18 | 0,2 | 1 | W0810080200 |
| 10,0 | EZ.V.0810.1000.S.Z1.F0020A.HA | 10 | 72 | 25 | 0,2 | 1 | W0810100200 |

# W0815-S, unbeschichtet

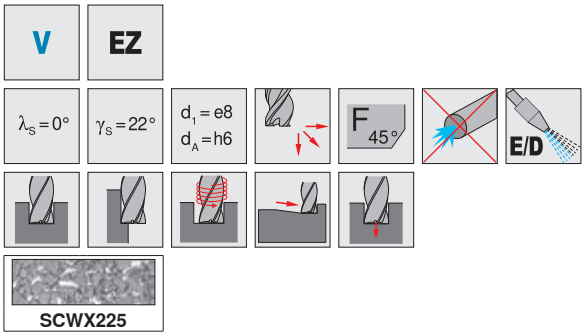
Schnittdatenempfehlung



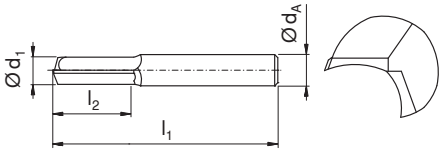
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | $f_z$ [mm] > Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 10,0 |
|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 500 | 1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 7.1.2 | | 500 | 1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 7.1.3 | | 500 | 1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 7.1.4 | | 500 | 1xø | 1xø | 0,04 | 0,06 | 0,08 |
| 7.1.5 | | 400 | 1xø | 1xø | 0,03 | 0,05 | 0,07 |
| 7.1.6 | | 300 | 1xø | 1xø | 0,03 | 0,05 | 0,07 |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |
| 8.1.1 | Thermoplast | 350 | 1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.2 | | 350 | 1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.3 | | 350 | 1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.4 | | 150 | 1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.5 | | 120 | 1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.6 | | 200 | 1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.7 | | 350 | 1xø | 1xø | 0,075 | 0,15 | 0,25 |
| 8.1.8 | | 300 | 1xø | 1xø | 0,125 | 0,25 | 0,35 |
| 8.1.9 | | 80 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.1 | Duroplast | 100 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.2 | | 100 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.3 | | 100 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.4 | | 150 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.5 | | 100 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.6 | | 80 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.7 | | 100 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.2.8 | | 100 | 1xø | 1xø | 0,05 | 0,1 | 0,2 |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | |
| 8.3.2 | | | | | | | |
| 8.3.3 | | | | | | | |
| 8.3.4 | | | | | | | |
| 8.3.5 | | | | | | | |
| 8.3.6 | | | | | | | |
| 8.4.1 | Sandwich | | | | | | |
| 8.4.2 | | | | | | | |
| 8.4.3 | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | |
| 9.1.2 | | | | | | | |

# W0815-S, unbeschichtet

Einzahnfräser





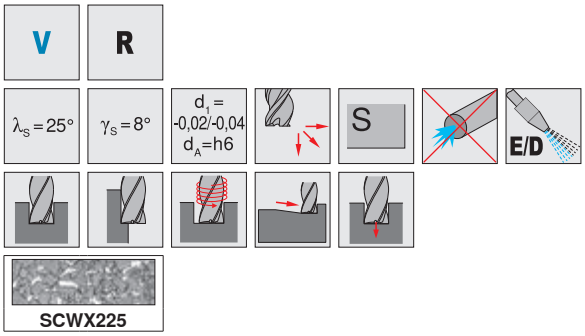

| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | F [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|
| 3,0 | EZ.V.0815.0300.S.Z1.F0020A.HA | 3 | 50 | 4 | 0,2 | 1 | W0815030200 |
| 4,0 | EZ.V.0815.0400.S.Z1.F0020A.HA | 4 | 50 | 5 | 0,2 | 1 | W0815040200 |
| 5,0 | EZ.V.0815.0500.S.Z1.F0020A.HA | 5 | 50 | 16 | 0,2 | 1 | W0815050200 |
| 6,0 | EZ.V.0815.0600.S.Z1.F0020A.HA | 6 | 50 | 16 | 0,2 | 1 | W0815060200 |
| 8,0 | EZ.V.0815.0800.S.Z1.F0020A.HA | 8 | 50 | 18 | 0,2 | 1 | W0815080200 |
| 10,0 | EZ.V.0815.1000.S.Z1.F0020A.HA | 10 | 72 | 25 | 0,2 | 1 | W0815100200 |

# W0828-L, unbeschichtet

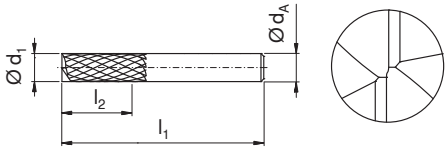
Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | f [mm/U] = Ø 4,0 = Ø 8,0 | f [mm/U] > Ø 8,0 = Ø 12,0 | f [mm/U] > Ø 12,0 = Ø 16,0 | f [mm/U] > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | **Magnesium** | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | **Kupfer** | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | **CuZn (Messing)** | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | **CuSn (Bronze)** | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | **CuAlFe (Ampco)** | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | **Titan** | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.8 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.5 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.6 | | 120 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.4.1 | **Sandwich** | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | | |
| 9.1.2 | | | | | | | | |






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 4,0 | R.V.0828.0400.L.S.HA | 4 | 50 | 16 | W0828040200 |
| 5,0 | R.V.0828.0500.L.S.HA | 5 | 50 | 16 | W0828050200 |
| 6,0 | R.V.0828.0600.L.S.HA | 6 | 60 | 19 | W0828060200 |
| 8,0 | R.V.0828.0800.L.S.HA | 8 | 63 | 25 | W0828080200 |
| 10,0 | R.V.0828.1000.L.S.HA | 10 | 72 | 25 | W0828100200 |
| 12,0 | R.V.0828.1200.L.S.HA | 12 | 83 | 32 | W0828120200 |
| 16,0 | R.V.0828.1600.L.S.HA | 16 | 92 | 36 | W0828160200 |
| 20,0 | R.V.0828.2000.L.S.HA | 20 | 104 | 45 | W0828200200 |

Vorschubangaben in mm / Umdrehung.

# W0830-L, unbeschichtet

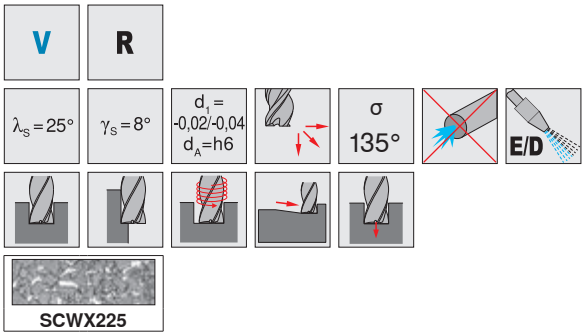
Schnittdatenempfehlung



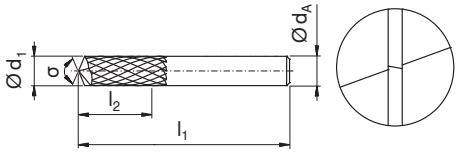
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | f [mm/U] = Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | Thermoplast | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | Duroplast | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.8 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.5 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.6 | | 120 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.4.1 | Sandwich | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | |
| 9.1.2 | | | | | | | | |

# W0830-L, unbeschichtet

Router






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 4,0 | R.V.0830.0400.L.HA | 4 | 50 | 16 | W0830040200 |
| 5,0 | R.V.0830.0500.L.HA | 5 | 50 | 16 | W0830050200 |
| 6,0 | R.V.0830.0600.L.HA | 6 | 60 | 19 | W0830060200 |
| 8,0 | R.V.0830.0800.L.HA | 8 | 63 | 25 | W0830080200 |
| 10,0 | R.V.0830.1000.L.HA | 10 | 72 | 25 | W0830100200 |
| 12,0 | R.V.0830.1200.L.HA | 12 | 83 | 32 | W0830120200 |
| 16,0 | R.V.0830.1600.L.HA | 16 | 92 | 36 | W0830160200 |
| 20,0 | R.V.0830.2000.L.HA | 20 | 104 | 45 | W0830200200 |

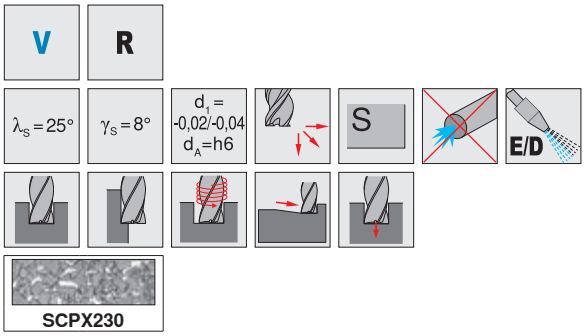
Vorschubangaben in mm / Umdrehung.

# W0828-L, beschichtet

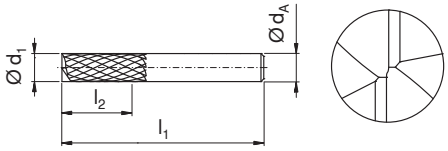
Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | f [mm/U] = Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | Thermoplast | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | Duroplast | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.8 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.5 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.6 | | 120 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.4.1 | Sandwich | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | |
| 9.1.2 | | | | | | | | |






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 4,0 | R.V.0828.0400.L.S.HA | 4 | 50 | 16 | W0828040270 |
| 5,0 | R.V.0828.0500.L.S.HA | 5 | 50 | 16 | W0828050270 |
| 6,0 | R.V.0828.0600.L.S.HA | 6 | 60 | 19 | W0828060270 |
| 8,0 | R.V.0828.0800.L.S.HA | 8 | 63 | 25 | W0828080270 |
| 10,0 | R.V.0828.1000.L.S.HA | 10 | 72 | 25 | W0828100270 |
| 12,0 | R.V.0828.1200.L.S.HA | 12 | 83 | 32 | W0828120270 |
| 16,0 | R.V.0828.1600.L.S.HA | 16 | 92 | 36 | W0828160270 |
| 20,0 | R.V.0828.2000.L.S.HA | 20 | 104 | 45 | W0828200270 |

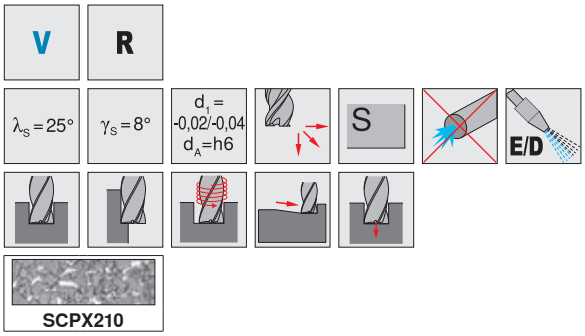
Vorschubangaben in mm / Umdrehung.

# WD828-L, beschichtet

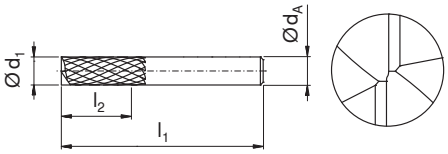
Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | f [mm/U] = Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | **Magnesium** | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | **Kupfer** | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | **CuZn (Messing)** | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | **CuSn (Bronze)** | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | **CuAlFe (Ampco)** | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | **Titan** | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.8 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.5 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.6 | | 120 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.4.1 | **Sandwich** | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | | |
| 9.1.2 | | | | | | | | |






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 4,0 | R.V.D828.0400.L.S.HA | 4 | 50 | 16 | WD828040260 |
| 5,0 | R.V.D828.0500.L.S.HA | 5 | 50 | 16 | WD828050260 |
| 6,0 | R.V.D828.0600.L.S.HA | 6 | 60 | 19 | WD828060260 |
| 8,0 | R.V.D828.0800.L.S.HA | 8 | 63 | 25 | WD828080260 |
| 10,0 | R.V.D828.1000.L.S.HA | 10 | 72 | 25 | WD828100260 |
| 12,0 | R.V.D828.1200.L.S.HA | 12 | 83 | 32 | WD828120260 |
| 16,0 | R.V.D828.1600.L.S.HA | 16 | 92 | 36 | WD828160260 |
| 20,0 | R.V.D828.2000.L.S.HA | 20 | 104 | 45 | WD828200260 |

Vorschubangaben in mm / Umdrehung.

# W0830-L, beschichtet

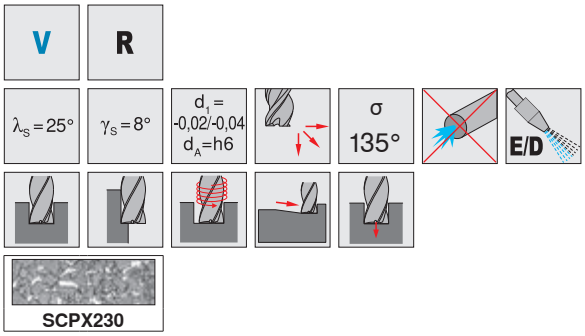
Schnittdatenempfehlung



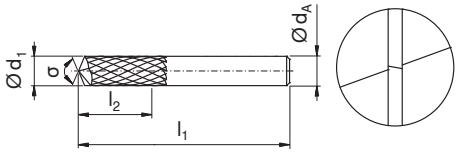
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | f [mm/U] = Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | **Magnesium** | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | **Kupfer** | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | **CuZn (Messing)** | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | **CuSn (Bronze)** | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | **CuAlFe (Ampco)** | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | **Titan** | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.8 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.5 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.6 | | 120 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.4.1 | **Sandwich** | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | | |
| 9.1.2 | | | | | | | | |

# W0830-L, beschichtet

Router






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 4,0 | R.V.0830.0400.L.HA | 4 | 50 | 16 | W0830040270 |
| 5,0 | R.V.0830.0500.L.HA | 5 | 50 | 16 | W0830050270 |
| 6,0 | R.V.0830.0600.L.HA | 6 | 60 | 19 | W0830060270 |
| 8,0 | R.V.0830.0800.L.HA | 8 | 63 | 25 | W0830080270 |
| 10,0 | R.V.0830.1000.L.HA | 10 | 72 | 25 | W0830100270 |
| 12,0 | R.V.0830.1200.L.HA | 12 | 83 | 32 | W0830120270 |
| 16,0 | R.V.0830.1600.L.HA | 16 | 92 | 36 | W0830160270 |
| 20,0 | R.V.0830.2000.L.HA | 20 | 104 | 45 | W0830200270 |

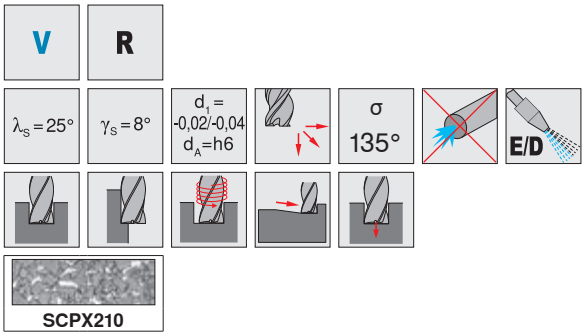
Vorschubangaben in mm / Umdrehung.

# WD830-L, beschichtet

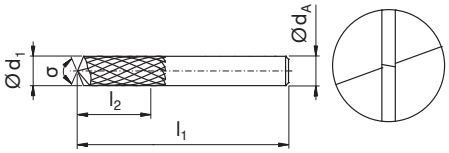
Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | f [mm/U] = Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | **Magnesium** | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | **Kupfer** | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | **CuZn (Messing)** | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | **CuSn (Bronze)** | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | **CuAlFe (Ampco)** | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | **Titan** | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | | |
| 8.1.2 | | | | | | | | |
| 8.1.3 | | | | | | | | |
| 8.1.4 | | | | | | | | |
| 8.1.5 | | | | | | | | |
| 8.1.6 | | | | | | | | |
| 8.1.7 | | | | | | | | |
| 8.1.8 | | | | | | | | |
| 8.1.9 | | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | | |
| 8.2.2 | | | | | | | | |
| 8.2.3 | | | | | | | | |
| 8.2.4 | | | | | | | | |
| 8.2.5 | | | | | | | | |
| 8.2.6 | | | | | | | | |
| 8.2.7 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.2.8 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | | | | |
| 8.3.2 | | | | | | | | |
| 8.3.3 | | | | | | | | |
| 8.3.4 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.5 | | 100 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.3.6 | | 120 | 1xø | 1xø | 0,1 | 0,2 | 0,3 | 0,4 |
| 8.4.1 | **Sandwich** | | | | | | | |
| 8.4.2 | | | | | | | | |
| 8.4.3 | | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | | |
| 9.1.2 | | | | | | | | |






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 4,0 | R.V.D830.0400.L.HA | 4 | 50 | 16 | WD830040260 |
| 5,0 | R.V.D830.0500.L.HA | 5 | 50 | 16 | WD830050260 |
| 6,0 | R.V.D830.0600.L.HA | 6 | 60 | 19 | WD830060260 |
| 8,0 | R.V.D830.0800.L.HA | 8 | 63 | 25 | WD830080260 |
| 10,0 | R.V.D830.1000.L.HA | 10 | 72 | 25 | WD830100260 |
| 12,0 | R.V.D830.1200.L.HA | 12 | 83 | 32 | WD830120260 |
| 16,0 | R.V.D830.1600.L.HA | 16 | 92 | 36 | WD830160260 |
| 20,0 | R.V.D830.2000.L.HA | 20 | 104 | 45 | WD830200260 |

Vorschubangaben in mm / Umdrehung.

# W0835-L, unbeschichtet

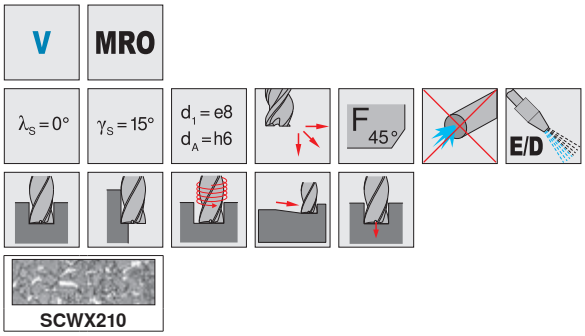
Schnittdatenempfehlung



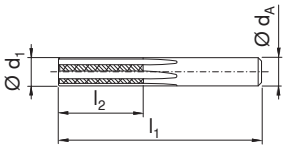
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | $f_z$ [mm] > Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | **Magnesium** | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | **Kupfer** | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | **CuZn (Messing)** | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | **CuSn (Bronze)** | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | **CuAlFe (Ampco)** | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | **Titan** | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | |
| 8.1.2 | | | | | | | |
| 8.1.3 | | | | | | | |
| 8.1.4 | | | | | | | |
| 8.1.5 | | | | | | | |
| 8.1.6 | | | | | | | |
| 8.1.7 | | | | | | | |
| 8.1.8 | | | | | | | |
| 8.1.9 | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | |
| 8.2.2 | | | | | | | |
| 8.2.3 | | | | | | | |
| 8.2.4 | | | | | | | |
| 8.2.5 | | | | | | | |
| 8.2.6 | | | | | | | |
| 8.2.7 | | | | | | | |
| 8.2.8 | | | | | | | |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | | | |
| 8.3.2 | | | | | | | |
| 8.3.3 | | 150 | 1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.3.4 | | 150 | 1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.3.5 | | | | | | | |
| 8.3.6 | | | | | | | |
| 8.4.1 | **Sandwich** | | | | | | |
| 8.4.2 | | | | | | | |
| 8.4.3 | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | |
| 9.1.2 | | | | | | | |

# W0835-L, unbeschichtet

Multirouter








| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | F [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|
| 3,0 | MRO.V.0835.0300.L.Z4.F0010A.HA | 6 | 57 | 14 | 0,1 | 4 | W0835030300 |
| 4,0 | MRO.V.0835.0400.L.Z4.F0010A.HA | 6 | 57 | 16 | 0,1 | 4 | W0835040300 |
| 5,0 | MRO.V.0835.0500.L.Z4.F0010A.HA | 6 | 57 | 18 | 0,1 | 4 | W0835050300 |
| 6,0 | MRO.V.0835.0600.L.Z6.F0010A.HA | 6 | 57 | 22 | 0,1 | 6 | W0835060300 |
| 8,0 | MRO.V.0835.0800.L.Z6.F0020A.HA | 8 | 63 | 27 | 0,2 | 6 | W0835080300 |
| 10,0 | MRO.V.0835.1000.L.Z6.F0020A.HA | 10 | 72 | 30 | 0,2 | 6 | W0835100300 |
| 12,0 | MRO.V.0835.1200.L.Z6.F0030A.HA | 12 | 83 | 32 | 0,3 | 6 | W0835120300 |

Die Schnittwerte müssen je nach Maschine, Werkstoff und Werkstückspannung nach oben oder nach unten angepasst werden.

# W0837-L, unbeschichtet

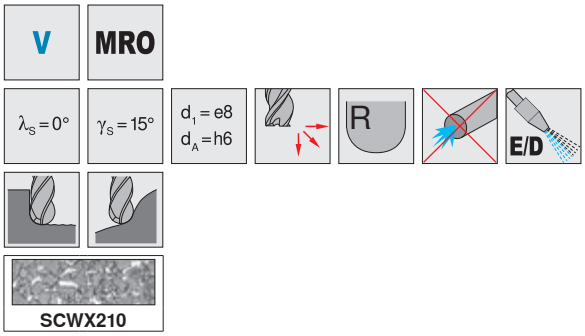
Schnittdatenempfehlung



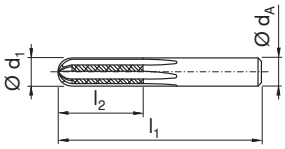
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | $f_z$ [mm] > Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |
| 8.1.1 | Thermoplast | | | | | | |
| 8.1.2 | | | | | | | |
| 8.1.3 | | | | | | | |
| 8.1.4 | | | | | | | |
| 8.1.5 | | | | | | | |
| 8.1.6 | | | | | | | |
| 8.1.7 | | | | | | | |
| 8.1.8 | | | | | | | |
| 8.1.9 | | | | | | | |
| 8.2.1 | Duroplast | | | | | | |
| 8.2.2 | | | | | | | |
| 8.2.3 | | | | | | | |
| 8.2.4 | | | | | | | |
| 8.2.5 | | | | | | | |
| 8.2.6 | | | | | | | |
| 8.2.7 | | | | | | | |
| 8.2.8 | | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | |
| 8.3.2 | | | | | | | |
| 8.3.3 | | 150 | 1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.3.4 | | 150 | 1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.3.5 | | | | | | | |
| 8.3.6 | | | | | | | |
| 8.4.1 | Sandwich | | | | | | |
| 8.4.2 | | | | | | | |
| 8.4.3 | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | |
| 9.1.2 | | | | | | | |

# W0837-L, unbeschichtet

Multirouter








| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | R [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|
| 3,0 | MRO.V.0837.0300.L.Z4.R0150.HA | 6 | 57 | 14 | 1,5 | 4 | W0837030300 |
| 4,0 | MRO.V.0837.0400.L.Z4.R0200.HA | 6 | 57 | 16 | 2 | 4 | W0837040300 |
| 5,0 | MRO.V.0837.0500.L.Z4.R0250.HA | 6 | 57 | 18 | 2,5 | 4 | W0837050300 |
| 6,0 | MRO.V.0837.0600.L.Z6.R0300.HA | 6 | 57 | 22 | 3 | 6 | W0837060300 |
| 8,0 | MRO.V.0837.0800.L.Z6.R0400.HA | 8 | 63 | 27 | 4 | 6 | W0837080300 |
| 10,0 | MRO.V.0837.1000.L.Z6.R0500.HA | 10 | 72 | 30 | 5 | 6 | W0837100300 |
| 12,0 | MRO.V.0837.1200.L.Z6.R0600.HA | 12 | 83 | 32 | 6 | 6 | W0837120300 |

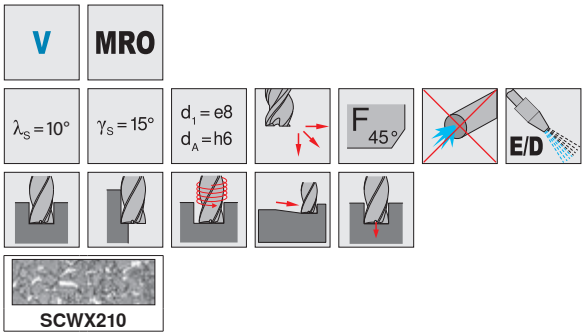
Die Schnittwerte müssen je nach Maschine, Werkstoff und Werkstückspannung nach oben oder nach unten angepasst werden.

# W0839-L, unbeschichtet

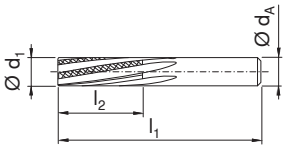
Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | | | | | |
| 7.1.2 | | | | | | |
| 7.1.3 | | | | | | |
| 7.1.4 | | | | | | |
| 7.1.5 | | | | | | |
| 7.1.6 | | | | | | |
| 7.2.1 | Magnesium | | | | | |
| 7.2.2 | | | | | | |
| 7.3.1 | Kupfer | | | | | |
| 7.3.2 | | | | | | |
| 7.3.3 | | | | | | |
| 7.3.4 | | | | | | |
| 7.3.5 | | | | | | |
| 7.3.6 | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | |
| 7.4.2 | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | |
| 7.5.2 | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | |
| 7.6.2 | | | | | | |
| 7.8.1 | Titan | | | | | |
| 7.8.2 | | | | | | |
| 7.8.3 | | | | | | |
| 8.1.1 | Thermoplast | | | | | |
| 8.1.2 | | | | | | |
| 8.1.3 | | | | | | |
| 8.1.4 | | | | | | |
| 8.1.5 | | | | | | |
| 8.1.6 | | | | | | |
| 8.1.7 | | | | | | |
| 8.1.8 | | | | | | |
| 8.1.9 | | | | | | |
| 8.2.1 | Duroplast | | | | | |
| 8.2.2 | | | | | | |
| 8.2.3 | | | | | | |
| 8.2.4 | | | | | | |
| 8.2.5 | | | | | | |
| 8.2.6 | | | | | | |
| 8.2.7 | | | | | | |
| 8.2.8 | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | |
| 8.3.2 | | | | | | |
| 8.3.3 | | 150 | 1xø | 1xø | 0,05 | 0,06 |
| 8.3.4 | | 150 | 1xø | 1xø | 0,05 | 0,06 |
| 8.3.5 | | | | | | |
| 8.3.6 | | | | | | |
| 8.4.1 | Sandwich | | | | | |
| 8.4.2 | | | | | | |
| 8.4.3 | | | | | | |
| 9.1.1 | Standard Graphit | | | | | |
| 9.1.2 | | | | | | |








| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | F [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|
| 6,0 | MRO.V.0839.0600.L.Z6.F0010A.HA | 6 | 57 | 22 | 0,1 | 6 | W0839060300 |
| 8,0 | MRO.V.0839.0800.L.Z6.F0020A.HA | 8 | 63 | 27 | 0,2 | 6 | W0839080300 |
| 10,0 | MRO.V.0839.1000.L.Z6.F0020A.HA | 10 | 72 | 30 | 0,2 | 6 | W0839100300 |
| 12,0 | MRO.V.0839.1200.L.Z6.F0030A.HA | 12 | 83 | 32 | 0,3 | 6 | W0839120300 |

Die Schnittwerte müssen je nach Maschine, Werkstoff und Werkstückspannung nach oben oder nach unten angepasst werden.

# W0841-L, unbeschichtet

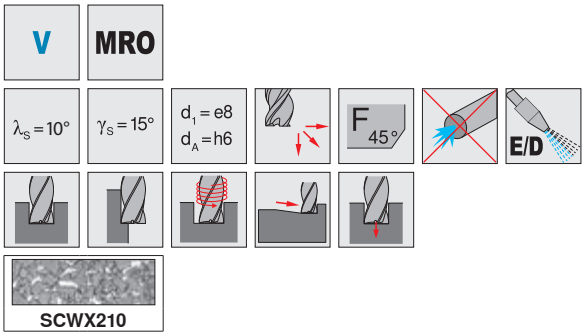
Schnittdatenempfehlung



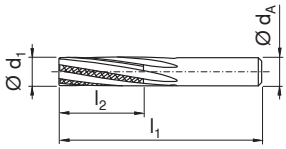
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | | | | | |
| 7.1.2 | | | | | | |
| 7.1.3 | | | | | | |
| 7.1.4 | | | | | | |
| 7.1.5 | | | | | | |
| 7.1.6 | | | | | | |
| 7.2.1 | Magnesium | | | | | |
| 7.2.2 | | | | | | |
| 7.3.1 | Kupfer | | | | | |
| 7.3.2 | | | | | | |
| 7.3.3 | | | | | | |
| 7.3.4 | | | | | | |
| 7.3.5 | | | | | | |
| 7.3.6 | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | |
| 7.4.2 | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | |
| 7.5.2 | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | |
| 7.6.2 | | | | | | |
| 7.8.1 | Titan | | | | | |
| 7.8.2 | | | | | | |
| 7.8.3 | | | | | | |
| 8.1.1 | Thermoplast | | | | | |
| 8.1.2 | | | | | | |
| 8.1.3 | | | | | | |
| 8.1.4 | | | | | | |
| 8.1.5 | | | | | | |
| 8.1.6 | | | | | | |
| 8.1.7 | | | | | | |
| 8.1.8 | | | | | | |
| 8.1.9 | | | | | | |
| 8.2.1 | Duroplast | | | | | |
| 8.2.2 | | | | | | |
| 8.2.3 | | | | | | |
| 8.2.4 | | | | | | |
| 8.2.5 | | | | | | |
| 8.2.6 | | | | | | |
| 8.2.7 | | | | | | |
| 8.2.8 | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | |
| 8.3.2 | | | | | | |
| 8.3.3 | | 150 | 1xø | 1xø | 0,05 | 0,06 |
| 8.3.4 | | 150 | 1xø | 1xø | 0,05 | 0,06 |
| 8.3.5 | | | | | | |
| 8.3.6 | | | | | | |
| 8.4.1 | Sandwich | | | | | |
| 8.4.2 | | | | | | |
| 8.4.3 | | | | | | |
| 9.1.1 | Standard Graphit | | | | | |
| 9.1.2 | | | | | | |

# W0841-L, unbeschichtet

Multirouter








| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | F [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|
| 6,0 | MRO.V.0841.0600.L.Z6.F0010A.HA | 6 | 57 | 22 | 0,1 | 6 | W0841060300 |
| 8,0 | MRO.V.0841.0800.L.Z6.F0020A.HA | 8 | 63 | 27 | 0,2 | 6 | W0841080300 |
| 10,0 | MRO.V.0841.1000.L.Z6.F0020A.HA | 10 | 72 | 30 | 0,2 | 6 | W0841100300 |
| 12,0 | MRO.V.0841.1200.L.Z6.F0030A.HA | 12 | 83 | 32 | 0,3 | 6 | W0841120300 |

Die Schnittwerte müssen je nach Maschine, Werkstoff und Werkstückspannung nach oben oder nach unten angepasst werden.

# W0843-L, unbeschichtet

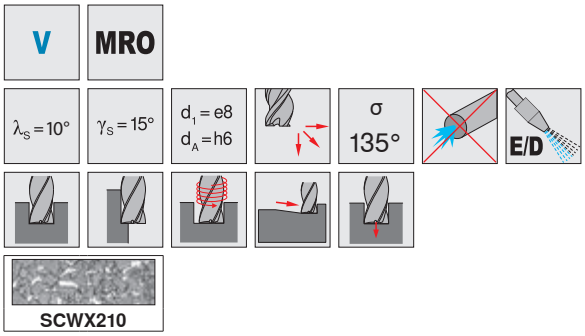
Schnittdatenempfehlung



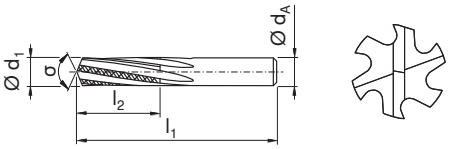
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | | | | | |
| 7.1.2 | | | | | | |
| 7.1.3 | | | | | | |
| 7.1.4 | | | | | | |
| 7.1.5 | | | | | | |
| 7.1.6 | | | | | | |
| 7.2.1 | Magnesium | | | | | |
| 7.2.2 | | | | | | |
| 7.3.1 | Kupfer | | | | | |
| 7.3.2 | | | | | | |
| 7.3.3 | | | | | | |
| 7.3.4 | | | | | | |
| 7.3.5 | | | | | | |
| 7.3.6 | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | |
| 7.4.2 | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | |
| 7.5.2 | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | |
| 7.6.2 | | | | | | |
| 7.8.1 | Titan | | | | | |
| 7.8.2 | | | | | | |
| 7.8.3 | | | | | | |
| 8.1.1 | Thermoplast | | | | | |
| 8.1.2 | | | | | | |
| 8.1.3 | | | | | | |
| 8.1.4 | | | | | | |
| 8.1.5 | | | | | | |
| 8.1.6 | | | | | | |
| 8.1.7 | | | | | | |
| 8.1.8 | | | | | | |
| 8.1.9 | | | | | | |
| 8.2.1 | Duroplast | | | | | |
| 8.2.2 | | | | | | |
| 8.2.3 | | | | | | |
| 8.2.4 | | | | | | |
| 8.2.5 | | | | | | |
| 8.2.6 | | | | | | |
| 8.2.7 | | | | | | |
| 8.2.8 | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | |
| 8.3.2 | | | | | | |
| 8.3.3 | | 150 | 1xø | 1xø | 0,05 | 0,06 |
| 8.3.4 | | 150 | 1xø | 1xø | 0,05 | 0,06 |
| 8.3.5 | | | | | | |
| 8.3.6 | | | | | | |
| 8.4.1 | Sandwich | | | | | |
| 8.4.2 | | | | | | |
| 8.4.3 | | | | | | |
| 9.1.1 | Standard Graphit | | | | | |
| 9.1.2 | | | | | | |

# W0843-L, unbeschichtet

Multirouter






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | z | HA Material |
|---|---|---|---|---|---|---|
| 6,0 | MRO.V.0843.0600.L.Z6.HA | 6 | 57 | 22 | 6 | W0843060300 |
| 8,0 | MRO.V.0843.0800.L.Z6.HA | 8 | 63 | 27 | 6 | W0843080300 |
| 10,0 | MRO.V.0843.1000.L.Z6.HA | 10 | 72 | 30 | 6 | W0843100300 |
| 12,0 | MRO.V.0843.1200.L.Z6.HA | 12 | 83 | 32 | 6 | W0843120300 |

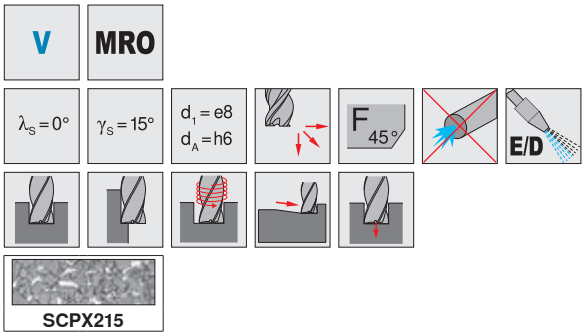
Die Schnittwerte müssen je nach Maschine, Werkstoff und Werkstückspannung nach oben oder nach unten angepasst werden.

# W0835-L, beschichtet

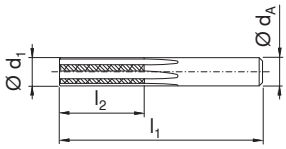
Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | $f_z$ [mm] > Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | **Magnesium** | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | **Kupfer** | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | **CuZn (Messing)** | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | **CuSn (Bronze)** | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | **CuAlFe (Ampco)** | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | **Titan** | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | |
| 8.1.2 | | | | | | | |
| 8.1.3 | | | | | | | |
| 8.1.4 | | | | | | | |
| 8.1.5 | | | | | | | |
| 8.1.6 | | | | | | | |
| 8.1.7 | | | | | | | |
| 8.1.8 | | | | | | | |
| 8.1.9 | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | |
| 8.2.2 | | | | | | | |
| 8.2.3 | | | | | | | |
| 8.2.4 | | | | | | | |
| 8.2.5 | | | | | | | |
| 8.2.6 | | | | | | | |
| 8.2.7 | | | | | | | |
| 8.2.8 | | | | | | | |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | | | |
| 8.3.2 | | | | | | | |
| 8.3.3 | | 250 | 1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.3.4 | | 250 | 1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.3.5 | | | | | | | |
| 8.3.6 | | | | | | | |
| 8.4.1 | **Sandwich** | | | | | | |
| 8.4.2 | | | | | | | |
| 8.4.3 | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | |
| 9.1.2 | | | | | | | |








| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | F [mm] | z | Material |
|---|---|---|---|---|---|---|---|
| 3,0 | MRO.V.0835.0300.L.Z4.F0010A.HA | 6 | 57 | 14 | 0,1 | 4 | W0835030370 |
| 4,0 | MRO.V.0835.0400.L.Z4.F0010A.HA | 6 | 57 | 16 | 0,1 | 4 | W0835040370 |
| 5,0 | MRO.V.0835.0500.L.Z4.F0010A.HA | 6 | 57 | 18 | 0,1 | 4 | W0835050370 |
| 6,0 | MRO.V.0835.0600.L.Z6.F0010A.HA | 6 | 57 | 22 | 0,1 | 6 | W0835060370 |
| 8,0 | MRO.V.0835.0800.L.Z6.F0020A.HA | 8 | 63 | 27 | 0,2 | 6 | W0835080370 |
| 10,0 | MRO.V.0835.1000.L.Z6.F0020A.HA | 10 | 72 | 30 | 0,2 | 6 | W0835100370 |
| 12,0 | MRO.V.0835.1200.L.Z6.F0030A.HA | 12 | 83 | 32 | 0,3 | 6 | W0835120370 |

Die Schnittwerte müssen je nach Maschine, Werkstoff und Werkstückspannung nach oben oder nach unten angepasst werden.

# W0837-L, beschichtet

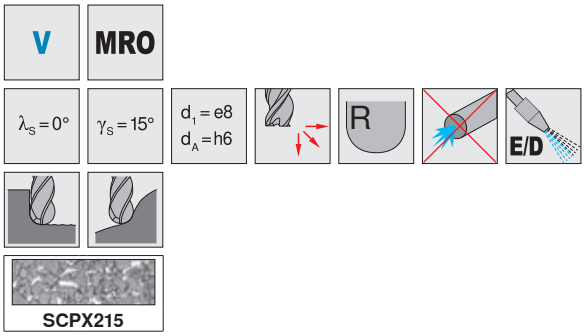
Schnittdatenempfehlung



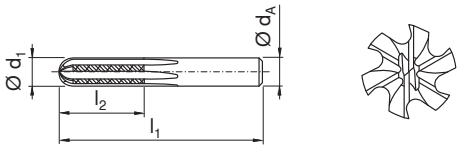
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 3,0 = Ø 4,0 | $f_z$ [mm] > Ø 4,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | **Magnesium** | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | **Kupfer** | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | **CuZn (Messing)** | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | **CuSn (Bronze)** | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | **CuAlFe (Ampco)** | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | **Titan** | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |
| 8.1.1 | **Thermoplast** | | | | | | |
| 8.1.2 | | | | | | | |
| 8.1.3 | | | | | | | |
| 8.1.4 | | | | | | | |
| 8.1.5 | | | | | | | |
| 8.1.6 | | | | | | | |
| 8.1.7 | | | | | | | |
| 8.1.8 | | | | | | | |
| 8.1.9 | | | | | | | |
| 8.2.1 | **Duroplast** | | | | | | |
| 8.2.2 | | | | | | | |
| 8.2.3 | | | | | | | |
| 8.2.4 | | | | | | | |
| 8.2.5 | | | | | | | |
| 8.2.6 | | | | | | | |
| 8.2.7 | | | | | | | |
| 8.2.8 | | | | | | | |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | | | |
| 8.3.2 | | | | | | | |
| 8.3.3 | | 250 | 1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.3.4 | | 250 | 1xø | 1xø | 0,03 | 0,05 | 0,06 |
| 8.3.5 | | | | | | | |
| 8.3.6 | | | | | | | |
| 8.4.1 | **Sandwich** | | | | | | |
| 8.4.2 | | | | | | | |
| 8.4.3 | | | | | | | |
| 9.1.1 | **Standard Graphit** | | | | | | |
| 9.1.2 | | | | | | | |

# W0837-L, beschichtet

Multirouter






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | R [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|
| 3,0 | MRO.V.0837.0300.L.Z4.R0150.HA | 6 | 57 | 14 | 1,5 | 4 | W0837030370 |
| 4,0 | MRO.V.0837.0400.L.Z4.R0200.HA | 6 | 57 | 16 | 2 | 4 | W0837040370 |
| 5,0 | MRO.V.0837.0500.L.Z4.R0250.HA | 6 | 57 | 18 | 2,5 | 4 | W0837050370 |
| 6,0 | MRO.V.0837.0600.L.Z6.R0300.HA | 6 | 57 | 22 | 3 | 6 | W0837060370 |
| 8,0 | MRO.V.0837.0800.L.Z6.R0400.HA | 8 | 63 | 27 | 4 | 6 | W0837080370 |
| 10,0 | MRO.V.0837.1000.L.Z6.R0500.HA | 10 | 72 | 30 | 5 | 6 | W0837100370 |
| 12,0 | MRO.V.0837.1200.L.Z6.R0600.HA | 12 | 83 | 32 | 6 | 6 | W0837120370 |

Die Schnittwerte müssen je nach Maschine, Werkstoff und Werkstückspannung nach oben oder nach unten angepasst werden.

# W0839-L, beschichtet

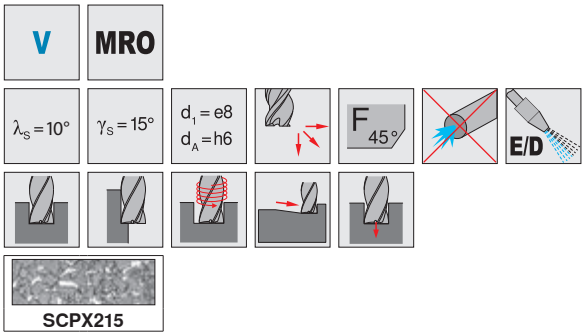
Schnittdatenempfehlung



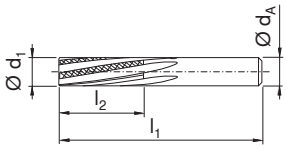
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | | | | | |
| 7.1.2 | | | | | | |
| 7.1.3 | | | | | | |
| 7.1.4 | | | | | | |
| 7.1.5 | | | | | | |
| 7.1.6 | | | | | | |
| 7.2.1 | Magnesium | | | | | |
| 7.2.2 | | | | | | |
| 7.3.1 | Kupfer | | | | | |
| 7.3.2 | | | | | | |
| 7.3.3 | | | | | | |
| 7.3.4 | | | | | | |
| 7.3.5 | | | | | | |
| 7.3.6 | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | |
| 7.4.2 | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | |
| 7.5.2 | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | |
| 7.6.2 | | | | | | |
| 7.8.1 | Titan | | | | | |
| 7.8.2 | | | | | | |
| 7.8.3 | | | | | | |
| 8.1.1 | Thermoplast | | | | | |
| 8.1.2 | | | | | | |
| 8.1.3 | | | | | | |
| 8.1.4 | | | | | | |
| 8.1.5 | | | | | | |
| 8.1.6 | | | | | | |
| 8.1.7 | | | | | | |
| 8.1.8 | | | | | | |
| 8.1.9 | | | | | | |
| 8.2.1 | Duroplast | | | | | |
| 8.2.2 | | | | | | |
| 8.2.3 | | | | | | |
| 8.2.4 | | | | | | |
| 8.2.5 | | | | | | |
| 8.2.6 | | | | | | |
| 8.2.7 | | | | | | |
| 8.2.8 | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | |
| 8.3.2 | | | | | | |
| 8.3.3 | | 250 | 1xø | 1xø | 0,05 | 0,06 |
| 8.3.4 | | 250 | 1xø | 1xø | 0,05 | 0,06 |
| 8.3.5 | | | | | | |
| 8.3.6 | | | | | | |
| 8.4.1 | Sandwich | | | | | |
| 8.4.2 | | | | | | |
| 8.4.3 | | | | | | |
| 9.1.1 | Standard Graphit | | | | | |
| 9.1.2 | | | | | | |

# W0839-L, beschichtet

Multirouter








| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | F [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|
| 6,0 | MRO.V.0839.0600.L.Z6.F0010A.HA | 6 | 57 | 22 | 0,1 | 6 | W0839060370 |
| 8,0 | MRO.V.0839.0800.L.Z6.F0020A.HA | 8 | 63 | 27 | 0,2 | 6 | W0839080370 |
| 10,0 | MRO.V.0839.1000.L.Z6.F0020A.HA | 10 | 72 | 30 | 0,2 | 6 | W0839100370 |
| 12,0 | MRO.V.0839.1200.L.Z6.F0030A.HA | 12 | 83 | 32 | 0,3 | 6 | W0839120370 |

Die Schnittwerte müssen je nach Maschine, Werkstoff und Werkstückspannung nach oben oder nach unten angepasst werden.

# W0841-L, beschichtet

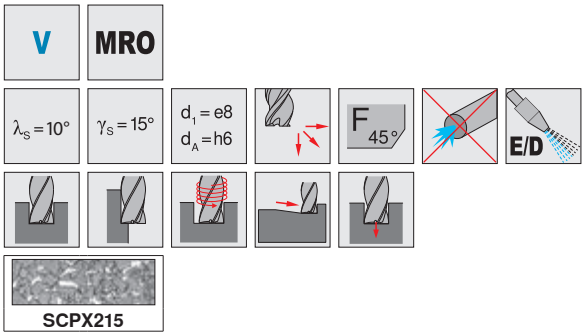
Schnittdatenempfehlung



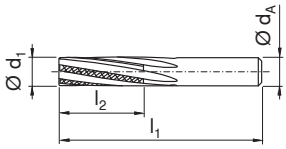
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | | | | | |
| 7.1.2 | | | | | | |
| 7.1.3 | | | | | | |
| 7.1.4 | | | | | | |
| 7.1.5 | | | | | | |
| 7.1.6 | | | | | | |
| 7.2.1 | Magnesium | | | | | |
| 7.2.2 | | | | | | |
| 7.3.1 | Kupfer | | | | | |
| 7.3.2 | | | | | | |
| 7.3.3 | | | | | | |
| 7.3.4 | | | | | | |
| 7.3.5 | | | | | | |
| 7.3.6 | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | |
| 7.4.2 | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | |
| 7.5.2 | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | |
| 7.6.2 | | | | | | |
| 7.8.1 | Titan | | | | | |
| 7.8.2 | | | | | | |
| 7.8.3 | | | | | | |
| 8.1.1 | Thermoplast | | | | | |
| 8.1.2 | | | | | | |
| 8.1.3 | | | | | | |
| 8.1.4 | | | | | | |
| 8.1.5 | | | | | | |
| 8.1.6 | | | | | | |
| 8.1.7 | | | | | | |
| 8.1.8 | | | | | | |
| 8.1.9 | | | | | | |
| 8.2.1 | Duroplast | | | | | |
| 8.2.2 | | | | | | |
| 8.2.3 | | | | | | |
| 8.2.4 | | | | | | |
| 8.2.5 | | | | | | |
| 8.2.6 | | | | | | |
| 8.2.7 | | | | | | |
| 8.2.8 | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | |
| 8.3.2 | | | | | | |
| 8.3.3 | | 250 | 1xø | 1xø | 0,05 | 0,06 |
| 8.3.4 | | 250 | 1xø | 1xø | 0,05 | 0,06 |
| 8.3.5 | | | | | | |
| 8.3.6 | | | | | | |
| 8.4.1 | Sandwich | | | | | |
| 8.4.2 | | | | | | |
| 8.4.3 | | | | | | |
| 9.1.1 | Standard Graphit | | | | | |
| 9.1.2 | | | | | | |

# W0841-L, beschichtet

Multirouter








| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | F [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|
| 6,0 | MRO.V.0841.0600.L.Z6.F0010A.HA | 6 | 57 | 22 | 0,1 | 6 | W0841060370 |
| 8,0 | MRO.V.0841.0800.L.Z6.F0020A.HA | 8 | 63 | 27 | 0,2 | 6 | W0841080370 |
| 10,0 | MRO.V.0841.1000.L.Z6.F0020A.HA | 10 | 72 | 30 | 0,2 | 6 | W0841100370 |
| 12,0 | MRO.V.0841.1200.L.Z6.F0030A.HA | 12 | 83 | 32 | 0,3 | 6 | W0841120370 |

Die Schnittwerte müssen je nach Maschine, Werkstoff und Werkstückspannung nach oben oder nach unten angepasst werden.

# W0843-L, beschichtet

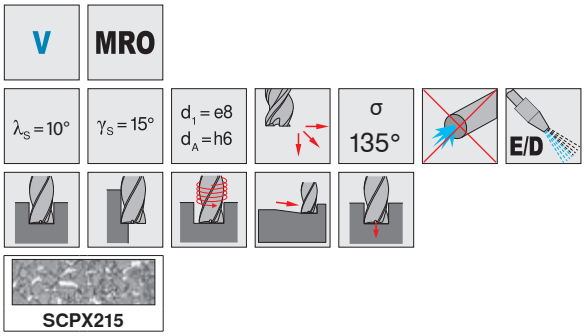
Schnittdatenempfehlung



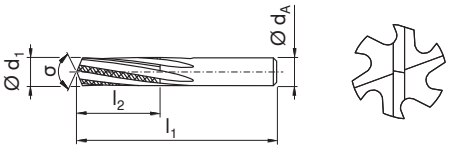
| Index | Materialbezeichnung | $V_c$ [m/min] | $a_e$ max. [mm] | $a_p$ max. [mm] | $f_z$ [mm] = Ø 6,0 = Ø 8,0 | $f_z$ [mm] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | | | | | |
| 7.1.2 | | | | | | |
| 7.1.3 | | | | | | |
| 7.1.4 | | | | | | |
| 7.1.5 | | | | | | |
| 7.1.6 | | | | | | |
| 7.2.1 | Magnesium | | | | | |
| 7.2.2 | | | | | | |
| 7.3.1 | Kupfer | | | | | |
| 7.3.2 | | | | | | |
| 7.3.3 | | | | | | |
| 7.3.4 | | | | | | |
| 7.3.5 | | | | | | |
| 7.3.6 | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | |
| 7.4.2 | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | |
| 7.5.2 | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | |
| 7.6.2 | | | | | | |
| 7.8.1 | Titan | | | | | |
| 7.8.2 | | | | | | |
| 7.8.3 | | | | | | |
| 8.1.1 | Thermoplast | | | | | |
| 8.1.2 | | | | | | |
| 8.1.3 | | | | | | |
| 8.1.4 | | | | | | |
| 8.1.5 | | | | | | |
| 8.1.6 | | | | | | |
| 8.1.7 | | | | | | |
| 8.1.8 | | | | | | |
| 8.1.9 | | | | | | |
| 8.2.1 | Duroplast | | | | | |
| 8.2.2 | | | | | | |
| 8.2.3 | | | | | | |
| 8.2.4 | | | | | | |
| 8.2.5 | | | | | | |
| 8.2.6 | | | | | | |
| 8.2.7 | | | | | | |
| 8.2.8 | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | |
| 8.3.2 | | | | | | |
| 8.3.3 | | 250 | 1xø | 1xø | 0,05 | 0,06 |
| 8.3.4 | | 250 | 1xø | 1xø | 0,05 | 0,06 |
| 8.3.5 | | | | | | |
| 8.3.6 | | | | | | |
| 8.4.1 | Sandwich | | | | | |
| 8.4.2 | | | | | | |
| 8.4.3 | | | | | | |
| 9.1.1 | Standard Graphit | | | | | |
| 9.1.2 | | | | | | |

# W0843-L, beschichtet

Multirouter






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | z | HA Material |
|---|---|---|---|---|---|---|
| 6,0 | MRO.V.0843.0600.L.Z6.HA | 6 | 57 | 22 | 6 | W0843060370 |
| 8,0 | MRO.V.0843.0800.L.Z6.HA | 8 | 63 | 27 | 6 | W0843080370 |
| 10,0 | MRO.V.0843.1000.L.Z6.HA | 10 | 72 | 30 | 6 | W0843100370 |
| 12,0 | MRO.V.0843.1200.L.Z6.HA | 12 | 83 | 32 | 6 | W0843120370 |

Die Schnittwerte müssen je nach Maschine, Werkstoff und Werkstückspannung nach oben oder nach unten angepasst werden.



# Bezeichnungssystem Werkzeuge

Vollhartmetallwerkzeuge Bohren

TS . UN . 1125 . 0300 . h7

1 2 3 4 5

1

| Werkzeuggruppe | | |
|---|---|---|
| HL | – | Hochleistungsspiralbohrer |
| HPC | – | HPC-Spiralbohrer |
| TS | – | Tieflochspiralbohrer |
| A | – | Anbohrer |
| PA | – | Präzisionsanbohrer |
| KS | – | Kevlarspiralbohrer |

2

| Werkstoff Hauptanwendung | | |
|---|---|---|
| UN | – | Universal |
| ST | – | Stahl |
| VA | – | rostfreier Stahl |
| TI | – | Titan |
| H | – | gehärteter Stahl |
| AL | – | Aluminium |
| V | – | Verbundwerkstoffe |

3

| Typ |
|---|

4

| Ø $d_1$ |
|---|
| 0399 ➢ Ø$d_1$ = 3,99 mm |
| 1000 ➢ Ø$d_1$ = 10,00 mm |

5

| Toleranz $d_1$ |
|---|

. 25XD . 135 . IK . HA | SCPP420

6 7 8 9 10

6

| Bohrtiefe |
|---|
| 5XD > 5 x Ø $d_1$ |
| 20XD > 20 x Ø $d_1$ |

7

| Spitzenwinkel |
|---|

8

| Innenkühlung |
|---|

9

| Schaft |
|---|
| HA |
| HB |
| HE |

10

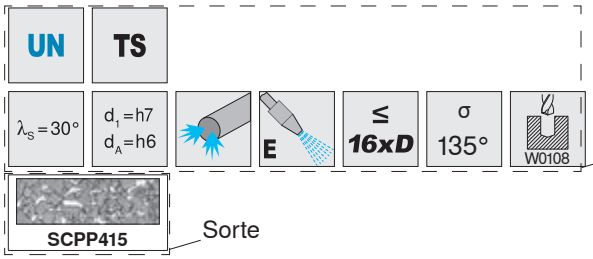
| Sorte |
|---|

# Tabellenerklärung

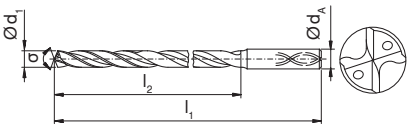
Vollhartmetallwerkzeuge Bohren

| | |
|---|---|
| UN | Werkstoffgruppe, z.B. UN = Universal |
| W0108 | empfohlener Pilotbohrer |
| h7 | Toleranz Nenndurchmesser $d_1$ |
| ≤ 12xD | Bohrtiefe, z.B. bis 12xD |
| | ohne Innenkühlung |
| | mit Innenkühlung |
| E | Emulsion empfohlen |

| | |
|---|---|
| HA | Schaftausführung DIN6535-HA |
| HB | Schaftausführung DIN6535-HB |
| HE | Schaftausführung DIN6535-HE |
| HL | Werkzeuggruppe, z.B. HL = Hochleistungsspiralbohrer |
| σ 90° | Spitzenwinkel |
| $d_1$=h7 $d_A$=h6 | Toleranz Schneidendurchmesser Toleranz Schaftdurchmesser |






Schaftausführung

| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,8 | TS.UN.1116.0380h7.16XD.135.IK.HA | 6 | 115 | 75 | W1116038340 |

Materialkurztext — Abmessungen — Materialnummer

| Sortenbezeichnung | Normbezeichnung | | Schneidstoffart | Anwendungsbereich | P | M | K | N | S | H |
|---|---|---|---|---|---|---|---|---|---|---|
| | ISO | ANSI | | 01 05 10 15 20 25 30 35 40 45 50 | Stahl | Rostfrei | Eisenguss | NE-Metalle | Hochwarmfest | Harte Werkstoffe |
| **SCPP415** | HC-P15 | C7 | P | | ● | ○ | ○ | | | |
| **SCPP420** | HC-P20 | C6 | P | | ● | ○ | ○ | | | |
| **SCPP425** | HC-P25 | C6 | P | | ● | | ○ | ○ | | ○ |
| **SCPP430** | HC-P30 | C6 | P | | ● | ○ | ○ | ○ | ○ | |
| **SCPP435** | HC-P35 | C6 | P | | ● | ○ | ○ | | ○ | |
| **SCPM410** | HC-M10 | | P | | ○ | ● | ○ | | ○ | |
| **SCPM415** | HC-M15 | | P | | ○ | ● | ○ | | ○ | |
| **SCPM430** | HC-M30 | | P | | ○ | ● | ○ | | | |
| **SCPX410** | HC-N10 | C4 | P | | | | | ● | | |
| **SCWX425** | HW-N25 | C2 | W | | | | | ● | | |
| **SCWN425** | HW-N25 | C2 | W | | | | | ● | | |
| **SCPX430** | HC-N30 | C1 | P | | | | | ● | | |
| **SCPN435** | HC-N30 | C1 | P | | | | ○ | ● | | |
| **SCPS430** | HC-S30 | | P | | ○ | ○ | | ○ | ● | |
| **SCPH405** | HC-H05 | C4 | P | | | | | | | ● |

● Hauptanwendung

○ Erweiterte Anwendung

# Sortenbeschreibung

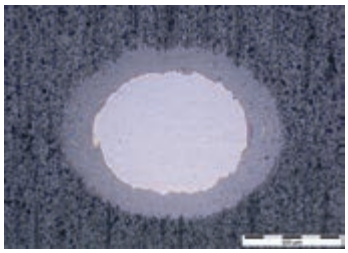
Vollhartmetallwerkzeuge Bohren



## SCPP415

HC-P15

● ○ ○



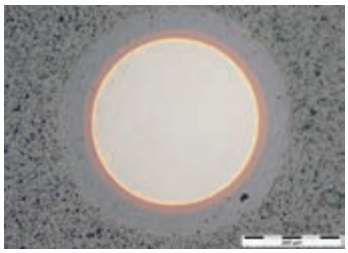
**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: Ti Al C N | Beschichtungsaufbau: Mehrlage

**Einsatzempfehlung:**
Gute Kombination zwischen Hartmetall und Beschichtung für universell einsetzbare Werkzeuge

## SCPP420

HC-P20

● ○ ○



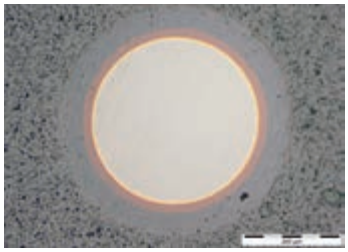
**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: Ti Al C N | Beschichtungsaufbau: Mehrlage

**Einsatzempfehlung:**
Erste Wahl aus Hartmetall und Beschichtung für Tieflochbohrer. Zusätzlich mit optimierter Spanausbringung

## SCPP425

HC-P25

● ○ ○ ○



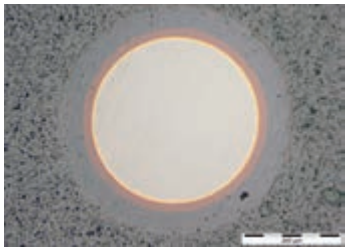
**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: Ti Al C N | Beschichtungsaufbau: Mehrlage

**Einsatzempfehlung:**
Gute Kombination zwischen Hartmetall und Beschichtung zur Bearbeitung von Stählen

## SCPP430

HC-P30

● ○ ○ ○ ○



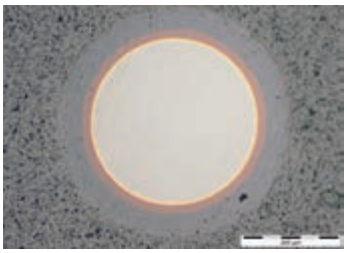
**Spezifikation:**
Korngröße / mittlere Korngröße: Fein / < 1 µm | Härte: $HV_{30}$ 1570 | Beschichtungsart: Ti Al C N | Beschichtungsaufbau: Mehrlage

**Einsatzempfehlung:**
Gute Kombination zwischen Hartmetall und Beschichtung für universell einsetzbare Werkzeuge

## SCPP435

HC-P35

● ○ ○ ○



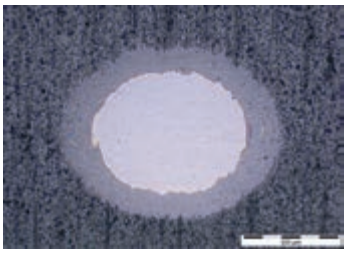
**Spezifikation:**
Korngröße / mittlere Korngröße: Fein / < 1 µm | Härte: $HV_{30}$ 1570 | Beschichtungsart: Ti Al C N | Beschichtungsaufbau: Mehrlage

**Einsatzempfehlung:**
Gute Kombination zwischen Hartmetall und Beschichtung für universell einsetzbare Werkzeuge, optimierte Spanausbringung

## SCPM410

HC-M10

○ ● ○ ○



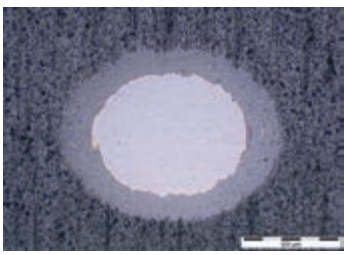
**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: Ti Al C N | Beschichtungsaufbau: Mehrlage

**Einsatzempfehlung:**
Gute Kombination aus Hartmetall und Beschichtung zur Bearbeitung von rostfreien Stählen

## SCPM415

HC-M15

○ ● ○ ○



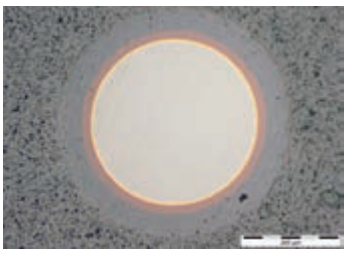
**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: Ti Al C N | Beschichtungsaufbau: Mehrlage

**Einsatzempfehlung:**
Gute Kombination aus Hartmetall und Beschichtung zur Bearbeitung von rostfreien Stählen, optimierte Spanausbringung

## SCPM430

HC-M30

○ ● ○



**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: Ti Al C N | Beschichtungsaufbau: Mehrlage

**Einsatzempfehlung:**
Gute Kombination aus Hartmetall und Beschichtung zur Bearbeitung von rostfreien Stählen, optimierte Spanausbringung

# Sortenbeschreibung

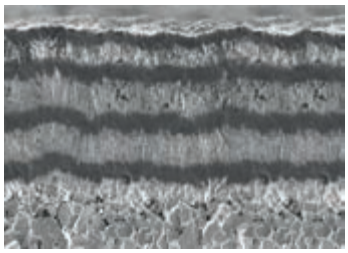
Vollhartmetallwerkzeuge Bohren



## SCPX410

HC-N10

●



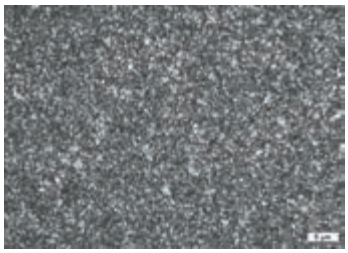
**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: Diamant | Beschichtungsaufbau: Mehrlage, kristallin

**Einsatzempfehlung:**
Gute Kombination zwischen Hartmetall und Diamant-Beschichtung, zur Bearbeitung von Faserverbundwerkstoffen

## SCWX425

HW-N25

●



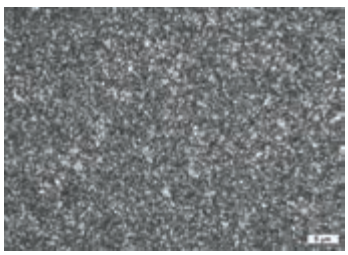
**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600

**Einsatzempfehlung:**
Feinstkornhartmetall zur spanenden Bearbeitung von Nichteisenmetallen, Kunstoffen und Verbundwerkstoffen (CFK, GFK)

## SCWN425

HW-N25

●



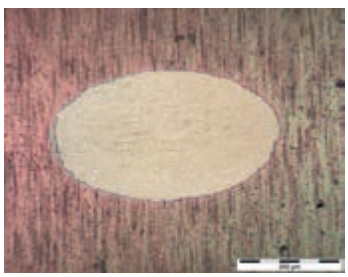
**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600

**Einsatzempfehlung:**
Feinstkornhartmetall zur spanenden Bearbeitung von Nichteisenmetallen, Kunstoffen und Verbundwerkstoffen (CFK, GFK)

## SCPX430

HC-N30

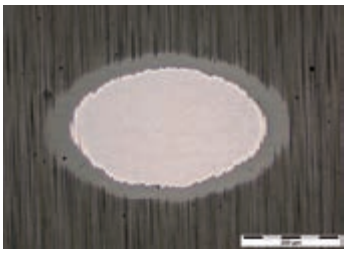
●



**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: DLC plus | Beschichtungsaufbau: Amorphe, wasserstofffreie Kohlenstoffschicht

**Einsatzempfehlung:**
Gute Kombination zwischen Hartmetall und DLC-Beschichtung, zur Bearbeitung von Faserverbundwerkstoffen

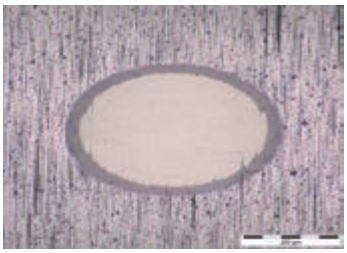
| SCPN435 | HC-N30 | ○ ● |
|---|---|---|



**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,5 µm | Härte: $HV_{30}$ 1620 | Beschichtungsart: a-C:Me | Beschichtungsaufbau: Monolage, DLC-Beschichtung

**Einsatzempfehlung:**
Erste Wahl aus Hartmetall und Beschichtung zur Bearbeitung von Nichteisenmetallen

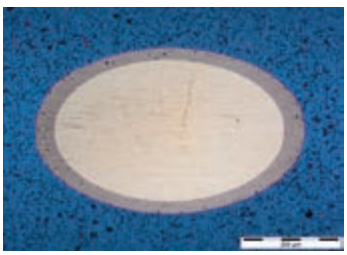
| SCPS430 | HC-S30 | ○ ○ ○ ● |
|---|---|---|



**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: Ti Al Cr N | Beschichtungsaufbau: Mehrlage

**Einsatzempfehlung:**
Gute Kombination zwischen Hartmetall und Beschichtung für Nickelbasis Legierungen

| SCPH405 | HC-H05 | ● |
|---|---|---|



**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: Ti Al Si N | Beschichtungsaufbau: Mehrlage

**Einsatzempfehlung:**
Gute Kombination aus Hartmetall und Beschichtung zur Hartbearbeitung

# Übersicht

Vollhartmetallwerkzeuge Bohren

| Werkzeugtyp | Ø-Bereich [mm] | Toleranz | Länge | Spitzenwinkel | Drallwinkel | Schaft | Innenkühlung | Seite |
|---|---|---|---|---|---|---|---|---|
| **UN** | **HL** | Hochleistungsspiralbohrer, beschichtet | | | | | | |
| W0175 | 1.0 - 20.0 | h7 | ≤ 3xD | σ 140° | $\lambda_S = 30°$ | HA | | F298 |
| W0177 | 3.0 - 20.0 | h7 | ≤ 3xD | σ 140° | $\lambda_S = 30°$ | HA | | F304 |
| W0174 | 3.0 - 20.0 | h7 | ≤ 5xD | σ 140° | $\lambda_S = 30°$ | HA | | F310 |
| W0173 | 2.0 - 20.0 | h7 | ≤ 5xD | σ 140° | $\lambda_S = 30°$ | HA | | F316 |
| W0172 | 3.0 - 20.0 | h7 | ≤ 8xD | σ 135° | $\lambda_S = 30°$ | HA | | F322 |
| W0171 | 3.0 - 16.0 | h7 | ≤ 12xD | σ 135° | $\lambda_S = 30°$ | HA | | F326 |
| **UN** | **TS** | Tieflochspiralbohrer, beschichtet | | | | | | |
| W1116 | 3.0 - 12.0 | h7 | ≤ 16xD | σ 135° | $\lambda_S = 30°$ | HA | | F330 |
| W1120 | 2.0 - 12.0 | h7 | ≤ 20xD | σ 135° | $\lambda_S = 30°$ | HA | | F332 |
| W1125 | 3.0 - 12.0 | h7 | ≤ 25xD | σ 135° | $\lambda_S = 30°$ | HA | | F334 |

| Werkzeugtyp | Ø-Bereich [mm] | Toleranz | Länge | Spitzenwinkel | Drallwinkel | Schaft | Innenkühlung | Seite |
|---|---|---|---|---|---|---|---|---|
| **UN** | **TS** | Tieflochspiralbohrer, beschichtet | | | | | | |
| W1130 | 2.0 - 12.0 | h7 | ≤ 30xD | σ 135° | $\lambda_S = 30°$ | HA | | F336 |
| W1140 | 3.0 - 9.0 | fg6 | ≤ 40xD | σ 135° | $\lambda_S = 30°$ | HA | | F338 |
| W1150 | 3.0 - 7.0 | fg6 | ≤ 50xD | σ 135° | $\lambda_S = 30°$ | HA | | F340 |
| **ST** | **HPC** | HPC-Spiralbohrer, beschichtet | | | | | | |
| W0105 | 1.0 - 20.0 | h7 | ≤ 3xD | σ 140° | $\lambda_S = 30°$ | HA | | F342 |
| W0107 | 3.0 - 20.0 | h7 | ≤ 3xD | σ 140° | $\lambda_S = 30°$ | HA | | F348 |
| W0103 | 3.0 - 16.0 | h7 | ≤ 5xD | σ 140° | $\lambda_S = 30°$ | HA | | F354 |
| W0104 | 3.0 - 12.0 | H7 | ≤ 5xD | σ 140° | $\lambda_S = 30°$ | HA | | F358 |
| W1103 | 3.0 - 16.0 | m6 | ≤ 5xD | σ 140° | $\lambda_S = 30°$ | HA | | F360 |
| W1102 | 3.0 - 16.0 | h7 | ≤ 8xD | σ 135° | $\lambda_S = 30°$ | HA | | F364 |

# Übersicht

Vollhartmetallwerkzeuge Bohren

| Werkzeugtyp | Ø-Bereich [mm] | Toleranz | Länge | Spitzenwinkel | Drallwinkel | Schaft | Innenkühlung | Seite |
|---|---|---|---|---|---|---|---|---|
| **ST** | **HPC** | HPC-Spiralbohrer, beschichtet | | | | | | |
| W1104 | 3.0 - 20.0 | m6 | ≤ 8xD | σ 140° | $\lambda_S = 30°$ | HA | | F368 |
| W1101 | 3.0 - 16.0 | h7 | ≤ 12xD | σ 135° | $\lambda_S = 30°$ | HA | | F372 |
| W1105 | 3.0 - 16.0 | m6 | ≤ 12xD | σ 140° | $\lambda_S = 30°$ | HA | | F376 |
| **ST** | **A** | Anbohrer, beschichtet | | | | | | |
| W0141 | 2.0 - 20.0 | h6 | | σ 90° | $\lambda_S = 30°$ | HA HB | | F378 |
| W0142 | 2.0 - 20.0 | h6 | | σ 142° | $\lambda_S = 30°$ | HA HB | | F378 |
| **ST** | **PA** | Präzisionsanbohrer, beschichtet | | | | | | |
| W0144 | 2.0 - 20.0 | h6 | | σ 142° | $\lambda_S = 0°$ | HA HB | | F380 |

| Werkzeugtyp | Ø-Bereich [mm] | Toleranz | Länge | Spitzenwinkel | Drallwinkel | Schaft | Innenkühlung | Seite |
|---|---|---|---|---|---|---|---|---|
| **VA** | **HL** | Hochleistungsspiralbohrer, beschichtet | | | | | | |
| W0109 | 3.0 - 16.0 | h7 | ≤ 3xD | σ 135° | $\lambda_S = 30°$ | HA | | F382 |
| W0108 | 1.0 - 25.0 | h7 | ≤ 5xD | σ 135° | $\lambda_S = 30°$ | HA | | F386 |
| W1110 | 1.0 - 16.0 | h7 | ≤ 10xD | σ 135° | $\lambda_S = 30°$ | HA | | F394 |
| **TI** | **HL** | Hochleistungsspiralbohrer, beschichtet | | | | | | |
| W0115 | 3.0 - 16.0 | h7 | ≤ 5xD | σ 140° | $\lambda_S = 38°$ | HA | | F398 |
| **H** | **HPC** | HPC-Spiralbohrer, beschichtet | | | | | | |
| W105H | 2.5 - 16.0 | h7 | ≤ 3xD | σ 140° | $\lambda_S = 30°$ | HA | | F402 |
| W106H | 2.6 - 16.0 | h7 | ≤ 5xD | σ 140° | $\lambda_S = 30°$ | HA | | F404 |

# Übersicht

Vollhartmetallwerkzeuge Bohren

| Werkzeugtyp | Ø-Bereich [mm] | Toleranz | Länge | Spitzenwinkel | Drallwinkel | Schaft | Innenkühlung | Seite |
|---|---|---|---|---|---|---|---|---|
| **AL** | **HPC** | HPC-Spiralbohrer, beschichtet | | | | | | |
| W1205 | 1.0 - 20.0 | h7 | ≤ 5xD | σ 135° | $\lambda_S = 15°$ | HA | | F406 |
| W1208 | 3.0 - 16.0 | h7 | ≤ 8xD | σ 135° | $\lambda_S = 15°$ | HA | | F414 |
| W1212 | 3.0 - 16.0 | h7 | ≤ 12xD | σ 135° | $\lambda_S = 15°$ | HA | | F418 |

| Werkzeugtyp | Ø-Bereich [mm] | Toleranz | Länge | Spitzenwinkel | Drallwinkel | Schaft | Innenkühlung | Seite |
|---|---|---|---|---|---|---|---|---|
| **AL** | **TS** | Tieflochspiralbohrer, beschichtet | | | | | | |
| W1216 | 3.0 - 12.0 | h7 | ≤ 16xD | σ 135° | $\lambda_S = 15°$ | HA | | F422 |
| W1220 | 2.0 - 12.0 | h7 | ≤ 20xD | σ 135° | $\lambda_S = 15°$ | HA | | F424 |
| W1225 | 3.0 - 12.0 | h7 | ≤ 25xD | σ 135° | $\lambda_S = 15°$ | HA | | F426 |
| W1230 | 2.0 - 12.0 | h7 | ≤ 30xD | σ 135° | $\lambda_S = 15°$ | HA | | F428 |

| Werkzeugtyp | Ø-Bereich [mm] | Toleranz | Länge | Spitzenwinkel | Drallwinkel | Schaft | Innenkühlung | Seite |
|---|---|---|---|---|---|---|---|---|
| **AL** | **A** | Anbohrer, unbeschichtet | | | | | | |
| W0142 |  2.0 - 20.0 | **h6** | | σ 142° | $\lambda_S = 30°$ |   |  | F430 |
| W0141 |  2.0 - 20.0 | **h6** | | σ 90° | $\lambda_S = 30°$ |   |  | F430 |
| **AL** | **PA** | Präzisionsanbohrer, unbeschichtet | | | | | | |
| W0143 |  2.0 - 20.0 | **h6** | | σ 90° | $\lambda_S = 0°$ |   |  | F432 |
| W0144 |  2.0 - 20.0 | **h6** | | σ 142° | $\lambda_S = 0°$ |   |  | F432 |
| **V** | **HL** | Hochleistungsspiralbohrer, unbeschichtet | | | | | | |
| W0119 |  3.0 - 12.0 | **m7** | **≤ 5xD** | σ 118/62° | $\lambda_S = 30°$ |   |  | F434 |

# Übersicht

Vollhartmetallwerkzeuge Bohren

| Werkzeugtyp | Ø-Bereich [mm] | Toleranz | Länge | Spitzenwinkel | Dralwinkel | Schaft | Innenkühlung | Seite |
|---|---|---|---|---|---|---|---|---|
| V | HL | Hochleistungsspiralbohrer, beschichtet | | | | | | |
| W0119 INCH |  3.175 - 11.113 | m7 | ≤ 5xD | σ 118/62° | $\lambda_S = 30°$ |  HA |  | F436 |
| W0119 |  3.0 - 12.0 | m7 | ≤ 5xD | σ 118/62° | $\lambda_S = 30°$ |  HA |  | F438 |
| WD119 INCH |  3.175 - 11.113 | m7 | ≤ 5xD | σ 118/62° | $\lambda_S = 30°$ |  HA |  | F440 |
| WD119 |  3.0 - 12.0 | m7 | ≤ 5xD | σ 118/62° | $\lambda_S = 30°$ |  HA |  | F442 |

| Werkzeugtyp | Ø-Bereich [mm] | Toleranz | Länge | Spitzenwinkel | Dralwinkel | Schaft | Innenkühlung | Seite |
|---|---|---|---|---|---|---|---|---|
| V | KS | Kevlarspiralbohrer, beschichtet | | | | | | |
| W0121 |  3.0 - 16.0 | m7 | ≤ 5xD |  | $\lambda_S = 30°$ |  HA |  | F444 |

# Notizen

# W0175, beschichtet

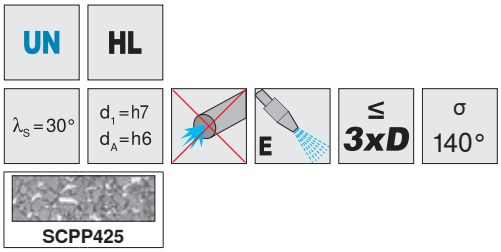
Schnittdatenempfehlung



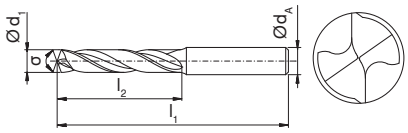
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 1,0 = Ø 1,5 | > Ø 1,5 = Ø 2,0 | > Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 80 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.1.2 | | | 70 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.1 | Baustahl | | 80 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.2 | | | 70 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.3 | | | 65 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.1 | Federstahl | | 50 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.2 | | | 40 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 1.3.3 | | | 20 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.1.1 | Einsatzstahl | | 75 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.2 | | | 70 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.3 | | | 65 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.1 | Nitrierstahl | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.2.2 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.1 | Vergütungsstahl | | 65 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.2 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.3 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.4 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.5 | | | 50 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.6 | | | 30 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.1.1 | Werkzeugstahl unlegiert | | 50 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.2 | | | 50 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.3 | | | 30 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.4 | | | | | | | | | | | |
| 3.2.5 | | | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 50 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.2 | | | 30 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.3 | | | | | | | | | | | |
| 3.3.4 | | | | | | | | | | | |
| 3.3.5 | | | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | | | |
| 4.1.2 | | | | | | | | | | | |
| 4.1.3 | | | | | | | | | | | |
| 4.1.4 | | | | | | | | | | | |
| 4.1.5 | | | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | | |
| 4.2.2 | | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 70 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.2 | | | 65 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 5.1.3 | | | 50 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.1 | rostfreier Stahlguss | | | | | | | | | | |
| 5.2.2 | | | | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 75 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.2 | | | 70 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.3 | | | 65 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.4 | | | | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 75 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.2 | | | 70 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.3 | | | 50 | 0,038 | 0,05 | 0,075 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 75 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.3.2 | | | 70 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.1 | GTS schwarzer Temperguss | | 75 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.2 | | | 70 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 7.1.1 | Aluminium | | | | | | | | | | |
| 7.1.2 | | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | | |
| 7.2.2 | | | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | | | |
| 7.3.2 | | | | | | | | | | | |
| 7.3.3 | | | | | | | | | | | |
| 7.3.4 | | | | | | | | | | | |
| 7.3.5 | | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | | |
| 7.4.2 | | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | | |
| 7.5.2 | | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | | |
| 7.6.2 | | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | | |
| 7.8.2 | | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | | |

# W0175, beschichtet

Hochleistungs-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 1,0 | HL.UN.0175.0100h7.3XD.140.HA | 4 | 45 | 7 | W0175010240 |
| 1,1 | HL.UN.0175.0110h7.3XD.140.HA | 4 | 45 | 7 | W0175011240 |
| 1,2 | HL.UN.0175.0120h7.3XD.140.HA | 4 | 45 | 7 | W0175012240 |
| 1,3 | HL.UN.0175.0130h7.3XD.140.HA | 4 | 45 | 7 | W0175013240 |
| 1,4 | HL.UN.0175.0140h7.3XD.140.HA | 4 | 45 | 7 | W0175014240 |
| 1,5 | HL.UN.0175.0150h7.3XD.140.HA | 4 | 55 | 14 | W0175015240 |
| 1,6 | HL.UN.0175.0160h7.3XD.140.HA | 4 | 55 | 14 | W0175016240 |
| 1,7 | HL.UN.0175.0170h7.3XD.140.HA | 4 | 55 | 14 | W0175017240 |
| 1,8 | HL.UN.0175.0180h7.3XD.140.HA | 4 | 55 | 14 | W0175018240 |
| 1,9 | HL.UN.0175.0190h7.3XD.140.HA | 4 | 55 | 14 | W0175019240 |
| 2,0 | HL.UN.0175.0200h7.3XD.140.HA | 4 | 55 | 20 | W0175020240 |
| 2,1 | HL.UN.0175.0210h7.3XD.140.HA | 4 | 55 | 20 | W0175021240 |
| 2,2 | HL.UN.0175.0220h7.3XD.140.HA | 4 | 55 | 20 | W0175022240 |
| 2,3 | HL.UN.0175.0230h7.3XD.140.HA | 4 | 55 | 20 | W0175023240 |
| 2,4 | HL.UN.0175.0240h7.3XD.140.HA | 4 | 55 | 20 | W0175024240 |
| 2,5 | HL.UN.0175.0250h7.3XD.140.HA | 4 | 55 | 20 | W0175025240 |
| 2,6 | HL.UN.0175.0260h7.3XD.140.HA | 4 | 55 | 20 | W0175026240 |
| 2,7 | HL.UN.0175.0270h7.3XD.140.HA | 4 | 55 | 20 | W0175027240 |
| 2,8 | HL.UN.0175.0280h7.3XD.140.HA | 4 | 55 | 20 | W0175028240 |
| 2,9 | HL.UN.0175.0290h7.3XD.140.HA | 4 | 55 | 20 | W0175029240 |
| 3,0 | HL.UN.0175.0300h7.3XD.140.HA | 6 | 62 | 20 | W0175030240 |
| 3,1 | HL.UN.0175.0310h7.3XD.140.HA | 6 | 62 | 20 | W0175031240 |
| 3,2 | HL.UN.0175.0320h7.3XD.140.HA | 6 | 62 | 20 | W0175032240 |
| 3,3 | HL.UN.0175.0330h7.3XD.140.HA | 6 | 62 | 20 | W0175033240 |
| 3,4 | HL.UN.0175.0340h7.3XD.140.HA | 6 | 62 | 20 | W0175034240 |
| 3,5 | HL.UN.0175.0350h7.3XD.140.HA | 6 | 62 | 20 | W0175035240 |
| 3,6 | HL.UN.0175.0360h7.3XD.140.HA | 6 | 62 | 20 | W0175036240 |
| 3,7 | HL.UN.0175.0370h7.3XD.140.HA | 6 | 62 | 20 | W0175037240 |
| 3,8 | HL.UN.0175.0380h7.3XD.140.HA | 6 | 66 | 24 | W0175038240 |
| 3,9 | HL.UN.0175.0390h7.3XD.140.HA | 6 | 66 | 24 | W0175039240 |
| 4,0 | HL.UN.0175.0400h7.3XD.140.HA | 6 | 66 | 24 | W0175040240 |
| 4,1 | HL.UN.0175.0410h7.3XD.140.HA | 6 | 66 | 24 | W0175041240 |
| 4,2 | HL.UN.0175.0420h7.3XD.140.HA | 6 | 66 | 24 | W0175042240 |
| 4,3 | HL.UN.0175.0430h7.3XD.140.HA | 6 | 66 | 24 | W0175043240 |
| 4,4 | HL.UN.0175.0440h7.3XD.140.HA | 6 | 66 | 24 | W0175044240 |
| 4,5 | HL.UN.0175.0450h7.3XD.140.HA | 6 | 66 | 24 | W0175045240 |
| 4,6 | HL.UN.0175.0460h7.3XD.140.HA | 6 | 66 | 24 | W0175046240 |
| 4,7 | HL.UN.0175.0470h7.3XD.140.HA | 6 | 66 | 24 | W0175047240 |
| 4,8 | HL.UN.0175.0480h7.3XD.140.HA | 6 | 66 | 28 | W0175048240 |
| 4,9 | HL.UN.0175.0490h7.3XD.140.HA | 6 | 66 | 28 | W0175049240 |
| 5,0 | HL.UN.0175.0500h7.3XD.140.HA | 6 | 66 | 28 | W0175050240 |
| 5,1 | HL.UN.0175.0510h7.3XD.140.HA | 6 | 66 | 28 | W0175051240 |
| 5,2 | HL.UN.0175.0520h7.3XD.140.HA | 6 | 66 | 28 | W0175052240 |
| 5,3 | HL.UN.0175.0530h7.3XD.140.HA | 6 | 66 | 28 | W0175053240 |
| 5,4 | HL.UN.0175.0540h7.3XD.140.HA | 6 | 66 | 28 | W0175054240 |
| 5,5 | HL.UN.0175.0550h7.3XD.140.HA | 6 | 66 | 28 | W0175055240 |
| 5,6 | HL.UN.0175.0560h7.3XD.140.HA | 6 | 66 | 28 | W0175056240 |
| 5,7 | HL.UN.0175.0570h7.3XD.140.HA | 6 | 66 | 28 | W0175057240 |

# W0175, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 1,0 = Ø 1,5 | > Ø 1,5 = Ø 2,0 | > Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 80 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.1.2 | | | 70 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.1 | Baustahl | | 80 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.2 | | | 70 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.3 | | | 65 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.1 | Federstahl | | 50 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.2 | | | 40 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 1.3.3 | | | 20 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.1.1 | Einsatzstahl | | 75 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.2 | | | 70 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.3 | | | 65 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.1 | Nitrierstahl | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.2.2 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.1 | Vergütungsstahl | | 65 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.2 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.3 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.4 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.5 | | | 50 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.6 | | | 30 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.1.1 | Werkzeugstahl unlegiert | | 50 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.2 | | | 50 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.3 | | | 30 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.4 | | | | | | | | | | | |
| 3.2.5 | | | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 50 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.2 | | | 30 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.3 | | | | | | | | | | | |
| 3.3.4 | | | | | | | | | | | |
| 3.3.5 | | | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | | | |
| 4.1.2 | | | | | | | | | | | |
| 4.1.3 | | | | | | | | | | | |
| 4.1.4 | | | | | | | | | | | |
| 4.1.5 | | | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | | |
| 4.2.2 | | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 70 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.2 | | | 65 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 5.1.3 | | | 50 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.1 | rostfreier Stahlguss | | | | | | | | | | |
| 5.2.2 | | | | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 75 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.2 | | | 70 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.3 | | | 65 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.4 | | | | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 75 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.2 | | | 70 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.3 | | | 50 | 0,038 | 0,05 | 0,075 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 75 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.3.2 | | | 70 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.1 | GTS schwarzer Temperguss | | 75 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.2 | | | 70 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 7.1.1 | Aluminium | | | | | | | | | | |
| 7.1.2 | | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | | |
| 7.2.2 | | | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | | | |
| 7.3.2 | | | | | | | | | | | |
| 7.3.3 | | | | | | | | | | | |
| 7.3.4 | | | | | | | | | | | |
| 7.3.5 | | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | | |
| 7.4.2 | | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | | |
| 7.5.2 | | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | | |
| 7.6.2 | | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | | |
| 7.8.2 | | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | | |

# W0175, beschichtet

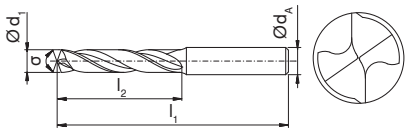
Hochleistungs-Spiralbohrer

UN | HL

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 3xD | σ 140°

SCPP425






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 5,8 | HL.UN.0175.0580h7.3XD.140.HA | 6 | 66 | 28 | W0175058240 |
| 5,9 | HL.UN.0175.0590h7.3XD.140.HA | 6 | 66 | 28 | W0175059240 |
| 6,0 | HL.UN.0175.0600h7.3XD.140.HA | 6 | 66 | 28 | W0175060240 |
| 6,1 | HL.UN.0175.0610h7.3XD.140.HA | 8 | 79 | 34 | W0175061240 |
| 6,2 | HL.UN.0175.0620h7.3XD.140.HA | 8 | 79 | 34 | W0175062240 |
| 6,3 | HL.UN.0175.0630h7.3XD.140.HA | 8 | 79 | 34 | W0175063240 |
| 6,4 | HL.UN.0175.0640h7.3XD.140.HA | 8 | 79 | 34 | W0175064240 |
| 6,5 | HL.UN.0175.0650h7.3XD.140.HA | 8 | 79 | 34 | W0175065240 |
| 6,6 | HL.UN.0175.0660h7.3XD.140.HA | 8 | 79 | 34 | W0175066240 |
| 6,7 | HL.UN.0175.0670h7.3XD.140.HA | 8 | 79 | 34 | W0175067240 |
| 6,8 | HL.UN.0175.0680h7.3XD.140.HA | 8 | 79 | 34 | W0175068240 |
| 6,9 | HL.UN.0175.0690h7.3XD.140.HA | 8 | 79 | 34 | W0175069240 |
| 7,0 | HL.UN.0175.0700h7.3XD.140.HA | 8 | 79 | 34 | W0175070240 |
| 7,1 | HL.UN.0175.0710h7.3XD.140.HA | 8 | 79 | 41 | W0175071240 |
| 7,2 | HL.UN.0175.0720h7.3XD.140.HA | 8 | 79 | 41 | W0175072240 |
| 7,3 | HL.UN.0175.0730h7.3XD.140.HA | 8 | 79 | 41 | W0175073240 |
| 7,4 | HL.UN.0175.0740h7.3XD.140.HA | 8 | 79 | 41 | W0175074240 |
| 7,5 | HL.UN.0175.0750h7.3XD.140.HA | 8 | 79 | 41 | W0175075240 |
| 7,6 | HL.UN.0175.0760h7.3XD.140.HA | 8 | 79 | 41 | W0175076240 |
| 7,7 | HL.UN.0175.0770h7.3XD.140.HA | 8 | 79 | 41 | W0175077240 |
| 7,8 | HL.UN.0175.0780h7.3XD.140.HA | 8 | 79 | 41 | W0175078240 |
| 7,9 | HL.UN.0175.0790h7.3XD.140.HA | 8 | 79 | 41 | W0175079240 |
| 8,0 | HL.UN.0175.0800h7.3XD.140.HA | 8 | 79 | 41 | W0175080240 |
| 8,1 | HL.UN.0175.0810h7.3XD.140.HA | 10 | 89 | 47 | W0175081240 |
| 8,2 | HL.UN.0175.0820h7.3XD.140.HA | 10 | 89 | 47 | W0175082240 |
| 8,3 | HL.UN.0175.0830h7.3XD.140.HA | 10 | 89 | 47 | W0175083240 |
| 8,4 | HL.UN.0175.0840h7.3XD.140.HA | 10 | 89 | 47 | W0175084240 |
| 8,5 | HL.UN.0175.0850h7.3XD.140.HA | 10 | 89 | 47 | W0175085240 |
| 8,6 | HL.UN.0175.0860h7.3XD.140.HA | 10 | 89 | 47 | W0175086240 |
| 8,7 | HL.UN.0175.0870h7.3XD.140.HA | 10 | 89 | 47 | W0175087240 |
| 8,8 | HL.UN.0175.0880h7.3XD.140.HA | 10 | 89 | 47 | W0175088240 |
| 8,9 | HL.UN.0175.0890h7.3XD.140.HA | 10 | 89 | 47 | W0175089240 |
| 9,0 | HL.UN.0175.0900h7.3XD.140.HA | 10 | 89 | 47 | W0175090240 |
| 9,1 | HL.UN.0175.0910h7.3XD.140.HA | 10 | 89 | 47 | W0175091240 |
| 9,2 | HL.UN.0175.0920h7.3XD.140.HA | 10 | 89 | 47 | W0175092240 |
| 9,3 | HL.UN.0175.0930h7.3XD.140.HA | 10 | 89 | 47 | W0175093240 |
| 9,4 | HL.UN.0175.0940h7.3XD.140.HA | 10 | 89 | 47 | W0175094240 |
| 9,5 | HL.UN.0175.0950h7.3XD.140.HA | 10 | 89 | 47 | W0175095240 |
| 9,6 | HL.UN.0175.0960h7.3XD.140.HA | 10 | 89 | 47 | W0175096240 |
| 9,7 | HL.UN.0175.0970h7.3XD.140.HA | 10 | 89 | 47 | W0175097240 |
| 9,8 | HL.UN.0175.0980h7.3XD.140.HA | 10 | 89 | 47 | W0175098240 |
| 9,9 | HL.UN.0175.0990h7.3XD.140.HA | 10 | 89 | 47 | W0175099240 |
| 10,0 | HL.UN.0175.1000h7.3XD.140.HA | 10 | 89 | 47 | W0175100240 |
| 10,2 | HL.UN.0175.1020h7.3XD.140.HA | 12 | 102 | 55 | W0175102240 |
| 10,5 | HL.UN.0175.1050h7.3XD.140.HA | 12 | 102 | 55 | W0175105240 |
| 10,8 | HL.UN.0175.1080h7.3XD.140.HA | 12 | 102 | 55 | W0175108240 |
| 11,0 | HL.UN.0175.1100h7.3XD.140.HA | 12 | 102 | 55 | W0175110240 |
| 11,2 | HL.UN.0175.1120h7.3XD.140.HA | 12 | 102 | 55 | W0175112240 |

# W0175, beschichtet

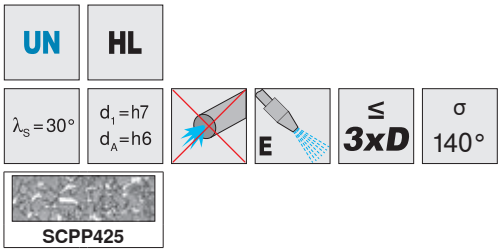
Schnittdatenempfehlung



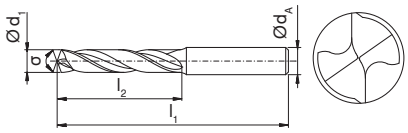
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 1,0 = Ø 1,5 | > Ø 1,5 = Ø 2,0 | > Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 80 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.1.2 | | | 70 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.1 | Baustahl | | 80 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.2 | | | 70 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.3 | | | 65 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.1 | Federstahl | | 50 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.2 | | | 40 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 1.3.3 | | | 20 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.1.1 | Einsatzstahl | | 75 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.2 | | | 70 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.3 | | | 65 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.1 | Nitrierstahl | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.2.2 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.1 | Vergütungsstahl | | 65 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.2 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.3 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.4 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.5 | | | 50 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.6 | | | 30 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.1.1 | Werkzeugstahl unlegiert | | 50 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.2 | | | 50 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.3 | | | 30 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.4 | | | | | | | | | | | |
| 3.2.5 | | | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 50 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.2 | | | 30 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.3 | | | | | | | | | | | |
| 3.3.4 | | | | | | | | | | | |
| 3.3.5 | | | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | | | |
| 4.1.2 | | | | | | | | | | | |
| 4.1.3 | | | | | | | | | | | |
| 4.1.4 | | | | | | | | | | | |
| 4.1.5 | | | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | | |
| 4.2.2 | | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 70 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.2 | | | 65 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 5.1.3 | | | 50 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.1 | rostfreier Stahlguss | | | | | | | | | | |
| 5.2.2 | | | | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 75 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.2 | | | 70 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.3 | | | 65 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.4 | | | | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 75 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.2 | | | 70 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.3 | | | 50 | 0,038 | 0,05 | 0,075 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 75 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.3.2 | | | 70 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.1 | GTS schwarzer Temperguss | | 75 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.2 | | | 70 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 7.1.1 | Aluminium | | | | | | | | | | |
| 7.1.2 | | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | | |
| 7.2.2 | | | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | | | |
| 7.3.2 | | | | | | | | | | | |
| 7.3.3 | | | | | | | | | | | |
| 7.3.4 | | | | | | | | | | | |
| 7.3.5 | | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | | |
| 7.4.2 | | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | | |
| 7.5.2 | | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | | |
| 7.6.2 | | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | | |
| 7.8.2 | | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | | |

# W0175, beschichtet

Hochleistungs-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 11,5 | HL.UN.0175.1150h7.3XD.140.HA | 12 | 102 | 55 | W0175115240 |
| 11,8 | HL.UN.0175.1180h7.3XD.140.HA | 12 | 102 | 55 | W0175118240 |
| 12,0 | HL.UN.0175.1200h7.3XD.140.HA | 12 | 102 | 55 | W0175120240 |
| 12,2 | HL.UN.0175.1220h7.3XD.140.HA | 14 | 107 | 60 | W0175122240 |
| 12,5 | HL.UN.0175.1250h7.3XD.140.HA | 14 | 107 | 60 | W0175125240 |
| 12,8 | HL.UN.0175.1280h7.3XD.140.HA | 14 | 107 | 60 | W0175128240 |
| 13,0 | HL.UN.0175.1300h7.3XD.140.HA | 14 | 107 | 60 | W0175130240 |
| 13,5 | HL.UN.0175.1350h7.3XD.140.HA | 14 | 107 | 60 | W0175135240 |
| 13,8 | HL.UN.0175.1380h7.3XD.140.HA | 14 | 107 | 60 | W0175138240 |
| 14,0 | HL.UN.0175.1400h7.3XD.140.HA | 14 | 107 | 60 | W0175140240 |
| 14,2 | HL.UN.0175.1420h7.3XD.140.HA | 16 | 115 | 65 | W0175142240 |
| 14,5 | HL.UN.0175.1450h7.3XD.140.HA | 16 | 115 | 65 | W0175145240 |
| 14,8 | HL.UN.0175.1480h7.3XD.140.HA | 16 | 115 | 65 | W0175148240 |
| 15,0 | HL.UN.0175.1500h7.3XD.140.HA | 16 | 115 | 65 | W0175150240 |
| 15,2 | HL.UN.0175.1520h7.3XD.140.HA | 16 | 115 | 65 | W0175152240 |
| 15,5 | HL.UN.0175.1550h7.3XD.140.HA | 16 | 115 | 65 | W0175155240 |
| 15,8 | HL.UN.0175.1580h7.3XD.140.HA | 16 | 115 | 65 | W0175158240 |
| 16,0 | HL.UN.0175.1600h7.3XD.140.HA | 16 | 115 | 65 | W0175160240 |
| 16,5 | HL.UN.0175.1650h7.3XD.140.HA | 18 | 123 | 73 | W0175165240 |
| 16,8 | HL.UN.0175.1680h7.3XD.140.HA | 18 | 123 | 73 | W0175168240 |
| 17,0 | HL.UN.0175.1700h7.3XD.140.HA | 18 | 123 | 73 | W0175170240 |
| 17,5 | HL.UN.0175.1750h7.3XD.140.HA | 18 | 123 | 73 | W0175175240 |
| 18,0 | HL.UN.0175.1800h7.3XD.140.HA | 18 | 123 | 73 | W0175180240 |
| 18,5 | HL.UN.0175.1850h7.3XD.140.HA | 20 | 131 | 79 | W0175185240 |
| 18,8 | HL.UN.0175.1880h7.3XD.140.HA | 20 | 131 | 79 | W0175188240 |
| 19,0 | HL.UN.0175.1900h7.3XD.140.HA | 20 | 131 | 79 | W0175190240 |
| 19,5 | HL.UN.0175.1950h7.3XD.140.HA | 20 | 131 | 79 | W0175195240 |
| 20,0 | HL.UN.0175.2000h7.3XD.140.HA | 20 | 131 | 79 | W0175200240 |

# W0177, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.1.2 | | | 90 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.1 | Baustahl | | 100 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.2 | | | 90 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.1 | Federstahl | | 60 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.2 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 1.3.3 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.1.1 | Einsatzstahl | | 95 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.2 | | | 85 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.1 | Nitrierstahl | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.2.2 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.1 | Vergütungsstahl | | 85 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.2 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.4 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.5 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.6 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.1.1 | Werkzeugstahl unlegiert | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.2 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.3 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.4 | | | 40 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.5 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.2 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.3 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.4 | | | 40 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.5 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | |
| 4.1.1 | rostfreier Stahl | | 50 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.2 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.3 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.4 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.5 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | |
| 4.2.2 | | | | | | | | |
| 4.2.3 | | | | | | | | |
| 4.2.4 | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 80 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.2 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 5.1.3 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.1 | rostfreier Stahlguss | | 40 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.2 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.1.1 | GG mit lamellarem Graphit | | 105 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.2 | | | 85 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.3 | | | 75 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.4 | | | 40 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.2.1 | GGG mit Kugelgraphit | | 85 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.3 | | | 60 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 85 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.3.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.1 | GTS schwarzer Temperguss | | 85 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 7.1.1 | Aluminium | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | 30 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.2 | | | 25 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.3 | | | 25 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |

# W0177, beschichtet

Hochleistungs-Spiralbohrer

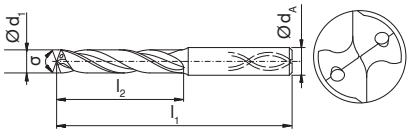


UN | HL

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 3xD | σ 140°

SCPP430






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | HL.UN.0177.0300h7.3XD.140.IK.HA | 6 | 62 | 20 | W0177030240 |
| 3,1 | HL.UN.0177.0310h7.3XD.140.IK.HA | 6 | 62 | 20 | W0177031240 |
| 3,2 | HL.UN.0177.0320h7.3XD.140.IK.HA | 6 | 62 | 20 | W0177032240 |
| 3,3 | HL.UN.0177.0330h7.3XD.140.IK.HA | 6 | 62 | 20 | W0177033240 |
| 3,4 | HL.UN.0177.0340h7.3XD.140.IK.HA | 6 | 62 | 20 | W0177034240 |
| 3,5 | HL.UN.0177.0350h7.3XD.140.IK.HA | 6 | 62 | 20 | W0177035240 |
| 3,6 | HL.UN.0177.0360h7.3XD.140.IK.HA | 6 | 62 | 20 | W0177036240 |
| 3,7 | HL.UN.0177.0370h7.3XD.140.IK.HA | 6 | 62 | 20 | W0177037240 |
| 3,8 | HL.UN.0177.0380h7.3XD.140.IK.HA | 6 | 66 | 24 | W0177038240 |
| 3,9 | HL.UN.0177.0390h7.3XD.140.IK.HA | 6 | 66 | 24 | W0177039240 |
| 4,0 | HL.UN.0177.0400h7.3XD.140.IK.HA | 6 | 66 | 24 | W0177040240 |
| 4,1 | HL.UN.0177.0410h7.3XD.140.IK.HA | 6 | 66 | 24 | W0177041240 |
| 4,2 | HL.UN.0177.0420h7.3XD.140.IK.HA | 6 | 66 | 24 | W0177042240 |
| 4,3 | HL.UN.0177.0430h7.3XD.140.IK.HA | 6 | 66 | 24 | W0177043240 |
| 4,4 | HL.UN.0177.0440h7.3XD.140.IK.HA | 6 | 66 | 24 | W0177044240 |
| 4,5 | HL.UN.0177.0450h7.3XD.140.IK.HA | 6 | 66 | 24 | W0177045240 |
| 4,6 | HL.UN.0177.0460h7.3XD.140.IK.HA | 6 | 66 | 24 | W0177046240 |
| 4,7 | HL.UN.0177.0470h7.3XD.140.IK.HA | 6 | 66 | 24 | W0177047240 |
| 4,8 | HL.UN.0177.0480h7.3XD.140.IK.HA | 6 | 66 | 28 | W0177048240 |
| 4,9 | HL.UN.0177.0490h7.3XD.140.IK.HA | 6 | 66 | 28 | W0177049240 |
| 5,0 | HL.UN.0177.0500h7.3XD.140.IK.HA | 6 | 66 | 28 | W0177050240 |
| 5,1 | HL.UN.0177.0510h7.3XD.140.IK.HA | 6 | 66 | 28 | W0177051240 |
| 5,2 | HL.UN.0177.0520h7.3XD.140.IK.HA | 6 | 66 | 28 | W0177052240 |
| 5,3 | HL.UN.0177.0530h7.3XD.140.IK.HA | 6 | 66 | 28 | W0177053240 |
| 5,4 | HL.UN.0177.0540h7.3XD.140.IK.HA | 6 | 66 | 28 | W0177054240 |
| 5,5 | HL.UN.0177.0550h7.3XD.140.IK.HA | 6 | 66 | 28 | W0177055240 |
| 5,6 | HL.UN.0177.0560h7.3XD.140.IK.HA | 6 | 66 | 28 | W0177056240 |
| 5,7 | HL.UN.0177.0570h7.3XD.140.IK.HA | 6 | 66 | 28 | W0177057240 |
| 5,8 | HL.UN.0177.0580h7.3XD.140.IK.HA | 6 | 66 | 28 | W0177058240 |
| 5,9 | HL.UN.0177.0590h7.3XD.140.IK.HA | 6 | 66 | 28 | W0177059240 |
| 6,0 | HL.UN.0177.0600h7.3XD.140.IK.HA | 6 | 66 | 28 | W0177060240 |
| 6,1 | HL.UN.0177.0610h7.3XD.140.IK.HA | 8 | 79 | 34 | W0177061240 |
| 6,2 | HL.UN.0177.0620h7.3XD.140.IK.HA | 8 | 79 | 34 | W0177062240 |
| 6,3 | HL.UN.0177.0630h7.3XD.140.IK.HA | 8 | 79 | 34 | W0177063240 |
| 6,4 | HL.UN.0177.0640h7.3XD.140.IK.HA | 8 | 79 | 34 | W0177064240 |
| 6,5 | HL.UN.0177.0650h7.3XD.140.IK.HA | 8 | 79 | 34 | W0177065240 |
| 6,6 | HL.UN.0177.0660h7.3XD.140.IK.HA | 8 | 79 | 34 | W0177066240 |
| 6,7 | HL.UN.0177.0670h7.3XD.140.IK.HA | 8 | 79 | 34 | W0177067240 |
| 6,8 | HL.UN.0177.0680h7.3XD.140.IK.HA | 8 | 79 | 34 | W0177068240 |
| 6,9 | HL.UN.0177.0690h7.3XD.140.IK.HA | 8 | 79 | 34 | W0177069240 |
| 7,0 | HL.UN.0177.0700h7.3XD.140.IK.HA | 8 | 79 | 34 | W0177070240 |
| 7,1 | HL.UN.0177.0710h7.3XD.140.IK.HA | 8 | 79 | 41 | W0177071240 |
| 7,2 | HL.UN.0177.0720h7.3XD.140.IK.HA | 8 | 79 | 41 | W0177072240 |
| 7,3 | HL.UN.0177.0730h7.3XD.140.IK.HA | 8 | 79 | 41 | W0177073240 |
| 7,4 | HL.UN.0177.0740h7.3XD.140.IK.HA | 8 | 79 | 41 | W0177074240 |
| 7,5 | HL.UN.0177.0750h7.3XD.140.IK.HA | 8 | 79 | 41 | W0177075240 |
| 7,6 | HL.UN.0177.0760h7.3XD.140.IK.HA | 8 | 79 | 41 | W0177076240 |
| 7,7 | HL.UN.0177.0770h7.3XD.140.IK.HA | 8 | 79 | 41 | W0177077240 |

# W0177, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.1.2 | | | 90 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.1 | Baustahl | | 100 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.2 | | | 90 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.1 | Federstahl | | 60 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.2 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 1.3.3 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.1.1 | Einsatzstahl | | 95 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.2 | | | 85 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.1 | Nitrierstahl | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.2.2 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.1 | Vergütungsstahl | | 85 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.2 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.4 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.5 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.6 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.1.1 | Werkzeugstahl unlegiert | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.2 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.3 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.4 | | | 40 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.5 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.2 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.3 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.4 | | | 40 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.5 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | |
| 4.1.1 | rostfreier Stahl | | 50 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.2 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.3 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.4 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.5 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | |
| 4.2.2 | | | | | | | | |
| 4.2.3 | | | | | | | | |
| 4.2.4 | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 80 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.2 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 5.1.3 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.1 | rostfreier Stahlguss | | 40 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.2 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.1.1 | GG mit lamellarem Graphit | | 105 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.2 | | | 85 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.3 | | | 75 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.4 | | | 40 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.2.1 | GGG mit Kugelgraphit | | 85 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.3 | | | 60 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 85 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.3.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.1 | GTS schwarzer Temperguss | | 85 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 7.1.1 | Aluminium | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | 30 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.2 | | | 25 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.3 | | | 25 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |

# W0177, beschichtet

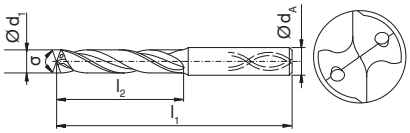
Hochleistungs-Spiralbohrer

UN | HL

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 3xD | σ 140°

SCPP430






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 7,8 | HL.UN.0177.0780h7.3XD.140.IK.HA | 8 | 79 | 41 | W0177078240 |
| 7,9 | HL.UN.0177.0790h7.3XD.140.IK.HA | 8 | 79 | 41 | W0177079240 |
| 8,0 | HL.UN.0177.0800h7.3XD.140.IK.HA | 8 | 79 | 41 | W0177080240 |
| 8,1 | HL.UN.0177.0810h7.3XD.140.IK.HA | 10 | 89 | 47 | W0177081240 |
| 8,2 | HL.UN.0177.0820h7.3XD.140.IK.HA | 10 | 89 | 47 | W0177082240 |
| 8,3 | HL.UN.0177.0830h7.3XD.140.IK.HA | 10 | 89 | 47 | W0177083240 |
| 8,4 | HL.UN.0177.0840h7.3XD.140.IK.HA | 10 | 89 | 47 | W0177084240 |
| 8,5 | HL.UN.0177.0850h7.3XD.140.IK.HA | 10 | 89 | 47 | W0177085240 |
| 8,6 | HL.UN.0177.0860h7.3XD.140.IK.HA | 10 | 89 | 47 | W0177086240 |
| 8,7 | HL.UN.0177.0870h7.3XD.140.IK.HA | 10 | 89 | 47 | W0177087240 |
| 8,8 | HL.UN.0177.0880h7.3XD.140.IK.HA | 10 | 89 | 47 | W0177088240 |
| 8,9 | HL.UN.0177.0890h7.3XD.140.IK.HA | 10 | 89 | 47 | W0177089240 |
| 9,0 | HL.UN.0177.0900h7.3XD.140.IK.HA | 10 | 89 | 47 | W0177090240 |
| 9,1 | HL.UN.0177.0910h7.3XD.140.IK.HA | 10 | 89 | 47 | W0177091240 |
| 9,2 | HL.UN.0177.0920h7.3XD.140.IK.HA | 10 | 89 | 47 | W0177092240 |
| 9,3 | HL.UN.0177.0930h7.3XD.140.IK.HA | 10 | 89 | 47 | W0177093240 |
| 9,4 | HL.UN.0177.0940h7.3XD.140.IK.HA | 10 | 89 | 47 | W0177094240 |
| 9,5 | HL.UN.0177.0950h7.3XD.140.IK.HA | 10 | 89 | 47 | W0177095240 |
| 9,6 | HL.UN.0177.0960h7.3XD.140.IK.HA | 10 | 89 | 47 | W0177096240 |
| 9,7 | HL.UN.0177.0970h7.3XD.140.IK.HA | 10 | 89 | 47 | W0177097240 |
| 9,8 | HL.UN.0177.0980h7.3XD.140.IK.HA | 10 | 89 | 47 | W0177098240 |
| 9,9 | HL.UN.0177.0990h7.3XD.140.IK.HA | 10 | 89 | 47 | W0177099240 |
| 10,0 | HL.UN.0177.1000h7.3XD.140.IK.HA | 10 | 89 | 47 | W0177100240 |
| 10,2 | HL.UN.0177.1020h7.3XD.140.IK.HA | 12 | 102 | 55 | W0177102240 |
| 10,5 | HL.UN.0177.1050h7.3XD.140.IK.HA | 12 | 102 | 55 | W0177105240 |
| 10,8 | HL.UN.0177.1080h7.3XD.140.IK.HA | 12 | 102 | 55 | W0177108240 |
| 11,0 | HL.UN.0177.1100h7.3XD.140.IK.HA | 12 | 102 | 55 | W0177110240 |
| 11,2 | HL.UN.0177.1120h7.3XD.140.IK.HA | 12 | 102 | 55 | W0177112240 |
| 11,5 | HL.UN.0177.1150h7.3XD.140.IK.HA | 12 | 102 | 55 | W0177115240 |
| 11,8 | HL.UN.0177.1180h7.3XD.140.IK.HA | 12 | 102 | 55 | W0177118240 |
| 12,0 | HL.UN.0177.1200h7.3XD.140.IK.HA | 12 | 102 | 55 | W0177120240 |
| 12,2 | HL.UN.0177.1220h7.3XD.140.IK.HA | 14 | 107 | 60 | W0177122240 |
| 12,5 | HL.UN.0177.1250h7.3XD.140.IK.HA | 14 | 107 | 60 | W0177125240 |
| 12,8 | HL.UN.0177.1280h7.3XD.140.IK.HA | 14 | 107 | 60 | W0177128240 |
| 13,0 | HL.UN.0177.1300h7.3XD.140.IK.HA | 14 | 107 | 60 | W0177130240 |
| 13,5 | HL.UN.0177.1350h7.3XD.140.IK.HA | 14 | 107 | 60 | W0177135240 |
| 13,8 | HL.UN.0177.1380h7.3XD.140.IK.HA | 14 | 107 | 60 | W0177138240 |
| 14,0 | HL.UN.0177.1400h7.3XD.140.IK.HA | 14 | 107 | 60 | W0177140240 |
| 14,2 | HL.UN.0177.1420h7.3XD.140.IK.HA | 16 | 115 | 65 | W0177142240 |
| 14,5 | HL.UN.0177.1450h7.3XD.140.IK.HA | 16 | 115 | 65 | W0177145240 |
| 14,8 | HL.UN.0177.1480h7.3XD.140.IK.HA | 16 | 115 | 65 | W0177148240 |
| 15,0 | HL.UN.0177.1500h7.3XD.140.IK.HA | 16 | 115 | 65 | W0177150240 |
| 15,2 | HL.UN.0177.1520h7.3XD.140.IK.HA | 16 | 115 | 65 | W0177152240 |
| 15,5 | HL.UN.0177.1550h7.3XD.140.IK.HA | 16 | 115 | 65 | W0177155240 |
| 15,8 | HL.UN.0177.1580h7.3XD.140.IK.HA | 16 | 115 | 65 | W0177158240 |
| 16,0 | HL.UN.0177.1600h7.3XD.140.IK.HA | 16 | 115 | 65 | W0177160240 |
| 16,5 | HL.UN.0177.1650h7.3XD.140.IK.HA | 18 | 123 | 73 | W0177165240 |
| 17,0 | HL.UN.0177.1700h7.3XD.140.IK.HA | 18 | 123 | 73 | W0177170240 |

# W0177, beschichtet

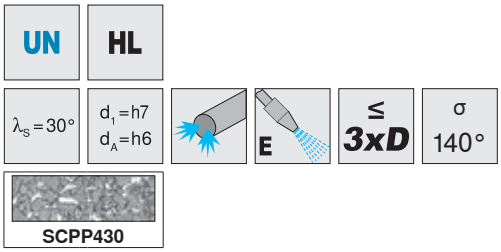
Schnittdatenempfehlung



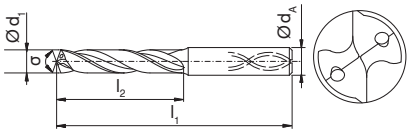
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.1.2 | | | 90 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.1 | Baustahl | | 100 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.2 | | | 90 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.1 | Federstahl | | 60 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.2 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 1.3.3 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.1.1 | Einsatzstahl | | 95 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.2 | | | 85 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.1 | Nitrierstahl | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.2.2 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.1 | Vergütungsstahl | | 85 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.2 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.4 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.5 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.6 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.1.1 | Werkzeugstahl unlegiert | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.2 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.3 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.4 | | | 40 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.5 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.2 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.3 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.4 | | | 40 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.5 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | |
| 4.1.1 | rostfreier Stahl | | 50 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.2 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.3 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.4 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.5 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | |
| 4.2.2 | | | | | | | | |
| 4.2.3 | | | | | | | | |
| 4.2.4 | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 80 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.2 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 5.1.3 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.1 | rostfreier Stahlguss | | 40 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.2 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.1.1 | GG mit lamellarem Graphit | | 105 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.2 | | | 85 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.3 | | | 75 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.4 | | | 40 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.2.1 | GGG mit Kugelgraphit | | 85 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.3 | | | 60 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 85 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.3.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.1 | GTS schwarzer Temperguss | | 85 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 7.1.1 | Aluminium | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | 30 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.2 | | | 25 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.3 | | | 25 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |

# W0177, beschichtet

Hochleistungs-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 17,5 | HL.UN.0177.1750h7.3XD.140.IK.HA | 18 | 123 | 73 | W0177175240 |
| 18,0 | HL.UN.0177.1800h7.3XD.140.IK.HA | 18 | 123 | 73 | W0177180240 |
| 18,5 | HL.UN.0177.1850h7.3XD.140.IK.HA | 20 | 131 | 79 | W0177185240 |
| 19,0 | HL.UN.0177.1900h7.3XD.140.IK.HA | 20 | 131 | 79 | W0177190240 |
| 19,5 | HL.UN.0177.1950h7.3XD.140.IK.HA | 20 | 131 | 79 | W0177195240 |
| 20,0 | HL.UN.0177.2000h7.3XD.140.IK.HA | 20 | 131 | 79 | W0177200240 |

# W0174, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.1.2 | | | 90 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.1 | Baustahl | | 100 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.2 | | | 90 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.1 | Federstahl | | 60 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.2 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 1.3.3 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.1.1 | Einsatzstahl | | 95 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.2 | | | 85 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.1 | Nitrierstahl | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.2.2 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.1 | Vergütungsstahl | | 85 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.2 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.4 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.5 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.6 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.1.1 | Werkzeugstahl unlegiert | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.2 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.3 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.4 | | | | | | | | |
| 3.2.5 | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.2 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.3 | | | | | | | | |
| 3.3.4 | | | | | | | | |
| 3.3.5 | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | |
| 4.1.2 | | | | | | | | |
| 4.1.3 | | | | | | | | |
| 4.1.4 | | | | | | | | |
| 4.1.5 | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | |
| 4.2.2 | | | | | | | | |
| 4.2.3 | | | | | | | | |
| 4.2.4 | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 80 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.2 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 5.1.3 | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | |
| 5.2.2 | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 105 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.2 | | | 85 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.3 | | | 75 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.4 | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 85 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.3 | | | 60 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 85 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.3.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.1 | GTS schwarzer Temperguss | | 85 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 7.1.1 | Aluminium | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |

# W0174, beschichtet

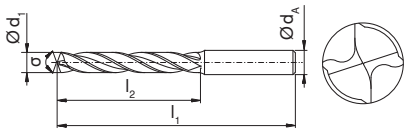
Hochleistungs-Spiralbohrer

UN | HL

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 5xD | σ 140°

SCPP415






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | HL.UN.0174.0300h7.5XD.140.HA | 6 | 66 | 28 | W0174030340 |
| 3,1 | HL.UN.0174.0310h7.5XD.140.HA | 6 | 66 | 28 | W0174031340 |
| 3,2 | HL.UN.0174.0320h7.5XD.140.HA | 6 | 66 | 28 | W0174032340 |
| 3,3 | HL.UN.0174.0330h7.5XD.140.HA | 6 | 66 | 28 | W0174033340 |
| 3,4 | HL.UN.0174.0340h7.5XD.140.HA | 6 | 66 | 28 | W0174034340 |
| 3,5 | HL.UN.0174.0350h7.5XD.140.HA | 6 | 66 | 28 | W0174035340 |
| 3,6 | HL.UN.0174.0360h7.5XD.140.HA | 6 | 66 | 28 | W0174036340 |
| 3,7 | HL.UN.0174.0370h7.5XD.140.HA | 6 | 66 | 28 | W0174037340 |
| 3,8 | HL.UN.0174.0380h7.5XD.140.HA | 6 | 74 | 36 | W0174038340 |
| 3,9 | HL.UN.0174.0390h7.5XD.140.HA | 6 | 74 | 36 | W0174039340 |
| 4,0 | HL.UN.0174.0400h7.5XD.140.HA | 6 | 74 | 36 | W0174040340 |
| 4,1 | HL.UN.0174.0410h7.5XD.140.HA | 6 | 74 | 36 | W0174041340 |
| 4,2 | HL.UN.0174.0420h7.5XD.140.HA | 6 | 74 | 36 | W0174042340 |
| 4,3 | HL.UN.0174.0430h7.5XD.140.HA | 6 | 74 | 36 | W0174043340 |
| 4,4 | HL.UN.0174.0440h7.5XD.140.HA | 6 | 74 | 36 | W0174044340 |
| 4,5 | HL.UN.0174.0450h7.5XD.140.HA | 6 | 74 | 36 | W0174045340 |
| 4,6 | HL.UN.0174.0460h7.5XD.140.HA | 6 | 74 | 36 | W0174046340 |
| 4,7 | HL.UN.0174.0470h7.5XD.140.HA | 6 | 74 | 36 | W0174047340 |
| 4,8 | HL.UN.0174.0480h7.5XD.140.HA | 6 | 82 | 44 | W0174048340 |
| 4,9 | HL.UN.0174.0490h7.5XD.140.HA | 6 | 82 | 44 | W0174049340 |
| 5,0 | HL.UN.0174.0500h7.5XD.140.HA | 6 | 82 | 44 | W0174050340 |
| 5,1 | HL.UN.0174.0510h7.5XD.140.HA | 6 | 82 | 44 | W0174051340 |
| 5,2 | HL.UN.0174.0520h7.5XD.140.HA | 6 | 82 | 44 | W0174052340 |
| 5,3 | HL.UN.0174.0530h7.5XD.140.HA | 6 | 82 | 44 | W0174053340 |
| 5,4 | HL.UN.0174.0540h7.5XD.140.HA | 6 | 82 | 44 | W0174054340 |
| 5,5 | HL.UN.0174.0550h7.5XD.140.HA | 6 | 82 | 44 | W0174055340 |
| 5,6 | HL.UN.0174.0560h7.5XD.140.HA | 6 | 82 | 44 | W0174056340 |
| 5,7 | HL.UN.0174.0570h7.5XD.140.HA | 6 | 82 | 44 | W0174057340 |
| 5,8 | HL.UN.0174.0580h7.5XD.140.HA | 6 | 82 | 44 | W0174058340 |
| 5,9 | HL.UN.0174.0590h7.5XD.140.HA | 6 | 82 | 44 | W0174059340 |
| 6,0 | HL.UN.0174.0600h7.5XD.140.HA | 6 | 82 | 44 | W0174060340 |
| 6,1 | HL.UN.0174.0610h7.5XD.140.HA | 8 | 91 | 53 | W0174061340 |
| 6,2 | HL.UN.0174.0620h7.5XD.140.HA | 8 | 91 | 53 | W0174062340 |
| 6,3 | HL.UN.0174.0630h7.5XD.140.HA | 8 | 91 | 53 | W0174063340 |
| 6,4 | HL.UN.0174.0640h7.5XD.140.HA | 8 | 91 | 53 | W0174064340 |
| 6,5 | HL.UN.0174.0650h7.5XD.140.HA | 8 | 91 | 53 | W0174065340 |
| 6,6 | HL.UN.0174.0660h7.5XD.140.HA | 8 | 91 | 53 | W0174066340 |
| 6,7 | HL.UN.0174.0670h7.5XD.140.HA | 8 | 91 | 53 | W0174067340 |
| 6,8 | HL.UN.0174.0680h7.5XD.140.HA | 8 | 91 | 53 | W0174068340 |
| 6,9 | HL.UN.0174.0690h7.5XD.140.HA | 8 | 91 | 53 | W0174069340 |
| 7,0 | HL.UN.0174.0700h7.5XD.140.HA | 8 | 91 | 53 | W0174070340 |
| 7,1 | HL.UN.0174.0710h7.5XD.140.HA | 8 | 91 | 53 | W0174071340 |
| 7,2 | HL.UN.0174.0720h7.5XD.140.HA | 8 | 91 | 53 | W0174072340 |
| 7,3 | HL.UN.0174.0730h7.5XD.140.HA | 8 | 91 | 53 | W0174073340 |
| 7,4 | HL.UN.0174.0740h7.5XD.140.HA | 8 | 91 | 53 | W0174074340 |
| 7,5 | HL.UN.0174.0750h7.5XD.140.HA | 8 | 91 | 53 | W0174075340 |
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| 7,7 | HL.UN.0174.0770h7.5XD.140.HA | 8 | 91 | 53 | W0174077340 |

# W0174, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.1.2 | | | 90 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.1 | Baustahl | | 100 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.2 | | | 90 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.1 | Federstahl | | 60 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.2 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 1.3.3 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.1.1 | Einsatzstahl | | 95 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.2 | | | 85 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.1 | Nitrierstahl | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.2.2 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.1 | Vergütungsstahl | | 85 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.2 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.4 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.5 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.6 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.1.1 | Werkzeugstahl unlegiert | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.2 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.3 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.4 | | | | | | | | |
| 3.2.5 | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.2 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.3 | | | | | | | | |
| 3.3.4 | | | | | | | | |
| 3.3.5 | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | |
| 4.1.2 | | | | | | | | |
| 4.1.3 | | | | | | | | |
| 4.1.4 | | | | | | | | |
| 4.1.5 | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | |
| 4.2.2 | | | | | | | | |
| 4.2.3 | | | | | | | | |
| 4.2.4 | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 80 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.2 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 5.1.3 | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | |
| 5.2.2 | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 105 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.2 | | | 85 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.3 | | | 75 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.4 | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 85 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.3 | | | 60 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 85 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.3.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.1 | GTS schwarzer Temperguss | | 85 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 7.1.1 | Aluminium | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |

# W0174, beschichtet

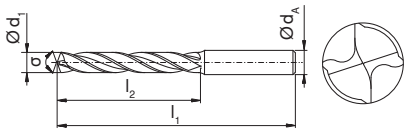
Hochleistungs-Spiralbohrer

UN | HL

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 5xD | σ 140°

SCPP415






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 7,8 | HL.UN.0174.0780h7.5XD.140.HA | 8 | 91 | 53 | W0174078340 |
| 7,9 | HL.UN.0174.0790h7.5XD.140.HA | 8 | 91 | 53 | W0174079340 |
| 8,0 | HL.UN.0174.0800h7.5XD.140.HA | 8 | 91 | 53 | W0174080340 |
| 8,1 | HL.UN.0174.0810h7.5XD.140.HA | 10 | 103 | 61 | W0174081340 |
| 8,2 | HL.UN.0174.0820h7.5XD.140.HA | 10 | 103 | 61 | W0174082340 |
| 8,3 | HL.UN.0174.0830h7.5XD.140.HA | 10 | 103 | 61 | W0174083340 |
| 8,4 | HL.UN.0174.0840h7.5XD.140.HA | 10 | 103 | 61 | W0174084340 |
| 8,5 | HL.UN.0174.0850h7.5XD.140.HA | 10 | 103 | 61 | W0174085340 |
| 8,6 | HL.UN.0174.0860h7.5XD.140.HA | 10 | 103 | 61 | W0174086340 |
| 8,7 | HL.UN.0174.0870h7.5XD.140.HA | 10 | 103 | 61 | W0174087340 |
| 8,8 | HL.UN.0174.0880h7.5XD.140.HA | 10 | 103 | 61 | W0174088340 |
| 8,9 | HL.UN.0174.0890h7.5XD.140.HA | 10 | 103 | 61 | W0174089340 |
| 9,0 | HL.UN.0174.0900h7.5XD.140.HA | 10 | 103 | 61 | W0174090340 |
| 9,1 | HL.UN.0174.0910h7.5XD.140.HA | 10 | 103 | 61 | W0174091340 |
| 9,2 | HL.UN.0174.0920h7.5XD.140.HA | 10 | 103 | 61 | W0174092340 |
| 9,3 | HL.UN.0174.0930h7.5XD.140.HA | 10 | 103 | 61 | W0174093340 |
| 9,4 | HL.UN.0174.0940h7.5XD.140.HA | 10 | 103 | 61 | W0174094340 |
| 9,5 | HL.UN.0174.0950h7.5XD.140.HA | 10 | 103 | 61 | W0174095340 |
| 9,6 | HL.UN.0174.0960h7.5XD.140.HA | 10 | 103 | 61 | W0174096340 |
| 9,7 | HL.UN.0174.0970h7.5XD.140.HA | 10 | 103 | 61 | W0174097340 |
| 9,8 | HL.UN.0174.0980h7.5XD.140.HA | 10 | 103 | 61 | W0174098340 |
| 9,9 | HL.UN.0174.0990h7.5XD.140.HA | 10 | 103 | 61 | W0174099340 |
| 10,0 | HL.UN.0174.1000h7.5XD.140.HA | 10 | 103 | 61 | W0174100340 |
| 10,2 | HL.UN.0174.1020h7.5XD.140.HA | 12 | 118 | 71 | W0174102340 |
| 10,5 | HL.UN.0174.1050h7.5XD.140.HA | 12 | 118 | 71 | W0174105340 |
| 10,8 | HL.UN.0174.1080h7.5XD.140.HA | 12 | 118 | 71 | W0174108340 |
| 11,0 | HL.UN.0174.1100h7.5XD.140.HA | 12 | 118 | 71 | W0174110340 |
| 11,2 | HL.UN.0174.1120h7.5XD.140.HA | 12 | 118 | 71 | W0174112340 |
| 11,5 | HL.UN.0174.1150h7.5XD.140.HA | 12 | 118 | 71 | W0174115340 |
| 11,8 | HL.UN.0174.1180h7.5XD.140.HA | 12 | 118 | 71 | W0174118340 |
| 12,0 | HL.UN.0174.1200h7.5XD.140.HA | 12 | 118 | 71 | W0174120340 |
| 12,2 | HL.UN.0174.1220h7.5XD.140.HA | 14 | 124 | 77 | W0174122340 |
| 12,5 | HL.UN.0174.1250h7.5XD.140.HA | 14 | 124 | 77 | W0174125340 |
| 12,8 | HL.UN.0174.1280h7.5XD.140.HA | 14 | 124 | 77 | W0174128340 |
| 13,0 | HL.UN.0174.1300h7.5XD.140.HA | 14 | 124 | 77 | W0174130340 |
| 13,2 | HL.UN.0174.1320h7.5XD.140.HA | 14 | 124 | 77 | W0174132340 |
| 13,5 | HL.UN.0174.1350h7.5XD.140.HA | 14 | 124 | 77 | W0174135340 |
| 13,8 | HL.UN.0174.1380h7.5XD.140.HA | 14 | 124 | 77 | W0174138340 |
| 14,0 | HL.UN.0174.1400h7.5XD.140.HA | 14 | 124 | 77 | W0174140340 |
| 14,2 | HL.UN.0174.1420h7.5XD.140.HA | 16 | 133 | 83 | W0174142340 |
| 14,5 | HL.UN.0174.1450h7.5XD.140.HA | 16 | 133 | 83 | W0174145340 |
| 14,8 | HL.UN.0174.1480h7.5XD.140.HA | 16 | 133 | 83 | W0174148340 |
| 15,0 | HL.UN.0174.1500h7.5XD.140.HA | 16 | 133 | 83 | W0174150340 |
| 15,2 | HL.UN.0174.1520h7.5XD.140.HA | 16 | 133 | 83 | W0174152340 |
| 15,5 | HL.UN.0174.1550h7.5XD.140.HA | 16 | 133 | 83 | W0174155340 |
| 15,8 | HL.UN.0174.1580h7.5XD.140.HA | 16 | 133 | 83 | W0174158340 |
| 16,0 | HL.UN.0174.1600h7.5XD.140.HA | 16 | 133 | 83 | W0174160340 |
| 16,5 | HL.UN.0174.1650h7.5XD.140.HA | 18 | 143 | 93 | W0174165340 |

# W0174, beschichtet

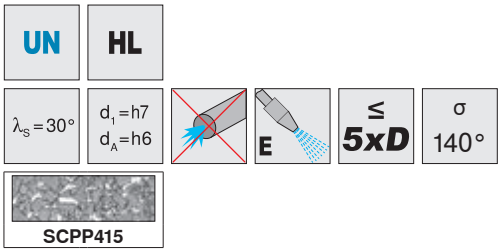
Schnittdatenempfehlung



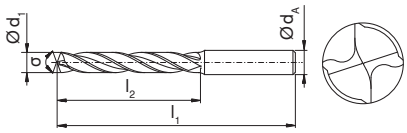
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.1.2 | | | 90 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.1 | Baustahl | | 100 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.2 | | | 90 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.1 | Federstahl | | 60 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.2 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 1.3.3 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.1.1 | Einsatzstahl | | 95 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.2 | | | 85 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.1 | Nitrierstahl | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.2.2 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.1 | Vergütungsstahl | | 85 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.2 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.4 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.5 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.6 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.1.1 | Werkzeugstahl unlegiert | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.2 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.3 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.4 | | | | | | | | |
| 3.2.5 | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.2 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.3 | | | | | | | | |
| 3.3.4 | | | | | | | | |
| 3.3.5 | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | |
| 4.1.2 | | | | | | | | |
| 4.1.3 | | | | | | | | |
| 4.1.4 | | | | | | | | |
| 4.1.5 | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | |
| 4.2.2 | | | | | | | | |
| 4.2.3 | | | | | | | | |
| 4.2.4 | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 80 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.2 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 5.1.3 | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | |
| 5.2.2 | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 105 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.2 | | | 85 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.3 | | | 75 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.4 | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 85 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.3 | | | 60 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 85 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.3.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.1 | GTS schwarzer Temperguss | | 85 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 7.1.1 | Aluminium | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |

# W0174, beschichtet

Hochleistungs-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 17,0 | HL.UN.0174.1700h7.5XD.140.HA | 18 | 143 | 93 | W0174170340 |
| 17,5 | HL.UN.0174.1750h7.5XD.140.HA | 18 | 143 | 93 | W0174175340 |
| 18,0 | HL.UN.0174.1800h7.5XD.140.HA | 18 | 143 | 93 | W0174180340 |
| 18,5 | HL.UN.0174.1850h7.5XD.140.HA | 20 | 153 | 101 | W0174185340 |
| 19,0 | HL.UN.0174.1900h7.5XD.140.HA | 20 | 153 | 101 | W0174190340 |
| 19,5 | HL.UN.0174.1950h7.5XD.140.HA | 20 | 153 | 101 | W0174195340 |
| 20,0 | HL.UN.0174.2000h7.5XD.140.HA | 20 | 153 | 101 | W0174200340 |

# W0173, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.1.2 | | | 90 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.1 | Baustahl | | 100 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.2 | | | 90 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.3 | | | 75 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.1 | Federstahl | | 60 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.2 | | | 50 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 1.3.3 | | | 30 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.1.1 | Einsatzstahl | | 95 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.2 | | | 85 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.3 | | | 75 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.1 | Nitrierstahl | | 75 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.2.2 | | | 75 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.1 | Vergütungsstahl | | 85 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.2 | | | 75 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.3 | | | 75 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.4 | | | 75 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.5 | | | 60 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.6 | | | 35 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.1.1 | Werkzeugstahl unlegiert | | 60 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 75 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.2 | | | 60 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.3 | | | 35 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.4 | | | 40 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.5 | | | 35 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 60 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.2 | | | 35 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.3 | | | 50 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.4 | | | 40 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.5 | | | 30 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 50 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.2 | | | 30 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.3 | | | 35 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.4 | | | 35 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.5 | | | 50 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | |
| 4.2.2 | | | | | | | | | |
| 4.2.3 | | | | | | | | | |
| 4.2.4 | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 80 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.2 | | | 75 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 5.1.3 | | | 60 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.1 | rostfreier Stahlguss | | 40 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.2 | | | 30 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.1.1 | GG mit lamellarem Graphit | | 105 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.2 | | | 85 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.3 | | | 75 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.4 | | | 40 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.2.1 | GGG mit Kugelgraphit | | 85 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.2 | | | 80 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.3 | | | 60 | 0,075 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 85 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.3.2 | | | 80 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.1 | GTS schwarzer Temperguss | | 85 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.2 | | | 80 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | 30 | 0,02 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.2 | | | 25 | 0,02 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.3 | | | 25 | 0,02 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |

# W0173, beschichtet

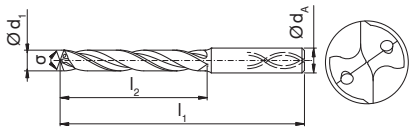
Hochleistungs-Spiralbohrer

UN | HL

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 5xD | σ 140°

SCPP435






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 2,0 | HL.UN.0173.0200h7.5XD.140.IK.HA | 4 | 57 | 21 | W0173020370 |
| 2,1 | HL.UN.0173.0210h7.5XD.140.IK.HA | 4 | 57 | 21 | W0173021370 |
| 2,2 | HL.UN.0173.0220h7.5XD.140.IK.HA | 4 | 57 | 21 | W0173022370 |
| 2,3 | HL.UN.0173.0230h7.5XD.140.IK.HA | 4 | 57 | 21 | W0173023370 |
| 2,4 | HL.UN.0173.0240h7.5XD.140.IK.HA | 4 | 57 | 21 | W0173024370 |
| 2,5 | HL.UN.0173.0250h7.5XD.140.IK.HA | 4 | 57 | 21 | W0173025370 |
| 2,6 | HL.UN.0173.0260h7.5XD.140.IK.HA | 4 | 57 | 21 | W0173026370 |
| 2,7 | HL.UN.0173.0270h7.5XD.140.IK.HA | 4 | 57 | 21 | W0173027370 |
| 2,8 | HL.UN.0173.0280h7.5XD.140.IK.HA | 4 | 57 | 21 | W0173028370 |
| 2,9 | HL.UN.0173.0290h7.5XD.140.IK.HA | 4 | 57 | 21 | W0173029370 |
| 3,0 | HL.UN.0173.0300h7.5XD.140.IK.HA | 6 | 66 | 28 | W0173030370 |
| 3,1 | HL.UN.0173.0310h7.5XD.140.IK.HA | 6 | 66 | 28 | W0173031370 |
| 3,2 | HL.UN.0173.0320h7.5XD.140.IK.HA | 6 | 66 | 28 | W0173032370 |
| 3,3 | HL.UN.0173.0330h7.5XD.140.IK.HA | 6 | 66 | 28 | W0173033370 |
| 3,4 | HL.UN.0173.0340h7.5XD.140.IK.HA | 6 | 66 | 28 | W0173034370 |
| 3,5 | HL.UN.0173.0350h7.5XD.140.IK.HA | 6 | 66 | 28 | W0173035370 |
| 3,6 | HL.UN.0173.0360h7.5XD.140.IK.HA | 6 | 66 | 28 | W0173036370 |
| 3,7 | HL.UN.0173.0370h7.5XD.140.IK.HA | 6 | 66 | 28 | W0173037370 |
| 3,8 | HL.UN.0173.0380h7.5XD.140.IK.HA | 6 | 74 | 36 | W0173038370 |
| 3,9 | HL.UN.0173.0390h7.5XD.140.IK.HA | 6 | 74 | 36 | W0173039370 |
| 4,0 | HL.UN.0173.0400h7.5XD.140.IK.HA | 6 | 74 | 36 | W0173040370 |
| 4,1 | HL.UN.0173.0410h7.5XD.140.IK.HA | 6 | 74 | 36 | W0173041370 |
| 4,2 | HL.UN.0173.0420h7.5XD.140.IK.HA | 6 | 74 | 36 | W0173042370 |
| 4,3 | HL.UN.0173.0430h7.5XD.140.IK.HA | 6 | 74 | 36 | W0173043370 |
| 4,4 | HL.UN.0173.0440h7.5XD.140.IK.HA | 6 | 74 | 36 | W0173044370 |
| 4,5 | HL.UN.0173.0450h7.5XD.140.IK.HA | 6 | 74 | 36 | W0173045370 |
| 4,6 | HL.UN.0173.0460h7.5XD.140.IK.HA | 6 | 74 | 36 | W0173046370 |
| 4,7 | HL.UN.0173.0470h7.5XD.140.IK.HA | 6 | 74 | 36 | W0173047370 |
| 4,8 | HL.UN.0173.0480h7.5XD.140.IK.HA | 6 | 82 | 44 | W0173048370 |
| 4,9 | HL.UN.0173.0490h7.5XD.140.IK.HA | 6 | 82 | 44 | W0173049370 |
| 5,0 | HL.UN.0173.0500h7.5XD.140.IK.HA | 6 | 82 | 44 | W0173050370 |
| 5,1 | HL.UN.0173.0510h7.5XD.140.IK.HA | 6 | 82 | 44 | W0173051370 |
| 5,2 | HL.UN.0173.0520h7.5XD.140.IK.HA | 6 | 82 | 44 | W0173052370 |
| 5,3 | HL.UN.0173.0530h7.5XD.140.IK.HA | 6 | 82 | 44 | W0173053370 |
| 5,4 | HL.UN.0173.0540h7.5XD.140.IK.HA | 6 | 82 | 44 | W0173054370 |
| 5,5 | HL.UN.0173.0550h7.5XD.140.IK.HA | 6 | 82 | 44 | W0173055370 |
| 5,6 | HL.UN.0173.0560h7.5XD.140.IK.HA | 6 | 82 | 44 | W0173056370 |
| 5,7 | HL.UN.0173.0570h7.5XD.140.IK.HA | 6 | 82 | 44 | W0173057370 |
| 5,8 | HL.UN.0173.0580h7.5XD.140.IK.HA | 6 | 82 | 44 | W0173058370 |
| 5,9 | HL.UN.0173.0590h7.5XD.140.IK.HA | 6 | 82 | 44 | W0173059370 |
| 6,0 | HL.UN.0173.0600h7.5XD.140.IK.HA | 6 | 82 | 44 | W0173060370 |
| 6,1 | HL.UN.0173.0610h7.5XD.140.IK.HA | 8 | 91 | 53 | W0173061370 |
| 6,2 | HL.UN.0173.0620h7.5XD.140.IK.HA | 8 | 91 | 53 | W0173062370 |
| 6,3 | HL.UN.0173.0630h7.5XD.140.IK.HA | 8 | 91 | 53 | W0173063370 |
| 6,4 | HL.UN.0173.0640h7.5XD.140.IK.HA | 8 | 91 | 53 | W0173064370 |
| 6,5 | HL.UN.0173.0650h7.5XD.140.IK.HA | 8 | 91 | 53 | W0173065370 |
| 6,6 | HL.UN.0173.0660h7.5XD.140.IK.HA | 8 | 91 | 53 | W0173066370 |
| 6,7 | HL.UN.0173.0670h7.5XD.140.IK.HA | 8 | 91 | 53 | W0173067370 |

# W0173, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.1.2 | | | 90 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.1 | Baustahl | | 100 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.2 | | | 90 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.3 | | | 75 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.1 | Federstahl | | 60 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.2 | | | 50 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 1.3.3 | | | 30 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.1.1 | Einsatzstahl | | 95 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.2 | | | 85 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.3 | | | 75 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.1 | Nitrierstahl | | 75 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.2.2 | | | 75 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.1 | Vergütungsstahl | | 85 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.2 | | | 75 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.3 | | | 75 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.4 | | | 75 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.5 | | | 60 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.6 | | | 35 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.1.1 | Werkzeugstahl unlegiert | | 60 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 75 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.2 | | | 60 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.3 | | | 35 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.4 | | | 40 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.5 | | | 35 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 60 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.2 | | | 35 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.3 | | | 50 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.4 | | | 40 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.5 | | | 30 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 50 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.2 | | | 30 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.3 | | | 35 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.4 | | | 35 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.5 | | | 50 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | |
| 4.2.2 | | | | | | | | | |
| 4.2.3 | | | | | | | | | |
| 4.2.4 | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 80 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.2 | | | 75 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 5.1.3 | | | 60 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.1 | rostfreier Stahlguss | | 40 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.2 | | | 30 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.1.1 | GG mit lamellarem Graphit | | 105 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.2 | | | 85 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.3 | | | 75 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.4 | | | 40 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.2.1 | GGG mit Kugelgraphit | | 85 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.2 | | | 80 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.3 | | | 60 | 0,075 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 85 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.3.2 | | | 80 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.1 | GTS schwarzer Temperguss | | 85 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.2 | | | 80 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | 30 | 0,02 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.2 | | | 25 | 0,02 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.3 | | | 25 | 0,02 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |

# W0173, beschichtet

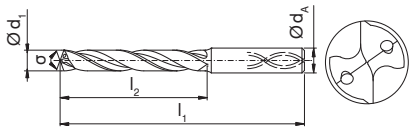
Hochleistungs-Spiralbohrer

UN | HL

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 5xD | σ 140°

SCPP435






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 6,8 | HL.UN.0173.0680h7.5XD.140.IK.HA | 8 | 91 | 53 | W0173068370 |
| 6,9 | HL.UN.0173.0690h7.5XD.140.IK.HA | 8 | 91 | 53 | W0173069370 |
| 7,0 | HL.UN.0173.0700h7.5XD.140.IK.HA | 8 | 91 | 53 | W0173070370 |
| 7,1 | HL.UN.0173.0710h7.5XD.140.IK.HA | 8 | 91 | 53 | W0173071370 |
| 7,2 | HL.UN.0173.0720h7.5XD.140.IK.HA | 8 | 91 | 53 | W0173072370 |
| 7,3 | HL.UN.0173.0730h7.5XD.140.IK.HA | 8 | 91 | 53 | W0173073370 |
| 7,4 | HL.UN.0173.0740h7.5XD.140.IK.HA | 8 | 91 | 53 | W0173074370 |
| 7,5 | HL.UN.0173.0750h7.5XD.140.IK.HA | 8 | 91 | 53 | W0173075370 |
| 7,6 | HL.UN.0173.0760h7.5XD.140.IK.HA | 8 | 91 | 53 | W0173076370 |
| 7,7 | HL.UN.0173.0770h7.5XD.140.IK.HA | 8 | 91 | 53 | W0173077370 |
| 7,8 | HL.UN.0173.0780h7.5XD.140.IK.HA | 8 | 91 | 53 | W0173078370 |
| 7,9 | HL.UN.0173.0790h7.5XD.140.IK.HA | 8 | 91 | 53 | W0173079370 |
| 8,0 | HL.UN.0173.0800h7.5XD.140.IK.HA | 8 | 91 | 53 | W0173080370 |
| 8,1 | HL.UN.0173.0810h7.5XD.140.IK.HA | 10 | 103 | 61 | W0173081370 |
| 8,2 | HL.UN.0173.0820h7.5XD.140.IK.HA | 10 | 103 | 61 | W0173082370 |
| 8,3 | HL.UN.0173.0830h7.5XD.140.IK.HA | 10 | 103 | 61 | W0173083370 |
| 8,4 | HL.UN.0173.0840h7.5XD.140.IK.HA | 10 | 103 | 61 | W0173084370 |
| 8,5 | HL.UN.0173.0850h7.5XD.140.IK.HA | 10 | 103 | 61 | W0173085370 |
| 8,6 | HL.UN.0173.0860h7.5XD.140.IK.HA | 10 | 103 | 61 | W0173086370 |
| 8,7 | HL.UN.0173.0870h7.5XD.140.IK.HA | 10 | 103 | 61 | W0173087370 |
| 8,8 | HL.UN.0173.0880h7.5XD.140.IK.HA | 10 | 103 | 61 | W0173088370 |
| 8,9 | HL.UN.0173.0890h7.5XD.140.IK.HA | 10 | 103 | 61 | W0173089370 |
| 9,0 | HL.UN.0173.0900h7.5XD.140.IK.HA | 10 | 103 | 61 | W0173090370 |
| 9,1 | HL.UN.0173.0910h7.5XD.140.IK.HA | 10 | 103 | 61 | W0173091370 |
| 9,2 | HL.UN.0173.0920h7.5XD.140.IK.HA | 10 | 103 | 61 | W0173092370 |
| 9,3 | HL.UN.0173.0930h7.5XD.140.IK.HA | 10 | 103 | 61 | W0173093370 |
| 9,4 | HL.UN.0173.0940h7.5XD.140.IK.HA | 10 | 103 | 61 | W0173094370 |
| 9,5 | HL.UN.0173.0950h7.5XD.140.IK.HA | 10 | 103 | 61 | W0173095370 |
| 9,6 | HL.UN.0173.0960h7.5XD.140.IK.HA | 10 | 103 | 61 | W0173096370 |
| 9,7 | HL.UN.0173.0970h7.5XD.140.IK.HA | 10 | 103 | 61 | W0173097370 |
| 9,8 | HL.UN.0173.0980h7.5XD.140.IK.HA | 10 | 103 | 61 | W0173098370 |
| 9,9 | HL.UN.0173.0990h7.5XD.140.IK.HA | 10 | 103 | 61 | W0173099370 |
| 10,0 | HL.UN.0173.1000h7.5XD.140.IK.HA | 10 | 103 | 61 | W0173100370 |
| 10,2 | HL.UN.0173.1020h7.5XD.140.IK.HA | 12 | 118 | 71 | W0173102370 |
| 10,3 | HL.UN.0173.1030h7.5XD.140.IK.HA | 12 | 118 | 71 | W0173103370 |
| 10,5 | HL.UN.0173.1050h7.5XD.140.IK.HA | 12 | 118 | 71 | W0173105370 |
| 10,8 | HL.UN.0173.1080h7.5XD.140.IK.HA | 12 | 118 | 71 | W0173108370 |
| 11,0 | HL.UN.0173.1100h7.5XD.140.IK.HA | 12 | 118 | 71 | W0173110370 |
| 11,2 | HL.UN.0173.1120h7.5XD.140.IK.HA | 12 | 118 | 71 | W0173112370 |
| 11,5 | HL.UN.0173.1150h7.5XD.140.IK.HA | 12 | 118 | 71 | W0173115370 |
| 11,8 | HL.UN.0173.1180h7.5XD.140.IK.HA | 12 | 118 | 71 | W0173118370 |
| 12,0 | HL.UN.0173.1200h7.5XD.140.IK.HA | 12 | 118 | 71 | W0173120370 |
| 12,2 | HL.UN.0173.1220h7.5XD.140.IK.HA | 14 | 124 | 77 | W0173122370 |
| 12,5 | HL.UN.0173.1250h7.5XD.140.IK.HA | 14 | 124 | 77 | W0173125370 |
| 12,8 | HL.UN.0173.1280h7.5XD.140.IK.HA | 14 | 124 | 77 | W0173128370 |
| 13,0 | HL.UN.0173.1300h7.5XD.140.IK.HA | 14 | 124 | 77 | W0173130370 |
| 13,2 | HL.UN.0173.1320h7.5XD.140.IK.HA | 14 | 124 | 77 | W0173132370 |
| 13,5 | HL.UN.0173.1350h7.5XD.140.IK.HA | 14 | 124 | 77 | W0173135370 |

# W0173, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.1.2 | | | 90 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.1 | Baustahl | | 100 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.2 | | | 90 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.3 | | | 75 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.1 | Federstahl | | 60 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.2 | | | 50 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 1.3.3 | | | 30 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.1.1 | Einsatzstahl | | 95 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.2 | | | 85 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.3 | | | 75 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.1 | Nitrierstahl | | 75 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.2.2 | | | 75 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.1 | Vergütungsstahl | | 85 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.2 | | | 75 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.3 | | | 75 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.4 | | | 75 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.5 | | | 60 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.6 | | | 35 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.1.1 | Werkzeugstahl unlegiert | | 60 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 75 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.2 | | | 60 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.3 | | | 35 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.4 | | | 40 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.5 | | | 35 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 60 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.2 | | | 35 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.3 | | | 50 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.4 | | | 40 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.5 | | | 30 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 50 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.2 | | | 30 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.3 | | | 35 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.4 | | | 35 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.5 | | | 50 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | |
| 4.2.2 | | | | | | | | | |
| 4.2.3 | | | | | | | | | |
| 4.2.4 | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 80 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.2 | | | 75 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 5.1.3 | | | 60 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.1 | rostfreier Stahlguss | | 40 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.2 | | | 30 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.1.1 | GG mit lamellarem Graphit | | 105 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.2 | | | 85 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.3 | | | 75 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.4 | | | 40 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.2.1 | GGG mit Kugelgraphit | | 85 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.2 | | | 80 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.3 | | | 60 | 0,075 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 85 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.3.2 | | | 80 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.1 | GTS schwarzer Temperguss | | 85 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.2 | | | 80 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 7.1.1 | Aluminium | | | | | | | | |
| 7.1.2 | | | | | | | | | |
| 7.1.3 | | | | | | | | | |
| 7.1.4 | | | | | | | | | |
| 7.1.5 | | | | | | | | | |
| 7.1.6 | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | |
| 7.3.2 | | | | | | | | | |
| 7.3.3 | | | | | | | | | |
| 7.3.4 | | | | | | | | | |
| 7.3.5 | | | | | | | | | |
| 7.3.6 | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | |
| 7.4.2 | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | |
| 7.5.2 | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | 30 | 0,02 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.2 | | | 25 | 0,02 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.3 | | | 25 | 0,02 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |

# W0173, beschichtet

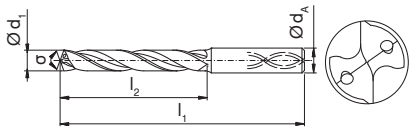
Hochleistungs-Spiralbohrer

UN | HL

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 5xD | σ 140°

SCPP435






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 13,8 | HL.UN.0173.1380h7.5XD.140.IK.HA | 14 | 124 | 77 | W0173138370 |
| 14,0 | HL.UN.0173.1400h7.5XD.140.IK.HA | 14 | 124 | 77 | W0173140370 |
| 14,2 | HL.UN.0173.1420h7.5XD.140.IK.HA | 16 | 133 | 83 | W0173142370 |
| 14,5 | HL.UN.0173.1450h7.5XD.140.IK.HA | 16 | 133 | 83 | W0173145370 |
| 14,8 | HL.UN.0173.1480h7.5XD.140.IK.HA | 16 | 133 | 83 | W0173148370 |
| 15,0 | HL.UN.0173.1500h7.5XD.140.IK.HA | 16 | 133 | 83 | W0173150370 |
| 15,2 | HL.UN.0173.1520h7.5XD.140.IK.HA | 16 | 133 | 83 | W0173152370 |
| 15,5 | HL.UN.0173.1550h7.5XD.140.IK.HA | 16 | 133 | 83 | W0173155370 |
| 15,8 | HL.UN.0173.1580h7.5XD.140.IK.HA | 16 | 133 | 83 | W0173158370 |
| 16,0 | HL.UN.0173.1600h7.5XD.140.IK.HA | 16 | 133 | 83 | W0173160370 |
| 16,5 | HL.UN.0173.1650h7.5XD.140.IK.HA | 18 | 143 | 93 | W0173165370 |
| 17,0 | HL.UN.0173.1700h7.5XD.140.IK.HA | 18 | 143 | 93 | W0173170370 |
| 17,5 | HL.UN.0173.1750h7.5XD.140.IK.HA | 18 | 143 | 93 | W0173175370 |
| 18,0 | HL.UN.0173.1800h7.5XD.140.IK.HA | 18 | 143 | 93 | W0173180370 |
| 18,5 | HL.UN.0173.1850h7.5XD.140.IK.HA | 20 | 153 | 101 | W0173185370 |
| 19,0 | HL.UN.0173.1900h7.5XD.140.IK.HA | 20 | 153 | 101 | W0173190370 |
| 19,5 | HL.UN.0173.1950h7.5XD.140.IK.HA | 20 | 153 | 101 | W0173195370 |
| 20,0 | HL.UN.0173.2000h7.5XD.140.IK.HA | 20 | 153 | 101 | W0173200370 |

# W0172, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 85 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.1.2 | | | 75 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.1 | Baustahl | | 85 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.2 | | | 75 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.3 | | | 70 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.1 | Federstahl | | | | | | | |
| 1.3.2 | | | | | | | | |
| 1.3.3 | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 80 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.2 | | | 75 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.3 | | | 70 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.1 | Nitrierstahl | | 70 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.2.2 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.1 | Vergütungsstahl | | 70 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.2 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.3 | | | 70 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.4 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.5 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.6 | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 55 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 70 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.2 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.3 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.4 | | | | | | | | |
| 3.2.5 | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 55 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.2 | | | | | | | | |
| 3.3.3 | | | | | | | | |
| 3.3.4 | | | | | | | | |
| 3.3.5 | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | |
| 4.1.1 | rostfreier Stahl | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.2 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.3 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.4 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.5 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | |
| 4.2.2 | | | | | | | | |
| 4.2.3 | | | | | | | | |
| 4.2.4 | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 75 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.2 | | | 70 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 5.1.3 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.1 | rostfreier Stahlguss | | 70 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.2 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.1.1 | GG mit lamellarem Graphit | | 80 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.2 | | | 75 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.3 | | | 70 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.4 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.2.1 | GGG mit Kugelgraphit | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.2 | | | 75 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.3 | | | 55 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.3.2 | | | 75 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.1 | GTS schwarzer Temperguss | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.2 | | | 75 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 7.1.1 | Aluminium | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | 30 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.2 | | | 25 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.3 | | | 25 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |

# W0172, beschichtet

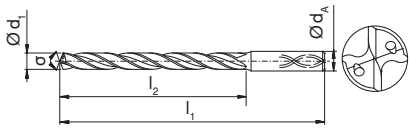
Hochleistungs-Spiralbohrer

UN | HL

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 8xD | σ 135°

SCPP435






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | HL.UN.0172.0300h7.8XD.135.IK.HA | 6 | 72 | 34 | W0172030340 |
| 3,1 | HL.UN.0172.0310h7.8XD.135.IK.HA | 6 | 72 | 34 | W0172031340 |
| 3,2 | HL.UN.0172.0320h7.8XD.135.IK.HA | 6 | 72 | 34 | W0172032340 |
| 3,3 | HL.UN.0172.0330h7.8XD.135.IK.HA | 6 | 72 | 34 | W0172033340 |
| 3,4 | HL.UN.0172.0340h7.8XD.135.IK.HA | 6 | 72 | 34 | W0172034340 |
| 3,5 | HL.UN.0172.0350h7.8XD.135.IK.HA | 6 | 72 | 34 | W0172035340 |
| 3,6 | HL.UN.0172.0360h7.8XD.135.IK.HA | 6 | 72 | 34 | W0172036340 |
| 3,7 | HL.UN.0172.0370h7.8XD.135.IK.HA | 6 | 72 | 34 | W0172037340 |
| 3,8 | HL.UN.0172.0380h7.8XD.135.IK.HA | 6 | 81 | 43 | W0172038340 |
| 3,9 | HL.UN.0172.0390h7.8XD.135.IK.HA | 6 | 81 | 43 | W0172039340 |
| 4,0 | HL.UN.0172.0400h7.8XD.135.IK.HA | 6 | 81 | 43 | W0172040340 |
| 4,1 | HL.UN.0172.0410h7.8XD.135.IK.HA | 6 | 81 | 43 | W0172041340 |
| 4,2 | HL.UN.0172.0420h7.8XD.135.IK.HA | 6 | 81 | 43 | W0172042340 |
| 4,3 | HL.UN.0172.0430h7.8XD.135.IK.HA | 6 | 81 | 43 | W0172043340 |
| 4,4 | HL.UN.0172.0440h7.8XD.135.IK.HA | 6 | 81 | 43 | W0172044340 |
| 4,5 | HL.UN.0172.0450h7.8XD.135.IK.HA | 6 | 81 | 43 | W0172045340 |
| 4,6 | HL.UN.0172.0460h7.8XD.135.IK.HA | 6 | 81 | 43 | W0172046340 |
| 4,7 | HL.UN.0172.0470h7.8XD.135.IK.HA | 6 | 81 | 43 | W0172047340 |
| 4,8 | HL.UN.0172.0480h7.8XD.135.IK.HA | 6 | 95 | 57 | W0172048340 |
| 4,9 | HL.UN.0172.0490h7.8XD.135.IK.HA | 6 | 95 | 57 | W0172049340 |
| 5,0 | HL.UN.0172.0500h7.8XD.135.IK.HA | 6 | 95 | 57 | W0172050340 |
| 5,1 | HL.UN.0172.0510h7.8XD.135.IK.HA | 6 | 95 | 57 | W0172051340 |
| 5,2 | HL.UN.0172.0520h7.8XD.135.IK.HA | 6 | 95 | 57 | W0172052340 |
| 5,3 | HL.UN.0172.0530h7.8XD.135.IK.HA | 6 | 95 | 57 | W0172053340 |
| 5,4 | HL.UN.0172.0540h7.8XD.135.IK.HA | 6 | 95 | 57 | W0172054340 |
| 5,5 | HL.UN.0172.0550h7.8XD.135.IK.HA | 6 | 95 | 57 | W0172055340 |
| 5,6 | HL.UN.0172.0560h7.8XD.135.IK.HA | 6 | 95 | 57 | W0172056340 |
| 5,7 | HL.UN.0172.0570h7.8XD.135.IK.HA | 6 | 95 | 57 | W0172057340 |
| 5,8 | HL.UN.0172.0580h7.8XD.135.IK.HA | 6 | 95 | 57 | W0172058340 |
| 5,9 | HL.UN.0172.0590h7.8XD.135.IK.HA | 6 | 95 | 57 | W0172059340 |
| 6,0 | HL.UN.0172.0600h7.8XD.135.IK.HA | 6 | 95 | 57 | W0172060340 |
| 6,1 | HL.UN.0172.0610h7.8XD.135.IK.HA | 8 | 114 | 76 | W0172061340 |
| 6,2 | HL.UN.0172.0620h7.8XD.135.IK.HA | 8 | 114 | 76 | W0172062340 |
| 6,3 | HL.UN.0172.0630h7.8XD.135.IK.HA | 8 | 114 | 76 | W0172063340 |
| 6,4 | HL.UN.0172.0640h7.8XD.135.IK.HA | 8 | 114 | 76 | W0172064340 |
| 6,5 | HL.UN.0172.0650h7.8XD.135.IK.HA | 8 | 114 | 76 | W0172065340 |
| 6,6 | HL.UN.0172.0660h7.8XD.135.IK.HA | 8 | 114 | 76 | W0172066340 |
| 6,7 | HL.UN.0172.0670h7.8XD.135.IK.HA | 8 | 114 | 76 | W0172067340 |
| 6,8 | HL.UN.0172.0680h7.8XD.135.IK.HA | 8 | 114 | 76 | W0172068340 |
| 6,9 | HL.UN.0172.0690h7.8XD.135.IK.HA | 8 | 114 | 76 | W0172069340 |
| 7,0 | HL.UN.0172.0700h7.8XD.135.IK.HA | 8 | 114 | 76 | W0172070340 |
| 7,1 | HL.UN.0172.0710h7.8XD.135.IK.HA | 8 | 114 | 76 | W0172071340 |
| 7,2 | HL.UN.0172.0720h7.8XD.135.IK.HA | 8 | 114 | 76 | W0172072340 |
| 7,3 | HL.UN.0172.0730h7.8XD.135.IK.HA | 8 | 114 | 76 | W0172073340 |
| 7,4 | HL.UN.0172.0740h7.8XD.135.IK.HA | 8 | 114 | 76 | W0172074340 |
| 7,5 | HL.UN.0172.0750h7.8XD.135.IK.HA | 8 | 114 | 76 | W0172075340 |
| 7,6 | HL.UN.0172.0760h7.8XD.135.IK.HA | 8 | 114 | 76 | W0172076340 |
| 7,7 | HL.UN.0172.0770h7.8XD.135.IK.HA | 8 | 114 | 76 | W0172077340 |

# W0172, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 85 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.1.2 | | | 75 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.1 | Baustahl | | 85 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.2 | | | 75 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.3 | | | 70 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.1 | Federstahl | | | | | | | |
| 1.3.2 | | | | | | | | |
| 1.3.3 | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 80 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.2 | | | 75 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.3 | | | 70 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.1 | Nitrierstahl | | 70 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.2.2 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.1 | Vergütungsstahl | | 70 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.2 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.3 | | | 70 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.4 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.5 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.6 | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 55 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 70 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.2 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.3 | | | 35 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.4 | | | | | | | | |
| 3.2.5 | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 55 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.2 | | | | | | | | |
| 3.3.3 | | | | | | | | |
| 3.3.4 | | | | | | | | |
| 3.3.5 | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | |
| 4.1.1 | rostfreier Stahl | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.2 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.3 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.4 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.5 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | |
| 4.2.2 | | | | | | | | |
| 4.2.3 | | | | | | | | |
| 4.2.4 | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 75 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.2 | | | 70 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 5.1.3 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.1 | rostfreier Stahlguss | | 70 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.2 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.1.1 | GG mit lamellarem Graphit | | 80 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.2 | | | 75 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.3 | | | 70 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.4 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.2.1 | GGG mit Kugelgraphit | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.2 | | | 75 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.3 | | | 55 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.3.2 | | | 75 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.1 | GTS schwarzer Temperguss | | 80 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.2 | | | 75 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 7.1.1 | Aluminium | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | 30 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.2 | | | 25 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.3 | | | 25 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |

# W0172, beschichtet

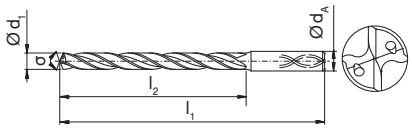
Hochleistungs-Spiralbohrer

UN | HL

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 8xD | σ 135°

SCPP435






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 7,8 | HL.UN.0172.0780h7.8XD.135.IK.HA | 8 | 114 | 76 | W0172078340 |
| 7,9 | HL.UN.0172.0790h7.8XD.135.IK.HA | 8 | 114 | 76 | W0172079340 |
| 8,0 | HL.UN.0172.0800h7.8XD.135.IK.HA | 8 | 114 | 76 | W0172080340 |
| 8,1 | HL.UN.0172.0810h7.8XD.135.IK.HA | 10 | 142 | 95 | W0172081340 |
| 8,2 | HL.UN.0172.0820h7.8XD.135.IK.HA | 10 | 142 | 95 | W0172082340 |
| 8,3 | HL.UN.0172.0830h7.8XD.135.IK.HA | 10 | 142 | 95 | W0172083340 |
| 8,4 | HL.UN.0172.0840h7.8XD.135.IK.HA | 10 | 142 | 95 | W0172084340 |
| 8,5 | HL.UN.0172.0850h7.8XD.135.IK.HA | 10 | 142 | 95 | W0172085340 |
| 8,6 | HL.UN.0172.0860h7.8XD.135.IK.HA | 10 | 142 | 95 | W0172086340 |
| 8,7 | HL.UN.0172.0870h7.8XD.135.IK.HA | 10 | 142 | 95 | W0172087340 |
| 8,8 | HL.UN.0172.0880h7.8XD.135.IK.HA | 10 | 142 | 95 | W0172088340 |
| 8,9 | HL.UN.0172.0890h7.8XD.135.IK.HA | 10 | 142 | 95 | W0172089340 |
| 9,0 | HL.UN.0172.0900h7.8XD.135.IK.HA | 10 | 142 | 95 | W0172090340 |
| 9,1 | HL.UN.0172.0910h7.8XD.135.IK.HA | 10 | 142 | 95 | W0172091340 |
| 9,2 | HL.UN.0172.0920h7.8XD.135.IK.HA | 10 | 142 | 95 | W0172092340 |
| 9,3 | HL.UN.0172.0930h7.8XD.135.IK.HA | 10 | 142 | 95 | W0172093340 |
| 9,4 | HL.UN.0172.0940h7.8XD.135.IK.HA | 10 | 142 | 95 | W0172094340 |
| 9,5 | HL.UN.0172.0950h7.8XD.135.IK.HA | 10 | 142 | 95 | W0172095340 |
| 9,6 | HL.UN.0172.0960h7.8XD.135.IK.HA | 10 | 142 | 95 | W0172096340 |
| 9,7 | HL.UN.0172.0970h7.8XD.135.IK.HA | 10 | 142 | 95 | W0172097340 |
| 9,8 | HL.UN.0172.0980h7.8XD.135.IK.HA | 10 | 142 | 95 | W0172098340 |
| 9,9 | HL.UN.0172.0990h7.8XD.135.IK.HA | 10 | 142 | 95 | W0172099340 |
| 10,0 | HL.UN.0172.1000h7.8XD.135.IK.HA | 10 | 142 | 95 | W0172100340 |
| 10,2 | HL.UN.0172.1020h7.8XD.135.IK.HA | 12 | 162 | 114 | W0172102340 |
| 10,5 | HL.UN.0172.1050h7.8XD.135.IK.HA | 12 | 162 | 114 | W0172105340 |
| 11,0 | HL.UN.0172.1100h7.8XD.135.IK.HA | 12 | 162 | 114 | W0172110340 |
| 11,5 | HL.UN.0172.1150h7.8XD.135.IK.HA | 12 | 162 | 114 | W0172115340 |
| 12,0 | HL.UN.0172.1200h7.8XD.135.IK.HA | 12 | 162 | 114 | W0172120340 |
| 12,5 | HL.UN.0172.1250h7.8XD.135.IK.HA | 14 | 178 | 131 | W0172125340 |
| 13,0 | HL.UN.0172.1300h7.8XD.135.IK.HA | 14 | 178 | 131 | W0172130340 |
| 13,5 | HL.UN.0172.1350h7.8XD.135.IK.HA | 14 | 178 | 131 | W0172135340 |
| 14,0 | HL.UN.0172.1400h7.8XD.135.IK.HA | 14 | 178 | 131 | W0172140340 |
| 14,5 | HL.UN.0172.1450h7.8XD.135.IK.HA | 16 | 203 | 152 | W0172145340 |
| 15,0 | HL.UN.0172.1500h7.8XD.135.IK.HA | 16 | 203 | 152 | W0172150340 |
| 15,5 | HL.UN.0172.1550h7.8XD.135.IK.HA | 16 | 203 | 152 | W0172155340 |
| 16,0 | HL.UN.0172.1600h7.8XD.135.IK.HA | 16 | 203 | 152 | W0172160340 |
| 16,5 | HL.UN.0172.1650h7.8XD.135.IK.HA | 18 | 222 | 171 | W0172165340 |
| 17,0 | HL.UN.0172.1700h7.8XD.135.IK.HA | 18 | 222 | 171 | W0172170340 |
| 17,5 | HL.UN.0172.1750h7.8XD.135.IK.HA | 18 | 222 | 171 | W0172175340 |
| 18,0 | HL.UN.0172.1800h7.8XD.135.IK.HA | 18 | 222 | 171 | W0172180340 |
| 18,5 | HL.UN.0172.1850h7.8XD.135.IK.HA | 20 | 243 | 190 | W0172185340 |
| 19,0 | HL.UN.0172.1900h7.8XD.135.IK.HA | 20 | 243 | 190 | W0172190340 |
| 19,5 | HL.UN.0172.1950h7.8XD.135.IK.HA | 20 | 243 | 190 | W0172195340 |
| 20,0 | HL.UN.0172.2000h7.8XD.135.IK.HA | 20 | 243 | 190 | W0172200340 |

# W0171, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 80 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.1.2 | | | 70 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.2.1 | Baustahl | | 80 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.2.2 | | | 70 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.2.3 | | | 65 | 0,15 | 0,21 | 0,27 | 0,32 |
| 1.3.1 | Federstahl | | | | | | |
| 1.3.2 | | | | | | | |
| 1.3.3 | | | | | | | |
| 2.1.1 | Einsatzstahl | | 75 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.1.2 | | | 70 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.1.3 | | | 65 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.2.1 | Nitrierstahl | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.2.2 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.3.1 | Vergütungsstahl | | 65 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.2 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.3.3 | | | 65 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.4 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.3.5 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.3.6 | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 50 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.2 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.3 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.4 | | | | | | | |
| 3.2.5 | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 50 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.2 | | | | | | | |
| 3.3.3 | | | | | | | |
| 3.3.4 | | | | | | | |
| 3.3.5 | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.2 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.3 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.4 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.5 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | |
| 4.2.2 | | | | | | | |
| 4.2.3 | | | | | | | |
| 4.2.4 | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 70 | 0,16 | 0,22 | 0,28 | 0,34 |
| 5.1.2 | | | 65 | 0,15 | 0,21 | 0,27 | 0,32 |
| 5.1.3 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 |
| 5.2.1 | rostfreier Stahlguss | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 5.2.2 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 |
| 6.1.1 | GG mit lamellarem Graphit | | 75 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.1.2 | | | 70 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.1.3 | | | 65 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.1.4 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 6.2.1 | GGG mit Kugelgraphit | | 75 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.2.2 | | | 70 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.2.3 | | | 50 | 0,11 | 0,125 | 0,15 | 0,175 |
| 6.3.1 | GTW weisser Temperguss | | 75 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.3.2 | | | 70 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.4.1 | GTS schwarzer Temperguss | | 75 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.4.2 | | | 70 | 0,125 | 0,175 | 0,225 | 0,3 |
| 7.1.1 | Aluminium | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | 30 | 0,04 | 0,08 | 0,12 | 0,16 |
| 7.8.2 | | | 25 | 0,04 | 0,08 | 0,12 | 0,16 |
| 7.8.3 | | | 25 | 0,04 | 0,08 | 0,12 | 0,16 |

# W0171, beschichtet

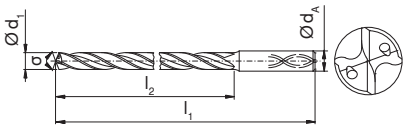
Hochleistungs-Spiralbohrer

UN | HL

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 12xD | σ 135°

SCPP435






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | HL.UN.0171.0300h7.12XD.135.IK.HA | 6 | 92 | 54 | W0171030340 |
| 3,1 | HL.UN.0171.0310h7.12XD.135.IK.HA | 6 | 92 | 54 | W0171031340 |
| 3,2 | HL.UN.0171.0320h7.12XD.135.IK.HA | 6 | 92 | 54 | W0171032340 |
| 3,3 | HL.UN.0171.0330h7.12XD.135.IK.HA | 6 | 92 | 54 | W0171033340 |
| 3,4 | HL.UN.0171.0340h7.12XD.135.IK.HA | 6 | 92 | 54 | W0171034340 |
| 3,5 | HL.UN.0171.0350h7.12XD.135.IK.HA | 6 | 92 | 54 | W0171035340 |
| 3,6 | HL.UN.0171.0360h7.12XD.135.IK.HA | 6 | 92 | 54 | W0171036340 |
| 3,7 | HL.UN.0171.0370h7.12XD.135.IK.HA | 6 | 92 | 54 | W0171037340 |
| 3,8 | HL.UN.0171.0380h7.12XD.135.IK.HA | 6 | 102 | 64 | W0171038340 |
| 3,9 | HL.UN.0171.0390h7.12XD.135.IK.HA | 6 | 102 | 64 | W0171039340 |
| 4,0 | HL.UN.0171.0400h7.12XD.135.IK.HA | 6 | 102 | 64 | W0171040340 |
| 4,1 | HL.UN.0171.0410h7.12XD.135.IK.HA | 6 | 102 | 64 | W0171041340 |
| 4,2 | HL.UN.0171.0420h7.12XD.135.IK.HA | 6 | 102 | 64 | W0171042340 |
| 4,3 | HL.UN.0171.0430h7.12XD.135.IK.HA | 6 | 102 | 64 | W0171043340 |
| 4,4 | HL.UN.0171.0440h7.12XD.135.IK.HA | 6 | 102 | 64 | W0171044340 |
| 4,5 | HL.UN.0171.0450h7.12XD.135.IK.HA | 6 | 102 | 64 | W0171045340 |
| 4,6 | HL.UN.0171.0460h7.12XD.135.IK.HA | 6 | 102 | 64 | W0171046340 |
| 4,7 | HL.UN.0171.0470h7.12XD.135.IK.HA | 6 | 102 | 64 | W0171047340 |
| 4,8 | HL.UN.0171.0480h7.12XD.135.IK.HA | 6 | 116 | 78 | W0171048340 |
| 4,9 | HL.UN.0171.0490h7.12XD.135.IK.HA | 6 | 116 | 78 | W0171049340 |
| 5,0 | HL.UN.0171.0500h7.12XD.135.IK.HA | 6 | 116 | 78 | W0171050340 |
| 5,1 | HL.UN.0171.0510h7.12XD.135.IK.HA | 6 | 116 | 78 | W0171051340 |
| 5,2 | HL.UN.0171.0520h7.12XD.135.IK.HA | 6 | 116 | 78 | W0171052340 |
| 5,3 | HL.UN.0171.0530h7.12XD.135.IK.HA | 6 | 116 | 78 | W0171053340 |
| 5,4 | HL.UN.0171.0540h7.12XD.135.IK.HA | 6 | 116 | 78 | W0171054340 |
| 5,5 | HL.UN.0171.0550h7.12XD.135.IK.HA | 6 | 116 | 78 | W0171055340 |
| 5,6 | HL.UN.0171.0560h7.12XD.135.IK.HA | 6 | 116 | 78 | W0171056340 |
| 5,7 | HL.UN.0171.0570h7.12XD.135.IK.HA | 6 | 116 | 78 | W0171057340 |
| 5,8 | HL.UN.0171.0580h7.12XD.135.IK.HA | 6 | 116 | 78 | W0171058340 |
| 5,9 | HL.UN.0171.0590h7.12XD.135.IK.HA | 6 | 116 | 78 | W0171059340 |
| 6,0 | HL.UN.0171.0600h7.12XD.135.IK.HA | 6 | 116 | 78 | W0171060340 |
| 6,1 | HL.UN.0171.0610h7.12XD.135.IK.HA | 8 | 146 | 108 | W0171061340 |
| 6,2 | HL.UN.0171.0620h7.12XD.135.IK.HA | 8 | 146 | 108 | W0171062340 |
| 6,3 | HL.UN.0171.0630h7.12XD.135.IK.HA | 8 | 146 | 108 | W0171063340 |
| 6,4 | HL.UN.0171.0640h7.12XD.135.IK.HA | 8 | 146 | 108 | W0171064340 |
| 6,5 | HL.UN.0171.0650h7.12XD.135.IK.HA | 8 | 146 | 108 | W0171065340 |
| 6,6 | HL.UN.0171.0660h7.12XD.135.IK.HA | 8 | 146 | 108 | W0171066340 |
| 6,7 | HL.UN.0171.0670h7.12XD.135.IK.HA | 8 | 146 | 108 | W0171067340 |
| 6,8 | HL.UN.0171.0680h7.12XD.135.IK.HA | 8 | 146 | 108 | W0171068340 |
| 6,9 | HL.UN.0171.0690h7.12XD.135.IK.HA | 8 | 146 | 108 | W0171069340 |
| 7,0 | HL.UN.0171.0700h7.12XD.135.IK.HA | 8 | 146 | 108 | W0171070340 |
| 7,1 | HL.UN.0171.0710h7.12XD.135.IK.HA | 8 | 146 | 108 | W0171071340 |
| 7,2 | HL.UN.0171.0720h7.12XD.135.IK.HA | 8 | 146 | 108 | W0171072340 |
| 7,3 | HL.UN.0171.0730h7.12XD.135.IK.HA | 8 | 146 | 108 | W0171073340 |
| 7,4 | HL.UN.0171.0740h7.12XD.135.IK.HA | 8 | 146 | 108 | W0171074340 |
| 7,5 | HL.UN.0171.0750h7.12XD.135.IK.HA | 8 | 146 | 108 | W0171075340 |
| 7,6 | HL.UN.0171.0760h7.12XD.135.IK.HA | 8 | 146 | 108 | W0171076340 |
| 7,7 | HL.UN.0171.0770h7.12XD.135.IK.HA | 8 | 146 | 108 | W0171077340 |

# W0171, beschichtet

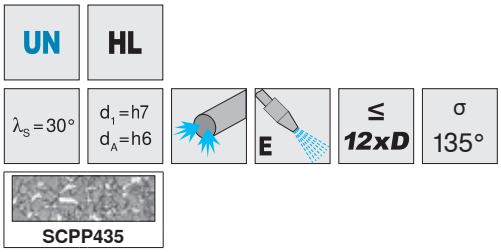
Schnittdatenempfehlung



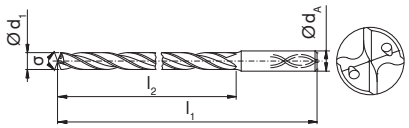
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 80 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.1.2 | | | 70 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.2.1 | Baustahl | | 80 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.2.2 | | | 70 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.2.3 | | | 65 | 0,15 | 0,21 | 0,27 | 0,32 |
| 1.3.1 | Federstahl | | | | | | |
| 1.3.2 | | | | | | | |
| 1.3.3 | | | | | | | |
| 2.1.1 | Einsatzstahl | | 75 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.1.2 | | | 70 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.1.3 | | | 65 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.2.1 | Nitrierstahl | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.2.2 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.3.1 | Vergütungsstahl | | 65 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.2 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.3.3 | | | 65 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.4 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.3.5 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.3.6 | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 50 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.2 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.3 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.4 | | | | | | | |
| 3.2.5 | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 50 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.2 | | | | | | | |
| 3.3.3 | | | | | | | |
| 3.3.4 | | | | | | | |
| 3.3.5 | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.2 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.3 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.4 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.5 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | |
| 4.2.2 | | | | | | | |
| 4.2.3 | | | | | | | |
| 4.2.4 | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 70 | 0,16 | 0,22 | 0,28 | 0,34 |
| 5.1.2 | | | 65 | 0,15 | 0,21 | 0,27 | 0,32 |
| 5.1.3 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 |
| 5.2.1 | rostfreier Stahlguss | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 5.2.2 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 |
| 6.1.1 | GG mit lamellarem Graphit | | 75 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.1.2 | | | 70 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.1.3 | | | 65 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.1.4 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 6.2.1 | GGG mit Kugelgraphit | | 75 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.2.2 | | | 70 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.2.3 | | | 50 | 0,11 | 0,125 | 0,15 | 0,175 |
| 6.3.1 | GTW weisser Temperguss | | 75 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.3.2 | | | 70 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.4.1 | GTS schwarzer Temperguss | | 75 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.4.2 | | | 70 | 0,125 | 0,175 | 0,225 | 0,3 |
| 7.1.1 | Aluminium | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | 30 | 0,04 | 0,08 | 0,12 | 0,16 |
| 7.8.2 | | | 25 | 0,04 | 0,08 | 0,12 | 0,16 |
| 7.8.3 | | | 25 | 0,04 | 0,08 | 0,12 | 0,16 |

# W0171, beschichtet

Hochleistungs-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 7,8 | HL.UN.0171.0780h7.12XD.135.IK.HA | 8 | 146 | 108 | W0171078340 |
| 7,9 | HL.UN.0171.0790h7.12XD.135.IK.HA | 8 | 146 | 108 | W0171079340 |
| 8,0 | HL.UN.0171.0800h7.12XD.135.IK.HA | 8 | 146 | 108 | W0171080340 |
| 8,1 | HL.UN.0171.0810h7.12XD.135.IK.HA | 10 | 162 | 120 | W0171081340 |
| 8,2 | HL.UN.0171.0820h7.12XD.135.IK.HA | 10 | 162 | 120 | W0171082340 |
| 8,3 | HL.UN.0171.0830h7.12XD.135.IK.HA | 10 | 162 | 120 | W0171083340 |
| 8,4 | HL.UN.0171.0840h7.12XD.135.IK.HA | 10 | 162 | 120 | W0171084340 |
| 8,5 | HL.UN.0171.0850h7.12XD.135.IK.HA | 10 | 162 | 120 | W0171085340 |
| 8,6 | HL.UN.0171.0860h7.12XD.135.IK.HA | 10 | 162 | 120 | W0171086340 |
| 8,7 | HL.UN.0171.0870h7.12XD.135.IK.HA | 10 | 162 | 120 | W0171087340 |
| 8,8 | HL.UN.0171.0880h7.12XD.135.IK.HA | 10 | 162 | 120 | W0171088340 |
| 8,9 | HL.UN.0171.0890h7.12XD.135.IK.HA | 10 | 162 | 120 | W0171089340 |
| 9,0 | HL.UN.0171.0900h7.12XD.135.IK.HA | 10 | 162 | 120 | W0171090340 |
| 9,1 | HL.UN.0171.0910h7.12XD.135.IK.HA | 10 | 162 | 120 | W0171091340 |
| 9,2 | HL.UN.0171.0920h7.12XD.135.IK.HA | 10 | 162 | 120 | W0171092340 |
| 9,3 | HL.UN.0171.0930h7.12XD.135.IK.HA | 10 | 162 | 120 | W0171093340 |
| 9,4 | HL.UN.0171.0940h7.12XD.135.IK.HA | 10 | 162 | 120 | W0171094340 |
| 9,5 | HL.UN.0171.0950h7.12XD.135.IK.HA | 10 | 162 | 120 | W0171095340 |
| 9,6 | HL.UN.0171.0960h7.12XD.135.IK.HA | 10 | 162 | 120 | W0171096340 |
| 9,7 | HL.UN.0171.0970h7.12XD.135.IK.HA | 10 | 162 | 120 | W0171097340 |
| 9,8 | HL.UN.0171.0980h7.12XD.135.IK.HA | 10 | 162 | 120 | W0171098340 |
| 9,9 | HL.UN.0171.0990h7.12XD.135.IK.HA | 10 | 162 | 120 | W0171099340 |
| 10,0 | HL.UN.0171.1000h7.12XD.135.IK.HA | 10 | 162 | 120 | W0171100340 |
| 10,2 | HL.UN.0171.1020h7.12XD.135.IK.HA | 12 | 204 | 156 | W0171102340 |
| 10,5 | HL.UN.0171.1050h7.12XD.135.IK.HA | 12 | 204 | 156 | W0171105340 |
| 11,0 | HL.UN.0171.1100h7.12XD.135.IK.HA | 12 | 204 | 156 | W0171110340 |
| 11,5 | HL.UN.0171.1150h7.12XD.135.IK.HA | 12 | 204 | 156 | W0171115340 |
| 12,0 | HL.UN.0171.1200h7.12XD.135.IK.HA | 12 | 204 | 156 | W0171120340 |
| 12,5 | HL.UN.0171.1250h7.12XD.135.IK.HA | 14 | 230 | 182 | W0171125340 |
| 13,0 | HL.UN.0171.1300h7.12XD.135.IK.HA | 14 | 230 | 182 | W0171130340 |
| 13,5 | HL.UN.0171.1350h7.12XD.135.IK.HA | 14 | 230 | 182 | W0171135340 |
| 14,0 | HL.UN.0171.1400h7.12XD.135.IK.HA | 14 | 230 | 182 | W0171140340 |
| 14,5 | HL.UN.0171.1450h7.12XD.135.IK.HA | 16 | 260 | 208 | W0171145340 |
| 15,0 | HL.UN.0171.1500h7.12XD.135.IK.HA | 16 | 260 | 208 | W0171150340 |
| 15,5 | HL.UN.0171.1550h7.12XD.135.IK.HA | 16 | 260 | 208 | W0171155340 |
| 16,0 | HL.UN.0171.1600h7.12XD.135.IK.HA | 16 | 260 | 208 | W0171160340 |

# W1116, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | f [mm/U] > Ø 5,0 = Ø 8,0 | f [mm/U] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 110 | 0,14 | 0,2 | 0,275 |
| 1.1.2 | | | 100 | 0,1 | 0,15 | 0,2 |
| 1.2.1 | Baustahl | | 110 | 0,14 | 0,2 | 0,275 |
| 1.2.2 | | | 100 | 0,1 | 0,15 | 0,2 |
| 1.2.3 | | | 95 | 0,1 | 0,15 | 0,2 |
| 1.3.1 | Federstahl | | | | | |
| 1.3.2 | | | | | | |
| 1.3.3 | | | | | | |
| 2.1.1 | Einsatzstahl | | 105 | 0,14 | 0,2 | 0,275 |
| 2.1.2 | | | 100 | 0,14 | 0,2 | 0,275 |
| 2.1.3 | | | 95 | 0,1 | 0,15 | 0,2 |
| 2.2.1 | Nitrierstahl | | 95 | 0,1 | 0,15 | 0,2 |
| 2.2.2 | | | 95 | 0,1 | 0,15 | 0,2 |
| 2.3.1 | Vergütungsstahl | | 95 | 0,14 | 0,2 | 0,275 |
| 2.3.2 | | | 95 | 0,1 | 0,15 | 0,2 |
| 2.3.3 | | | 95 | 0,14 | 0,2 | 0,275 |
| 2.3.4 | | | 95 | 0,1 | 0,15 | 0,2 |
| 2.3.5 | | | 75 | 0,1 | 0,15 | 0,2 |
| 2.3.6 | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 75 | 0,1 | 0,15 | 0,2 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 95 | 0,1 | 0,15 | 0,2 |
| 3.2.2 | | | 75 | 0,1 | 0,15 | 0,2 |
| 3.2.3 | | | | | | |
| 3.2.4 | | | | | | |
| 3.2.5 | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 75 | 0,1 | 0,15 | 0,2 |
| 3.3.2 | | | | | | |
| 3.3.3 | | | | | | |
| 3.3.4 | | | | | | |
| 3.3.5 | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | |
| 3.5.2 | | 55–58 HRC | | | | |
| 3.5.3 | | 58–60 HRC | | | | |
| 3.5.4 | | 60–62 HRC | | | | |
| 3.5.5 | | 62–64 HRC | | | | |
| 4.1.1 | rostfreier Stahl | | 75 | 0,08 | 0,12 | 0,15 |
| 4.1.2 | | | 50 | 0,08 | 0,12 | 0,15 |
| 4.1.3 | | | 55 | 0,08 | 0,12 | 0,15 |
| 4.1.4 | | | 55 | 0,08 | 0,12 | 0,15 |
| 4.1.5 | | | 75 | 0,08 | 0,12 | 0,15 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | |
| 4.2.2 | | | | | | |
| 4.2.3 | | | | | | |
| 4.2.4 | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 100 | 0,14 | 0,2 | 0,275 |
| 5.1.2 | | | 95 | 0,1 | 0,15 | 0,2 |
| 5.1.3 | | | 75 | 0,1 | 0,15 | 0,2 |
| 5.2.1 | rostfreier Stahlguss | | 50 | 0,08 | 0,12 | 0,15 |
| 5.2.2 | | | 55 | 0,08 | 0,12 | 0,15 |
| 6.1.1 | GG mit lamellarem Graphit | | 105 | 0,23 | 0,335 | 0,425 |
| 6.1.2 | | | 100 | 0,23 | 0,335 | 0,425 |
| 6.1.3 | | | 95 | 0,23 | 0,335 | 0,425 |
| 6.1.4 | | | 75 | 0,08 | 0,12 | 0,15 |
| 6.2.1 | GGG mit Kugelgraphit | | 105 | 0,2 | 0,25 | 0,35 |
| 6.2.2 | | | 100 | 0,2 | 0,25 | 0,35 |
| 6.2.3 | | | 75 | 0,08 | 0,12 | 0,15 |
| 6.3.1 | GTW weisser Temperguss | | 105 | 0,2 | 0,25 | 0,35 |
| 6.3.2 | | | 100 | 0,2 | 0,25 | 0,35 |
| 6.4.1 | GTS schwarzer Temperguss | | 105 | 0,2 | 0,25 | 0,35 |
| 6.4.2 | | | 100 | 0,2 | 0,25 | 0,35 |
| 7.1.1 | Aluminium | | | | | |
| 7.1.2 | | | | | | |
| 7.1.3 | | | | | | |
| 7.1.4 | | | | | | |
| 7.1.5 | | | | | | |
| 7.1.6 | | | | | | |
| 7.2.1 | Magnesium | | | | | |
| 7.2.2 | | | | | | |
| 7.3.1 | Kupfer | | | | | |
| 7.3.2 | | | | | | |
| 7.3.3 | | | | | | |
| 7.3.4 | | | | | | |
| 7.3.5 | | | | | | |
| 7.3.6 | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | |
| 7.4.2 | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | |
| 7.5.2 | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | |
| 7.6.2 | | | | | | |
| 7.8.1 | Titan | | 35 | 0,03 | 0,065 | 0,085 |
| 7.8.2 | | | 30 | 0,03 | 0,065 | 0,085 |
| 7.8.3 | | | 25 | 0,03 | 0,065 | 0,085 |

# W1116, beschichtet

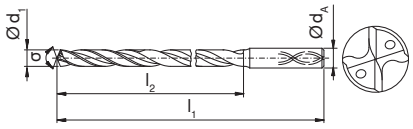
Tieflochspiralbohrer

UN | TS

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 16xD | σ 135° | W0108

SCPP415






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | TS.UN.1116.0300h7.16XD.135.IK.HA | 6 | 100 | 60 | W1116030340 |
| 3,2 | TS.UN.1116.0320h7.16XD.135.IK.HA | 6 | 100 | 60 | W1116032340 |
| 3,3 | TS.UN.1116.0330h7.16XD.135.IK.HA | 6 | 100 | 60 | W1116033340 |
| 3,5 | TS.UN.1116.0350h7.16XD.135.IK.HA | 6 | 100 | 60 | W1116035340 |
| 3,8 | TS.UN.1116.0380h7.16XD.135.IK.HA | 6 | 115 | 75 | W1116038340 |
| 4,0 | TS.UN.1116.0400h7.16XD.135.IK.HA | 6 | 115 | 75 | W1116040340 |
| 4,2 | TS.UN.1116.0420h7.16XD.135.IK.HA | 6 | 115 | 75 | W1116042340 |
| 4,5 | TS.UN.1116.0450h7.16XD.135.IK.HA | 6 | 130 | 90 | W1116045340 |
| 4,8 | TS.UN.1116.0480h7.16XD.135.IK.HA | 6 | 130 | 90 | W1116048340 |
| 5,0 | TS.UN.1116.0500h7.16XD.135.IK.HA | 6 | 130 | 90 | W1116050340 |
| 5,5 | TS.UN.1116.0550h7.16XD.135.IK.HA | 6 | 150 | 108 | W1116055340 |
| 5,8 | TS.UN.1116.0580h7.16XD.135.IK.HA | 6 | 150 | 108 | W1116058340 |
| 6,0 | TS.UN.1116.0600h7.16XD.135.IK.HA | 6 | 150 | 108 | W1116060340 |
| 6,5 | TS.UN.1116.0650h7.16XD.135.IK.HA | 8 | 165 | 125 | W1116065340 |
| 6,8 | TS.UN.1116.0680h7.16XD.135.IK.HA | 8 | 165 | 125 | W1116068340 |
| 7,0 | TS.UN.1116.0700h7.16XD.135.IK.HA | 8 | 165 | 125 | W1116070340 |
| 7,5 | TS.UN.1116.0750h7.16XD.135.IK.HA | 8 | 180 | 140 | W1116075340 |
| 7,8 | TS.UN.1116.0780h7.16XD.135.IK.HA | 8 | 180 | 140 | W1116078340 |
| 8,0 | TS.UN.1116.0800h7.16XD.135.IK.HA | 8 | 180 | 140 | W1116080340 |
| 8,5 | TS.UN.1116.0850h7.16XD.135.IK.HA | 10 | 205 | 160 | W1116085340 |
| 8,8 | TS.UN.1116.0880h7.16XD.135.IK.HA | 10 | 205 | 160 | W1116088340 |
| 9,0 | TS.UN.1116.0900h7.16XD.135.IK.HA | 10 | 205 | 160 | W1116090340 |
| 9,8 | TS.UN.1116.0980h7.16XD.135.IK.HA | 10 | 225 | 180 | W1116098340 |
| 10,0 | TS.UN.1116.1000h7.16XD.135.IK.HA | 10 | 225 | 180 | W1116100340 |
| 10,2 | TS.UN.1116.1020h7.16XD.135.IK.HA | 12 | 240 | 190 | W1116102340 |
| 10,8 | TS.UN.1116.1080h7.16XD.135.IK.HA | 12 | 240 | 190 | W1116108340 |
| 11,8 | TS.UN.1116.1180h7.16XD.135.IK.HA | 12 | 265 | 215 | W1116118340 |
| 12,0 | TS.UN.1116.1200h7.16XD.135.IK.HA | 12 | 265 | 215 | W1116120340 |

Unbedingt Anwendungshinweise Seite F489-F491 beachten!
Für das Setzen der Pilotbohrung VHM-Bohrer Typ W0108 verwenden (siehe Seite F385-F392).

# W1120, beschichtet

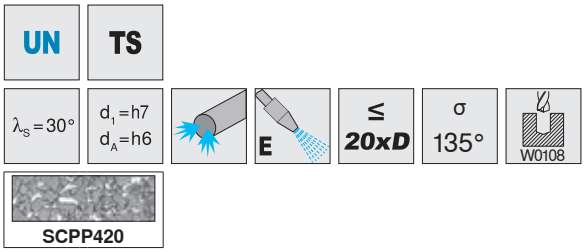
Schnittdatenempfehlung



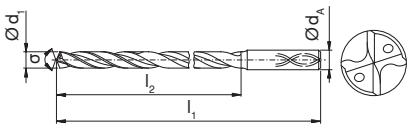
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 105 | 0,1 | 0,14 | 0,2 | 0,275 |
| 1.1.2 | | | 95 | 0,075 | 0,1 | 0,15 | 0,2 |
| 1.2.1 | Baustahl | | 105 | 0,1 | 0,14 | 0,2 | 0,275 |
| 1.2.2 | | | 95 | 0,075 | 0,1 | 0,15 | 0,2 |
| 1.2.3 | | | 90 | 0,075 | 0,1 | 0,15 | 0,2 |
| 1.3.1 | Federstahl | | | | | | |
| 1.3.2 | | | | | | | |
| 1.3.3 | | | | | | | |
| 2.1.1 | Einsatzstahl | | 100 | 0,1 | 0,14 | 0,2 | 0,275 |
| 2.1.2 | | | 95 | 0,1 | 0,14 | 0,2 | 0,275 |
| 2.1.3 | | | 90 | 0,075 | 0,1 | 0,15 | 0,2 |
| 2.2.1 | Nitrierstahl | | 90 | 0,075 | 0,1 | 0,15 | 0,2 |
| 2.2.2 | | | 90 | 0,075 | 0,1 | 0,15 | 0,2 |
| 2.3.1 | Vergütungsstahl | | 90 | 0,1 | 0,14 | 0,2 | 0,275 |
| 2.3.2 | | | 90 | 0,075 | 0,1 | 0,15 | 0,2 |
| 2.3.3 | | | 90 | 0,1 | 0,14 | 0,2 | 0,275 |
| 2.3.4 | | | 90 | 0,075 | 0,1 | 0,15 | 0,2 |
| 2.3.5 | | | 70 | 0,075 | 0,1 | 0,15 | 0,2 |
| 2.3.6 | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 70 | 0,075 | 0,1 | 0,15 | 0,2 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 90 | 0,075 | 0,1 | 0,15 | 0,2 |
| 3.2.2 | | | 70 | 0,075 | 0,1 | 0,15 | 0,2 |
| 3.2.3 | | | | | | | |
| 3.2.4 | | | | | | | |
| 3.2.5 | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 70 | 0,075 | 0,1 | 0,15 | 0,2 |
| 3.3.2 | | | | | | | |
| 3.3.3 | | | | | | | |
| 3.3.4 | | | | | | | |
| 3.3.5 | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | 70 | 0,05 | 0,08 | 0,12 | 0,15 |
| 4.1.2 | | | 45 | 0,05 | 0,08 | 0,12 | 0,15 |
| 4.1.3 | | | 50 | 0,05 | 0,08 | 0,12 | 0,15 |
| 4.1.4 | | | 50 | 0,05 | 0,08 | 0,12 | 0,15 |
| 4.1.5 | | | 70 | 0,05 | 0,08 | 0,12 | 0,15 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | |
| 4.2.2 | | | | | | | |
| 4.2.3 | | | | | | | |
| 4.2.4 | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 95 | 0,1 | 0,14 | 0,2 | 0,275 |
| 5.1.2 | | | 90 | 0,075 | 0,1 | 0,15 | 0,2 |
| 5.1.3 | | | 70 | 0,075 | 0,1 | 0,15 | 0,2 |
| 5.2.1 | rostfreier Stahlguss | | 45 | 0,05 | 0,08 | 0,12 | 0,15 |
| 5.2.2 | | | 50 | 0,05 | 0,08 | 0,12 | 0,15 |
| 6.1.1 | GG mit lamellarem Graphit | | 100 | 0,15 | 0,23 | 0,335 | 0,425 |
| 6.1.2 | | | 95 | 0,15 | 0,23 | 0,335 | 0,425 |
| 6.1.3 | | | 90 | 0,15 | 0,23 | 0,335 | 0,425 |
| 6.1.4 | | | 70 | 0,05 | 0,08 | 0,12 | 0,15 |
| 6.2.1 | GGG mit Kugelgraphit | | 100 | 0,125 | 0,2 | 0,25 | 0,35 |
| 6.2.2 | | | 95 | 0,125 | 0,2 | 0,25 | 0,35 |
| 6.2.3 | | | 70 | 0,05 | 0,08 | 0,12 | 0,15 |
| 6.3.1 | GTW weisser Temperguss | | 100 | 0,125 | 0,2 | 0,25 | 0,35 |
| 6.3.2 | | | 95 | 0,125 | 0,2 | 0,25 | 0,35 |
| 6.4.1 | GTS schwarzer Temperguss | | 100 | 0,125 | 0,2 | 0,25 | 0,35 |
| 6.4.2 | | | 95 | 0,125 | 0,2 | 0,25 | 0,35 |
| 7.1.1 | Aluminium | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |

# W1120, beschichtet

Tieflochspiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 2,0 | TS.UN.1120.0200h7.20XD.135.IK.HA | 4 | 92 | 50 | W1120020340 |
| 2,2 | TS.UN.1120.0220h7.20XD.135.IK.HA | 4 | 92 | 50 | W1120022340 |
| 2,3 | TS.UN.1120.0230h7.20XD.135.IK.HA | 4 | 92 | 50 | W1120023340 |
| 2,4 | TS.UN.1120.0240h7.20XD.135.IK.HA | 4 | 112 | 70 | W1120024340 |
| 2,5 | TS.UN.1120.0250h7.20XD.135.IK.HA | 4 | 112 | 70 | W1120025340 |
| 2,7 | TS.UN.1120.0270h7.20XD.135.IK.HA | 4 | 112 | 70 | W1120027340 |
| 2,8 | TS.UN.1120.0280h7.20XD.135.IK.HA | 4 | 112 | 70 | W1120028340 |
| 3,0 | TS.UN.1120.0300h7.20XD.135.IK.HA | 6 | 120 | 80 | W1120030340 |
| 3,2 | TS.UN.1120.0320h7.20XD.135.IK.HA | 6 | 120 | 80 | W1120032340 |
| 3,3 | TS.UN.1120.0330h7.20XD.135.IK.HA | 6 | 120 | 80 | W1120033340 |
| 3,5 | TS.UN.1120.0350h7.20XD.135.IK.HA | 6 | 120 | 80 | W1120035340 |
| 3,8 | TS.UN.1120.0380h7.20XD.135.IK.HA | 6 | 130 | 90 | W1120038340 |
| 4,0 | TS.UN.1120.0400h7.20XD.135.IK.HA | 6 | 130 | 90 | W1120040340 |
| 4,2 | TS.UN.1120.0420h7.20XD.135.IK.HA | 6 | 160 | 110 | W1120042340 |
| 4,5 | TS.UN.1120.0450h7.20XD.135.IK.HA | 6 | 160 | 110 | W1120045340 |
| 4,8 | TS.UN.1120.0480h7.20XD.135.IK.HA | 6 | 160 | 120 | W1120048340 |
| 5,0 | TS.UN.1120.0500h7.20XD.135.IK.HA | 6 | 160 | 120 | W1120050340 |
| 5,5 | TS.UN.1120.0550h7.20XD.135.IK.HA | 6 | 185 | 140 | W1120055340 |
| 5,8 | TS.UN.1120.0580h7.20XD.135.IK.HA | 6 | 185 | 140 | W1120058340 |
| 6,0 | TS.UN.1120.0600h7.20XD.135.IK.HA | 6 | 185 | 140 | W1120060340 |
| 6,5 | TS.UN.1120.0650h7.20XD.135.IK.HA | 8 | 210 | 160 | W1120065340 |
| 6,8 | TS.UN.1120.0680h7.20XD.135.IK.HA | 8 | 210 | 160 | W1120068340 |
| 7,0 | TS.UN.1120.0700h7.20XD.135.IK.HA | 8 | 210 | 160 | W1120070340 |
| 7,5 | TS.UN.1120.0750h7.20XD.135.IK.HA | 8 | 230 | 180 | W1120075340 |
| 7,8 | TS.UN.1120.0780h7.20XD.135.IK.HA | 8 | 230 | 180 | W1120078340 |
| 8,0 | TS.UN.1120.0800h7.20XD.135.IK.HA | 8 | 230 | 180 | W1120080340 |
| 8,5 | TS.UN.1120.0850h7.20XD.135.IK.HA | 10 | 260 | 195 | W1120085340 |
| 8,8 | TS.UN.1120.0880h7.20XD.135.IK.HA | 10 | 290 | 230 | W1120088340 |
| 9,0 | TS.UN.1120.0900h7.20XD.135.IK.HA | 10 | 290 | 230 | W1120090340 |
| 9,8 | TS.UN.1120.0980h7.20XD.135.IK.HA | 10 | 290 | 230 | W1120098340 |
| 10,0 | TS.UN.1120.1000h7.20XD.135.IK.HA | 10 | 290 | 230 | W1120100340 |
| 10,2 | TS.UN.1120.1020h7.20XD.135.IK.HA | 12 | 315 | 268 | W1120102340 |
| 10,8 | TS.UN.1120.1080h7.20XD.135.IK.HA | 12 | 315 | 268 | W1120108340 |
| 11,8 | TS.UN.1120.1180h7.20XD.135.IK.HA | 12 | 315 | 268 | W1120118340 |
| 12,0 | TS.UN.1120.1200h7.20XD.135.IK.HA | 12 | 315 | 268 | W1120120340 |

Unbedingt Anwendungshinweise Seite F489-F491 beachten!
Für das Setzen der Pilotbohrung VHM-Bohrer Typ W0108 verwenden (siehe Seite F385-F392).

# W1125, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | f [mm/U] > Ø 5,0 = Ø 8,0 | f [mm/U] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 95 | 0,14 | 0,2 | 0,275 |
| 1.1.2 | | | 85 | 0,1 | 0,15 | 0,2 |
| 1.2.1 | Baustahl | | 95 | 0,14 | 0,2 | 0,275 |
| 1.2.2 | | | 85 | 0,1 | 0,15 | 0,2 |
| 1.2.3 | | | 80 | 0,1 | 0,15 | 0,2 |
| 1.3.1 | Federstahl | | | | | |
| 1.3.2 | | | | | | |
| 1.3.3 | | | | | | |
| 2.1.1 | Einsatzstahl | | 90 | 0,14 | 0,2 | 0,275 |
| 2.1.2 | | | 85 | 0,14 | 0,2 | 0,275 |
| 2.1.3 | | | 80 | 0,1 | 0,15 | 0,2 |
| 2.2.1 | Nitrierstahl | | 80 | 0,1 | 0,15 | 0,2 |
| 2.2.2 | | | 80 | 0,1 | 0,15 | 0,2 |
| 2.3.1 | Vergütungsstahl | | 80 | 0,14 | 0,2 | 0,275 |
| 2.3.2 | | | 80 | 0,1 | 0,15 | 0,2 |
| 2.3.3 | | | 80 | 0,14 | 0,2 | 0,275 |
| 2.3.4 | | | 80 | 0,1 | 0,15 | 0,2 |
| 2.3.5 | | | 65 | 0,1 | 0,15 | 0,2 |
| 2.3.6 | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 65 | 0,1 | 0,15 | 0,2 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 80 | 0,1 | 0,15 | 0,2 |
| 3.2.2 | | | 65 | 0,1 | 0,15 | 0,2 |
| 3.2.3 | | | | | | |
| 3.2.4 | | | | | | |
| 3.2.5 | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 65 | 0,1 | 0,15 | 0,2 |
| 3.3.2 | | | | | | |
| 3.3.3 | | | | | | |
| 3.3.4 | | | | | | |
| 3.3.5 | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | |
| 3.5.2 | | 55–58 HRC | | | | |
| 3.5.3 | | 58–60 HRC | | | | |
| 3.5.4 | | 60–62 HRC | | | | |
| 3.5.5 | | 62–64 HRC | | | | |
| 4.1.1 | rostfreier Stahl | | 65 | 0,08 | 0,12 | 0,15 |
| 4.1.2 | | | 45 | 0,08 | 0,12 | 0,15 |
| 4.1.3 | | | 50 | 0,08 | 0,12 | 0,15 |
| 4.1.4 | | | 50 | 0,08 | 0,12 | 0,15 |
| 4.1.5 | | | 65 | 0,08 | 0,12 | 0,15 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | |
| 4.2.2 | | | | | | |
| 4.2.3 | | | | | | |
| 4.2.4 | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 85 | 0,14 | 0,2 | 0,275 |
| 5.1.2 | | | 80 | 0,1 | 0,15 | 0,2 |
| 5.1.3 | | | 65 | 0,1 | 0,15 | 0,2 |
| 5.2.1 | rostfreier Stahlguss | | 45 | 0,08 | 0,12 | 0,15 |
| 5.2.2 | | | 50 | 0,08 | 0,12 | 0,15 |
| 6.1.1 | GG mit lamellarem Graphit | | 90 | 0,23 | 0,335 | 0,425 |
| 6.1.2 | | | 85 | 0,23 | 0,335 | 0,425 |
| 6.1.3 | | | 80 | 0,23 | 0,335 | 0,425 |
| 6.1.4 | | | 65 | 0,08 | 0,12 | 0,15 |
| 6.2.1 | GGG mit Kugelgraphit | | 90 | 0,2 | 0,25 | 0,35 |
| 6.2.2 | | | 85 | 0,2 | 0,25 | 0,35 |
| 6.2.3 | | | 65 | 0,08 | 0,12 | 0,15 |
| 6.3.1 | GTW weisser Temperguss | | 90 | 0,2 | 0,25 | 0,35 |
| 6.3.2 | | | 85 | 0,2 | 0,25 | 0,35 |
| 6.4.1 | GTS schwarzer Temperguss | | 90 | 0,2 | 0,25 | 0,35 |
| 6.4.2 | | | 85 | 0,2 | 0,25 | 0,35 |
| 7.1.1 | Aluminium | | | | | |
| 7.1.2 | | | | | | |
| 7.1.3 | | | | | | |
| 7.1.4 | | | | | | |
| 7.1.5 | | | | | | |
| 7.1.6 | | | | | | |
| 7.2.1 | Magnesium | | | | | |
| 7.2.2 | | | | | | |
| 7.3.1 | Kupfer | | | | | |
| 7.3.2 | | | | | | |
| 7.3.3 | | | | | | |
| 7.3.4 | | | | | | |
| 7.3.5 | | | | | | |
| 7.3.6 | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | |
| 7.4.2 | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | |
| 7.5.2 | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | |
| 7.6.2 | | | | | | |
| 7.8.1 | Titan | | | | | |
| 7.8.2 | | | | | | |
| 7.8.3 | | | | | | |

# W1125, beschichtet

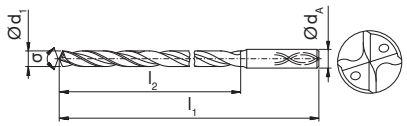
Tieflochspiralbohrer

UN | TS

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 25xD | σ 135° | W0108

SCPP420






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | TS.UN.1125.0300h7.25XD.135.IK.HA | 6 | 135 | 98 | W1125030340 |
| 3,2 | TS.UN.1125.0320h7.25XD.135.IK.HA | 6 | 135 | 98 | W1125032340 |
| 3,3 | TS.UN.1125.0330h7.25XD.135.IK.HA | 6 | 150 | 110 | W1125033340 |
| 3,5 | TS.UN.1125.0350h7.25XD.135.IK.HA | 6 | 150 | 110 | W1125035340 |
| 3,8 | TS.UN.1125.0380h7.25XD.135.IK.HA | 6 | 160 | 120 | W1125038340 |
| 4,0 | TS.UN.1125.0400h7.25XD.135.IK.HA | 6 | 160 | 120 | W1125040340 |
| 4,2 | TS.UN.1125.0420h7.25XD.135.IK.HA | 6 | 160 | 120 | W1125042340 |
| 4,5 | TS.UN.1125.0450h7.25XD.135.IK.HA | 6 | 180 | 135 | W1125045340 |
| 4,8 | TS.UN.1125.0480h7.25XD.135.IK.HA | 6 | 180 | 135 | W1125048340 |
| 5,0 | TS.UN.1125.0500h7.25XD.135.IK.HA | 6 | 180 | 135 | W1125050340 |
| 5,5 | TS.UN.1125.0550h7.25XD.135.IK.HA | 6 | 205 | 168 | W1125055340 |
| 5,8 | TS.UN.1125.0580h7.25XD.135.IK.HA | 6 | 205 | 168 | W1125058340 |
| 6,0 | TS.UN.1125.0600h7.25XD.135.IK.HA | 6 | 205 | 168 | W1125060340 |
| 6,5 | TS.UN.1125.0650h7.25XD.135.IK.HA | 8 | 240 | 200 | W1125065340 |
| 6,8 | TS.UN.1125.0680h7.25XD.135.IK.HA | 8 | 240 | 200 | W1125068340 |
| 7,0 | TS.UN.1125.0700h7.25XD.135.IK.HA | 8 | 240 | 200 | W1125070340 |
| 7,5 | TS.UN.1125.0750h7.25XD.135.IK.HA | 8 | 260 | 220 | W1125075340 |
| 7,8 | TS.UN.1125.0780h7.25XD.135.IK.HA | 8 | 260 | 220 | W1125078340 |
| 8,0 | TS.UN.1125.0800h7.25XD.135.IK.HA | 8 | 260 | 220 | W1125080340 |
| 8,5 | TS.UN.1125.0850h7.25XD.135.IK.HA | 10 | 285 | 240 | W1125085340 |
| 8,8 | TS.UN.1125.0880h7.25XD.135.IK.HA | 10 | 310 | 268 | W1125088340 |
| 9,0 | TS.UN.1125.0900h7.25XD.135.IK.HA | 10 | 310 | 268 | W1125090340 |
| 9,8 | TS.UN.1125.0980h7.25XD.135.IK.HA | 10 | 310 | 268 | W1125098340 |
| 10,0 | TS.UN.1125.1000h7.25XD.135.IK.HA | 10 | 310 | 268 | W1125100340 |
| 10,2 | TS.UN.1125.1020h7.25XD.135.IK.HA | 12 | 375 | 325 | W1125102340 |
| 10,8 | TS.UN.1125.1080h7.25XD.135.IK.HA | 12 | 375 | 325 | W1125108340 |
| 11,8 | TS.UN.1125.1180h7.25XD.135.IK.HA | 12 | 375 | 325 | W1125118340 |
| 12,0 | TS.UN.1125.1200h7.25XD.135.IK.HA | 12 | 375 | 325 | W1125120340 |

Unbedingt Anwendungshinweise Seite F489-F491 beachten!
Für das Setzen der Pilotbohrung VHM-Bohrer Typ W0108 verwenden (siehe Seite F385-F392).

# W1130, beschichtet

Schnittdatenempfehlung

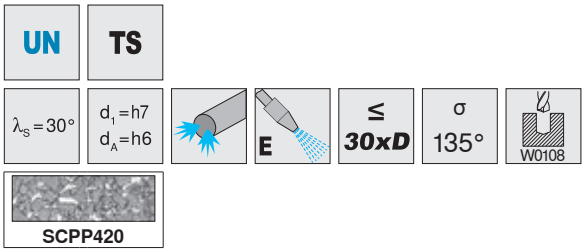


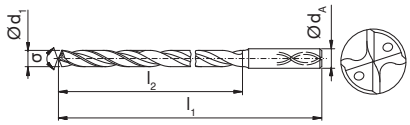
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 90 | 0,1 | 0,14 | 0,2 | 0,275 |
| 1.1.2 | | | 80 | 0,075 | 0,1 | 0,15 | 0,2 |
| 1.2.1 | Baustahl | | 90 | 0,1 | 0,14 | 0,2 | 0,275 |
| 1.2.2 | | | 80 | 0,075 | 0,1 | 0,15 | 0,2 |
| 1.2.3 | | | 75 | 0,075 | 0,1 | 0,15 | 0,2 |
| 1.3.1 | Federstahl | | | | | | |
| 1.3.2 | | | | | | | |
| 1.3.3 | | | | | | | |
| 2.1.1 | Einsatzstahl | | 85 | 0,1 | 0,14 | 0,2 | 0,275 |
| 2.1.2 | | | 80 | 0,1 | 0,14 | 0,2 | 0,275 |
| 2.1.3 | | | 75 | 0,075 | 0,1 | 0,15 | 0,2 |
| 2.2.1 | Nitrierstahl | | 75 | 0,075 | 0,1 | 0,15 | 0,2 |
| 2.2.2 | | | 75 | 0,075 | 0,1 | 0,15 | 0,2 |
| 2.3.1 | Vergütungsstahl | | 75 | 0,1 | 0,14 | 0,2 | 0,275 |
| 2.3.2 | | | 75 | 0,075 | 0,1 | 0,15 | 0,2 |
| 2.3.3 | | | 75 | 0,1 | 0,14 | 0,2 | 0,275 |
| 2.3.4 | | | 75 | 0,075 | 0,1 | 0,15 | 0,2 |
| 2.3.5 | | | 60 | 0,075 | 0,1 | 0,15 | 0,2 |
| 2.3.6 | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 60 | 0,075 | 0,1 | 0,15 | 0,2 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 75 | 0,075 | 0,1 | 0,15 | 0,2 |
| 3.2.2 | | | 60 | 0,075 | 0,1 | 0,15 | 0,2 |
| 3.2.3 | | | | | | | |
| 3.2.4 | | | | | | | |
| 3.2.5 | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 60 | 0,075 | 0,1 | 0,15 | 0,2 |
| 3.3.2 | | | | | | | |
| 3.3.3 | | | | | | | |
| 3.3.4 | | | | | | | |
| 3.3.5 | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | 60 | 0,05 | 0,08 | 0,12 | 0,15 |
| 4.1.2 | | | 40 | 0,05 | 0,08 | 0,12 | 0,15 |
| 4.1.3 | | | 45 | 0,05 | 0,08 | 0,12 | 0,15 |
| 4.1.4 | | | 45 | 0,05 | 0,08 | 0,12 | 0,15 |
| 4.1.5 | | | 60 | 0,05 | 0,08 | 0,12 | 0,15 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | |
| 4.2.2 | | | | | | | |
| 4.2.3 | | | | | | | |
| 4.2.4 | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 80 | 0,1 | 0,14 | 0,2 | 0,275 |
| 5.1.2 | | | 75 | 0,075 | 0,1 | 0,15 | 0,2 |
| 5.1.3 | | | 60 | 0,075 | 0,1 | 0,15 | 0,2 |
| 5.2.1 | rostfreier Stahlguss | | 40 | 0,05 | 0,08 | 0,12 | 0,15 |
| 5.2.2 | | | 45 | 0,05 | 0,08 | 0,12 | 0,15 |
| 6.1.1 | GG mit lamellarem Graphit | | 85 | 0,15 | 0,23 | 0,335 | 0,425 |
| 6.1.2 | | | 80 | 0,15 | 0,23 | 0,335 | 0,425 |
| 6.1.3 | | | 75 | 0,15 | 0,23 | 0,335 | 0,425 |
| 6.1.4 | | | 60 | 0,05 | 0,08 | 0,12 | 0,15 |
| 6.2.1 | GGG mit Kugelgraphit | | 85 | 0,125 | 0,2 | 0,25 | 0,35 |
| 6.2.2 | | | 80 | 0,125 | 0,2 | 0,25 | 0,35 |
| 6.2.3 | | | 60 | 0,05 | 0,08 | 0,12 | 0,15 |
| 6.3.1 | GTW weisser Temperguss | | 85 | 0,125 | 0,2 | 0,25 | 0,35 |
| 6.3.2 | | | 80 | 0,125 | 0,2 | 0,25 | 0,35 |
| 6.4.1 | GTS schwarzer Temperguss | | 85 | 0,125 | 0,2 | 0,25 | 0,35 |
| 6.4.2 | | | 80 | 0,125 | 0,2 | 0,25 | 0,35 |
| 7.1.1 | Aluminium | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |

# W1130, beschichtet

Tieflochspiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 2,0 | TS.UN.1130.0200h7.30XD.135.IK.HA | 4 | 115 | 70 | W1130020440 |
| 2,2 | TS.UN.1130.0220h7.30XD.135.IK.HA | 4 | 115 | 70 | W1130022440 |
| 2,3 | TS.UN.1130.0230h7.30XD.135.IK.HA | 4 | 115 | 70 | W1130023440 |
| 2,4 | TS.UN.1130.0240h7.30XD.135.IK.HA | 4 | 138 | 90 | W1130024440 |
| 2,5 | TS.UN.1130.0250h7.30XD.135.IK.HA | 4 | 138 | 90 | W1130025440 |
| 2,7 | TS.UN.1130.0270h7.30XD.135.IK.HA | 4 | 138 | 90 | W1130027440 |
| 2,8 | TS.UN.1130.0280h7.30XD.135.IK.HA | 4 | 138 | 90 | W1130028440 |
| 3,0 | TS.UN.1130.0300h7.30XD.135.IK.HA | 6 | 150 | 105 | W1130030440 |
| 3,2 | TS.UN.1130.0320h7.30XD.135.IK.HA | 6 | 150 | 105 | W1130032440 |
| 3,3 | TS.UN.1130.0330h7.30XD.135.IK.HA | 6 | 185 | 135 | W1130033440 |
| 3,5 | TS.UN.1130.0350h7.30XD.135.IK.HA | 6 | 185 | 135 | W1130035440 |
| 3,8 | TS.UN.1130.0380h7.30XD.135.IK.HA | 6 | 185 | 135 | W1130038440 |
| 4,0 | TS.UN.1130.0400h7.30XD.135.IK.HA | 6 | 185 | 135 | W1130040440 |
| 4,2 | TS.UN.1130.0420h7.30XD.135.IK.HA | 6 | 185 | 135 | W1130042440 |
| 4,5 | TS.UN.1130.0450h7.30XD.135.IK.HA | 6 | 215 | 165 | W1130045440 |
| 4,8 | TS.UN.1130.0480h7.30XD.135.IK.HA | 6 | 215 | 165 | W1130048440 |
| 5,0 | TS.UN.1130.0500h7.30XD.135.IK.HA | 6 | 215 | 165 | W1130050440 |
| 5,5 | TS.UN.1130.0550h7.30XD.135.IK.HA | 6 | 230 | 180 | W1130055440 |
| 5,8 | TS.UN.1130.0580h7.30XD.135.IK.HA | 6 | 230 | 180 | W1130058440 |
| 6,0 | TS.UN.1130.0600h7.30XD.135.IK.HA | 6 | 230 | 180 | W1130060440 |
| 6,5 | TS.UN.1130.0650h7.30XD.135.IK.HA | 8 | 280 | 215 | W1130065440 |
| 6,8 | TS.UN.1130.0680h7.30XD.135.IK.HA | 8 | 280 | 230 | W1130068440 |
| 7,0 | TS.UN.1130.0700h7.30XD.135.IK.HA | 8 | 280 | 230 | W1130070440 |
| 7,5 | TS.UN.1130.0750h7.30XD.135.IK.HA | 8 | 280 | 230 | W1130075440 |
| 7,8 | TS.UN.1130.0780h7.30XD.135.IK.HA | 8 | 315 | 265 | W1130078440 |
| 8,0 | TS.UN.1130.0800h7.30XD.135.IK.HA | 8 | 315 | 265 | W1130080440 |
| 8,5 | TS.UN.1130.0850h7.30XD.135.IK.HA | 10 | 350 | 295 | W1130085440 |
| 8,8 | TS.UN.1130.0880h7.30XD.135.IK.HA | 10 | 380 | 330 | W1130088440 |
| 9,0 | TS.UN.1130.0900h7.30XD.135.IK.HA | 10 | 380 | 330 | W1130090440 |
| 9,8 | TS.UN.1130.0980h7.30XD.135.IK.HA | 10 | 380 | 330 | W1130098440 |
| 10,0 | TS.UN.1130.1000h7.30XD.135.IK.HA | 10 | 380 | 330 | W1130100440 |
| 10,2 | TS.UN.1130.1020h7.30XD.135.IK.HA | 12 | 430 | 380 | W1130102440 |
| 10,8 | TS.UN.1130.1080h7.30XD.135.IK.HA | 12 | 430 | 380 | W1130108440 |
| 11,8 | TS.UN.1130.1180h7.30XD.135.IK.HA | 12 | 430 | 380 | W1130118440 |
| 12,0 | TS.UN.1130.1200h7.30XD.135.IK.HA | 12 | 430 | 380 | W1130120440 |

Unbedingt Anwendungshinweise Seite F489-F491 beachten!
Für das Setzen der Pilotbohrung VHM-Bohrer Typ W0108 verwenden (siehe Seite F385-F392).

# W1140, beschichtet

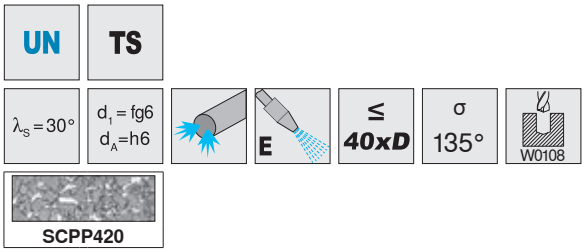
Schnittdatenempfehlung



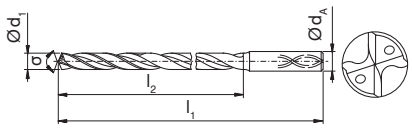
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | f [mm/U] > Ø 5,0 = Ø 8,0 | f [mm/U] > Ø 8,0 = Ø 9,0 |
|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 75 | 0,1 | 0,15 | 0,2 |
| 1.1.2 | | | 65 | 0,08 | 0,12 | 0,15 |
| 1.2.1 | Baustahl | | 75 | 0,1 | 0,15 | 0,2 |
| 1.2.2 | | | 65 | 0,08 | 0,12 | 0,15 |
| 1.2.3 | | | 60 | 0,08 | 0,12 | 0,15 |
| 1.3.1 | Federstahl | | | | | |
| 1.3.2 | | | | | | |
| 1.3.3 | | | | | | |
| 2.1.1 | Einsatzstahl | | 70 | 0,1 | 0,15 | 0,2 |
| 2.1.2 | | | 65 | 0,1 | 0,15 | 0,2 |
| 2.1.3 | | | 60 | 0,08 | 0,12 | 0,15 |
| 2.2.1 | Nitrierstahl | | 60 | 0,08 | 0,12 | 0,15 |
| 2.2.2 | | | 60 | 0,08 | 0,12 | 0,15 |
| 2.3.1 | Vergütungsstahl | | 60 | 0,1 | 0,15 | 0,2 |
| 2.3.2 | | | 60 | 0,08 | 0,12 | 0,15 |
| 2.3.3 | | | 60 | 0,1 | 0,15 | 0,2 |
| 2.3.4 | | | 60 | 0,08 | 0,12 | 0,15 |
| 2.3.5 | | | 50 | 0,08 | 0,12 | 0,15 |
| 2.3.6 | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 50 | 0,08 | 0,12 | 0,15 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 60 | 0,08 | 0,12 | 0,15 |
| 3.2.2 | | | 50 | 0,08 | 0,12 | 0,15 |
| 3.2.3 | | | | | | |
| 3.2.4 | | | | | | |
| 3.2.5 | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 50 | 0,08 | 0,12 | 0,15 |
| 3.3.2 | | | | | | |
| 3.3.3 | | | | | | |
| 3.3.4 | | | | | | |
| 3.3.5 | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | |
| 3.5.2 | | 55–58 HRC | | | | |
| 3.5.3 | | 58–60 HRC | | | | |
| 3.5.4 | | 60–62 HRC | | | | |
| 3.5.5 | | 62–64 HRC | | | | |
| 4.1.1 | rostfreier Stahl | | 50 | 0,06 | 0,09 | 0,11 |
| 4.1.2 | | | 35 | 0,06 | 0,09 | 0,11 |
| 4.1.3 | | | 40 | 0,06 | 0,09 | 0,11 |
| 4.1.4 | | | 40 | 0,06 | 0,09 | 0,11 |
| 4.1.5 | | | 50 | 0,06 | 0,09 | 0,11 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | |
| 4.2.2 | | | | | | |
| 4.2.3 | | | | | | |
| 4.2.4 | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 65 | 0,1 | 0,15 | 0,2 |
| 5.1.2 | | | 60 | 0,08 | 0,12 | 0,15 |
| 5.1.3 | | | 50 | 0,08 | 0,12 | 0,15 |
| 5.2.1 | rostfreier Stahlguss | | 35 | 0,06 | 0,09 | 0,11 |
| 5.2.2 | | | 40 | 0,06 | 0,09 | 0,11 |
| 6.1.1 | GG mit lamellarem Graphit | | 70 | 0,2 | 0,25 | 0,35 |
| 6.1.2 | | | 65 | 0,2 | 0,25 | 0,35 |
| 6.1.3 | | | 60 | 0,2 | 0,25 | 0,35 |
| 6.1.4 | | | 50 | 0,06 | 0,09 | 0,11 |
| 6.2.1 | GGG mit Kugelgraphit | | 70 | 0,14 | 0,2 | 0,275 |
| 6.2.2 | | | 65 | 0,14 | 0,2 | 0,275 |
| 6.2.3 | | | 50 | 0,08 | 0,12 | 0,15 |
| 6.3.1 | GTW weisser Temperguss | | 70 | 0,14 | 0,2 | 0,275 |
| 6.3.2 | | | 65 | 0,14 | 0,2 | 0,275 |
| 6.4.1 | GTS schwarzer Temperguss | | 70 | 0,14 | 0,2 | 0,275 |
| 6.4.2 | | | 65 | 0,14 | 0,2 | 0,275 |
| 7.1.1 | Aluminium | | | | | |
| 7.1.2 | | | | | | |
| 7.1.3 | | | | | | |
| 7.1.4 | | | | | | |
| 7.1.5 | | | | | | |
| 7.1.6 | | | | | | |
| 7.2.1 | Magnesium | | | | | |
| 7.2.2 | | | | | | |
| 7.3.1 | Kupfer | | | | | |
| 7.3.2 | | | | | | |
| 7.3.3 | | | | | | |
| 7.3.4 | | | | | | |
| 7.3.5 | | | | | | |
| 7.3.6 | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | |
| 7.4.2 | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | |
| 7.5.2 | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | |
| 7.6.2 | | | | | | |
| 7.8.1 | Titan | | | | | |
| 7.8.2 | | | | | | |
| 7.8.3 | | | | | | |

# W1140, beschichtet

Tieflochspiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | TS.UN.1140.0300fg6.40XD.135.IK.HA | 6 | 195 | 150 | W1140030440 |
| 4,0 | TS.UN.1140.0400fg6.40XD.135.IK.HA | 6 | 220 | 175 | W1140040440 |
| 4,2 | TS.UN.1140.0420fg6.40XD.135.IK.HA | 6 | 245 | 200 | W1140042440 |
| 4,5 | TS.UN.1140.0450fg6.40XD.135.IK.HA | 6 | 245 | 200 | W1140045440 |
| 4,8 | TS.UN.1140.0480fg6.40XD.135.IK.HA | 6 | 275 | 230 | W1140048440 |
| 5,0 | TS.UN.1140.0500fg6.40XD.135.IK.HA | 6 | 275 | 230 | W1140050440 |
| 5,5 | TS.UN.1140.0550fg6.40XD.135.IK.HA | 6 | 305 | 260 | W1140055440 |
| 5,8 | TS.UN.1140.0580fg6.40XD.135.IK.HA | 6 | 305 | 260 | W1140058440 |
| 6,0 | TS.UN.1140.0600fg6.40XD.135.IK.HA | 6 | 305 | 260 | W1140060440 |
| 6,5 | TS.UN.1140.0650fg6.40XD.135.IK.HA | 8 | 345 | 300 | W1140065440 |
| 6,8 | TS.UN.1140.0680fg6.40XD.135.IK.HA | 8 | 345 | 300 | W1140068440 |
| 7,0 | TS.UN.1140.0700fg6.40XD.135.IK.HA | 8 | 345 | 300 | W1140070440 |
| 7,5 | TS.UN.1140.0750fg6.40XD.135.IK.HA | 8 | 385 | 340 | W1140075440 |
| 7,8 | TS.UN.1140.0780fg6.40XD.135.IK.HA | 8 | 385 | 340 | W1140078440 |
| 8,0 | TS.UN.1140.0800fg6.40XD.135.IK.HA | 8 | 385 | 340 | W1140080440 |
| 8,5 | TS.UN.1140.0850fg6.40XD.135.IK.HA | 10 | 430 | 380 | W1140085440 |
| 8,8 | TS.UN.1140.0880fg6.40XD.135.IK.HA | 10 | 430 | 380 | W1140088440 |
| 9,0 | TS.UN.1140.0900fg6.40XD.135.IK.HA | 10 | 430 | 380 | W1140090440 |

Unbedingt Anwendungshinweise Seite F489-F491 beachten!
Für das Setzen der Pilotbohrung VHM-Bohrer Typ W0108 verwenden (siehe Seite F385-F392).

# W1150, beschichtet

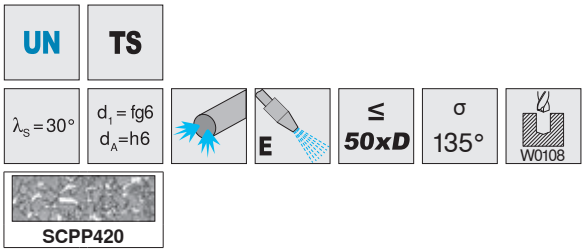
Schnittdatenempfehlung



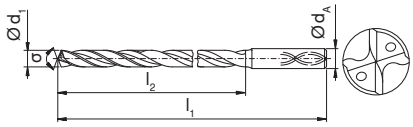
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | f [mm/U] > Ø 5,0 = Ø 7,0 |
|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 65 | 0,1 | 0,15 |
| 1.1.2 | | | 55 | 0,08 | 0,12 |
| 1.2.1 | Baustahl | | 65 | 0,1 | 0,15 |
| 1.2.2 | | | 55 | 0,08 | 0,12 |
| 1.2.3 | | | 50 | 0,08 | 0,12 |
| 1.3.1 | Federstahl | | | | |
| 1.3.2 | | | | | |
| 1.3.3 | | | | | |
| 2.1.1 | Einsatzstahl | | 60 | 0,1 | 0,15 |
| 2.1.2 | | | 55 | 0,1 | 0,15 |
| 2.1.3 | | | 50 | 0,08 | 0,12 |
| 2.2.1 | Nitrierstahl | | 50 | 0,08 | 0,12 |
| 2.2.2 | | | 50 | 0,08 | 0,12 |
| 2.3.1 | Vergütungsstahl | | 50 | 0,1 | 0,15 |
| 2.3.2 | | | 50 | 0,08 | 0,12 |
| 2.3.3 | | | 50 | 0,1 | 0,15 |
| 2.3.4 | | | 50 | 0,08 | 0,12 |
| 2.3.5 | | | 45 | 0,08 | 0,12 |
| 2.3.6 | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 45 | 0,08 | 0,12 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 50 | 0,08 | 0,12 |
| 3.2.2 | | | 45 | 0,08 | 0,12 |
| 3.2.3 | | | | | |
| 3.2.4 | | | | | |
| 3.2.5 | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 45 | 0,08 | 0,12 |
| 3.3.2 | | | | | |
| 3.3.3 | | | | | |
| 3.3.4 | | | | | |
| 3.3.5 | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | |
| 3.5.2 | | 55–58 HRC | | | |
| 3.5.3 | | 58–60 HRC | | | |
| 3.5.4 | | 60–62 HRC | | | |
| 3.5.5 | | 62–64 HRC | | | |
| 4.1.1 | rostfreier Stahl | | 45 | 0,06 | 0,09 |
| 4.1.2 | | | 30 | 0,06 | 0,09 |
| 4.1.3 | | | 35 | 0,06 | 0,09 |
| 4.1.4 | | | 35 | 0,06 | 0,09 |
| 4.1.5 | | | 45 | 0,06 | 0,09 |
| 4.2.1 | hochwarmfeste Legierungen | | | | |
| 4.2.2 | | | | | |
| 4.2.3 | | | | | |
| 4.2.4 | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 55 | 0,1 | 0,15 |
| 5.1.2 | | | 50 | 0,08 | 0,12 |
| 5.1.3 | | | 55 | 0,08 | 0,12 |
| 5.2.1 | rostfreier Stahlguss | | 30 | 0,06 | 0,09 |
| 5.2.2 | | | 35 | 0,06 | 0,09 |
| 6.1.1 | GG mit lamellarem Graphit | | 60 | 0,2 | 0,25 |
| 6.1.2 | | | 55 | 0,2 | 0,25 |
| 6.1.3 | | | 50 | 0,2 | 0,25 |
| 6.1.4 | | | 45 | 0,06 | 0,09 |
| 6.2.1 | GGG mit Kugelgraphit | | 60 | 0,14 | 0,2 |
| 6.2.2 | | | 55 | 0,14 | 0,2 |
| 6.2.3 | | | 45 | 0,08 | 0,12 |
| 6.3.1 | GTW weisser Temperguss | | 60 | 0,14 | 0,2 |
| 6.3.2 | | | 55 | 0,14 | 0,2 |
| 6.4.1 | GTS schwarzer Temperguss | | 60 | 0,14 | 0,2 |
| 6.4.2 | | | 55 | 0,14 | 0,2 |
| 7.1.1 | Aluminium | | | | |
| 7.1.2 | | | | | |
| 7.1.3 | | | | | |
| 7.1.4 | | | | | |
| 7.1.5 | | | | | |
| 7.1.6 | | | | | |
| 7.2.1 | Magnesium | | | | |
| 7.2.2 | | | | | |
| 7.3.1 | Kupfer | | | | |
| 7.3.2 | | | | | |
| 7.3.3 | | | | | |
| 7.3.4 | | | | | |
| 7.3.5 | | | | | |
| 7.3.6 | | | | | |
| 7.4.1 | CuZn (Messing) | | | | |
| 7.4.2 | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | |
| 7.5.2 | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | |
| 7.6.2 | | | | | |
| 7.8.1 | Titan | | | | |
| 7.8.2 | | | | | |
| 7.8.3 | | | | | |

# W1150, beschichtet

Tieflochspiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | TS.UN.1150.0300fg6.50XD.135.IK.HA | 6 | 220 | 175 | W1150030440 |
| 4,0 | TS.UN.1150.0400fg6.50XD.135.IK.HA | 6 | 265 | 220 | W1150040440 |
| 4,2 | TS.UN.1150.0420fg6.50XD.135.IK.HA | 6 | 290 | 245 | W1150042440 |
| 4,5 | TS.UN.1150.0450fg6.50XD.135.IK.HA | 6 | 290 | 245 | W1150045440 |
| 4,8 | TS.UN.1150.0480fg6.50XD.135.IK.HA | 6 | 320 | 275 | W1150048440 |
| 5,0 | TS.UN.1150.0500fg6.50XD.135.IK.HA | 6 | 320 | 275 | W1150050440 |
| 5,5 | TS.UN.1150.0550fg6.50XD.135.IK.HA | 6 | 355 | 310 | W1150055440 |
| 5,8 | TS.UN.1150.0580fg6.50XD.135.IK.HA | 6 | 355 | 315 | W1150058440 |
| 6,0 | TS.UN.1150.0600fg6.50XD.135.IK.HA | 6 | 355 | 315 | W1150060440 |
| 6,5 | TS.UN.1150.0650fg6.50XD.135.IK.HA | 8 | 395 | 350 | W1150065440 |
| 7,0 | TS.UN.1150.0700fg6.50XD.135.IK.HA | 8 | 425 | 380 | W1150070440 |

Unbedingt Anwendungshinweise Seite F489-F491 beachten!
Für das Setzen der Pilotbohrung VHM-Bohrer Typ W0108 verwenden (siehe Seite F385-F392).

# W0105, beschichtet

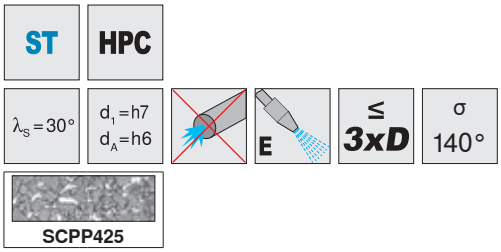
Schnittdatenempfehlung



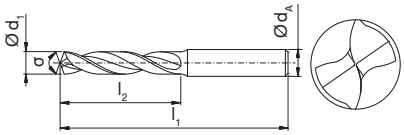
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 1,0 = Ø 1,5 | > Ø 1,5 = Ø 2,0 | > Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 90 | 0,05 | 0,067 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.1.2 | | | 80 | 0,05 | 0,067 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.2.1 | Baustahl | | 90 | 0,05 | 0,067 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.2.2 | | | 80 | 0,05 | 0,067 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.2.3 | | | 75 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.3.1 | Federstahl | | 50 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.3.2 | | | 40 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.3 | | | 20 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.1.1 | Einsatzstahl | | 80 | 0,05 | 0,067 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 2.1.2 | | | 75 | 0,05 | 0,067 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 2.1.3 | | | 70 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.2.1 | Nitrierstahl | | 70 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.2 | | | 70 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.1 | Vergütungsstahl | | 70 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.2 | | | 70 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.3 | | | 70 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.4 | | | 70 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.5 | | | 60 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.6 | | | 40 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.1.1 | Werkzeugstahl unlegiert | | 60 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 75 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.2.2 | | | 60 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.2.3 | | | 40 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.4 | | | | | | | | | | | |
| 3.2.5 | | | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 60 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.3.2 | | | 40 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.3 | | | | | | | | | | | |
| 3.3.4 | | | | | | | | | | | |
| 3.3.5 | | | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | | | |
| 4.1.2 | | | | | | | | | | | |
| 4.1.3 | | | | | | | | | | | |
| 4.1.4 | | | | | | | | | | | |
| 4.1.5 | | | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | | |
| 4.2.2 | | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 80 | 0,05 | 0,067 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 5.1.2 | | | 75 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.3 | | | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | | | | |
| 5.2.2 | | | | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 85 | 0,075 | 0,1 | 0,15 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.2 | | | 80 | 0,075 | 0,1 | 0,15 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.3 | | | 75 | 0,075 | 0,1 | 0,15 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.4 | | | | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 85 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.2.2 | | | 80 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.2.3 | | | 60 | 0,038 | 0,05 | 0,075 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 85 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.3.2 | | | 80 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.4.1 | GTS schwarzer Temperguss | | 85 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.4.2 | | | 80 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 7.1.1 | Aluminium | | | | | | | | | | |
| 7.1.2 | | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | | |
| 7.2.2 | | | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | | | |
| 7.3.2 | | | | | | | | | | | |
| 7.3.3 | | | | | | | | | | | |
| 7.3.4 | | | | | | | | | | | |
| 7.3.5 | | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | | |
| 7.4.2 | | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | | |
| 7.5.2 | | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | | |
| 7.6.2 | | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | | |
| 7.8.2 | | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | | |

# W0105, beschichtet

HPC-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 1,0 | HPC.ST.0105.0100h7.3XD.140.HA | 4 | 45 | 7 | W0105010240 |
| 1,1 | HPC.ST.0105.0110h7.3XD.140.HA | 4 | 45 | 7 | W0105011240 |
| 1,2 | HPC.ST.0105.0120h7.3XD.140.HA | 4 | 45 | 7 | W0105012240 |
| 1,3 | HPC.ST.0105.0130h7.3XD.140.HA | 4 | 45 | 7 | W0105013240 |
| 1,4 | HPC.ST.0105.0140h7.3XD.140.HA | 4 | 45 | 7 | W0105014240 |
| 1,5 | HPC.ST.0105.0150h7.3XD.140.HA | 4 | 55 | 14 | W0105015240 |
| 1,6 | HPC.ST.0105.0160h7.3XD.140.HA | 4 | 55 | 14 | W0105016240 |
| 1,7 | HPC.ST.0105.0170h7.3XD.140.HA | 4 | 55 | 14 | W0105017240 |
| 1,8 | HPC.ST.0105.0180h7.3XD.140.HA | 4 | 55 | 14 | W0105018240 |
| 1,9 | HPC.ST.0105.0190h7.3XD.140.HA | 4 | 55 | 14 | W0105019240 |
| 2,0 | HPC.ST.0105.0200h7.3XD.140.HA | 4 | 55 | 20 | W0105020240 |
| 2,1 | HPC.ST.0105.0210h7.3XD.140.HA | 4 | 55 | 20 | W0105021240 |
| 2,2 | HPC.ST.0105.0220h7.3XD.140.HA | 4 | 55 | 20 | W0105022240 |
| 2,3 | HPC.ST.0105.0230h7.3XD.140.HA | 4 | 55 | 20 | W0105023240 |
| 2,4 | HPC.ST.0105.0240h7.3XD.140.HA | 4 | 55 | 20 | W0105024240 |
| 2,5 | HPC.ST.0105.0250h7.3XD.140.HA | 4 | 55 | 20 | W0105025240 |
| 2,6 | HPC.ST.0105.0260h7.3XD.140.HA | 4 | 55 | 20 | W0105026240 |
| 2,7 | HPC.ST.0105.0270h7.3XD.140.HA | 4 | 55 | 20 | W0105027240 |
| 2,8 | HPC.ST.0105.0280h7.3XD.140.HA | 4 | 55 | 20 | W0105028240 |
| 2,9 | HPC.ST.0105.0290h7.3XD.140.HA | 4 | 55 | 20 | W0105029240 |
| 3,0 | HPC.ST.0105.0300h7.3XD.140.HA | 6 | 62 | 20 | W0105030240 |
| 3,1 | HPC.ST.0105.0310h7.3XD.140.HA | 6 | 62 | 20 | W0105031240 |
| 3,2 | HPC.ST.0105.0320h7.3XD.140.HA | 6 | 62 | 20 | W0105032240 |
| 3,3 | HPC.ST.0105.0330h7.3XD.140.HA | 6 | 62 | 20 | W0105033240 |
| 3,4 | HPC.ST.0105.0340h7.3XD.140.HA | 6 | 62 | 20 | W0105034240 |
| 3,5 | HPC.ST.0105.0350h7.3XD.140.HA | 6 | 62 | 20 | W0105035240 |
| 3,6 | HPC.ST.0105.0360h7.3XD.140.HA | 6 | 62 | 20 | W0105036240 |
| 3,7 | HPC.ST.0105.0370h7.3XD.140.HA | 6 | 62 | 20 | W0105037240 |
| 3,8 | HPC.ST.0105.0380h7.3XD.140.HA | 6 | 66 | 24 | W0105038240 |
| 3,9 | HPC.ST.0105.0390h7.3XD.140.HA | 6 | 66 | 24 | W0105039240 |
| 4,0 | HPC.ST.0105.0400h7.3XD.140.HA | 6 | 66 | 24 | W0105040240 |
| 4,1 | HPC.ST.0105.0410h7.3XD.140.HA | 6 | 66 | 24 | W0105041240 |
| 4,2 | HPC.ST.0105.0420h7.3XD.140.HA | 6 | 66 | 24 | W0105042240 |
| 4,3 | HPC.ST.0105.0430h7.3XD.140.HA | 6 | 66 | 24 | W0105043240 |
| 4,4 | HPC.ST.0105.0440h7.3XD.140.HA | 6 | 66 | 24 | W0105044240 |
| 4,5 | HPC.ST.0105.0450h7.3XD.140.HA | 6 | 66 | 24 | W0105045240 |
| 4,6 | HPC.ST.0105.0460h7.3XD.140.HA | 6 | 66 | 24 | W0105046240 |
| 4,7 | HPC.ST.0105.0470h7.3XD.140.HA | 6 | 66 | 24 | W0105047240 |
| 4,8 | HPC.ST.0105.0480h7.3XD.140.HA | 6 | 66 | 28 | W0105048240 |
| 4,9 | HPC.ST.0105.0490h7.3XD.140.HA | 6 | 66 | 28 | W0105049240 |
| 5,0 | HPC.ST.0105.0500h7.3XD.140.HA | 6 | 66 | 28 | W0105050240 |
| 5,1 | HPC.ST.0105.0510h7.3XD.140.HA | 6 | 66 | 28 | W0105051240 |
| 5,2 | HPC.ST.0105.0520h7.3XD.140.HA | 6 | 66 | 28 | W0105052240 |
| 5,3 | HPC.ST.0105.0530h7.3XD.140.HA | 6 | 66 | 28 | W0105053240 |
| 5,4 | HPC.ST.0105.0540h7.3XD.140.HA | 6 | 66 | 28 | W0105054240 |
| 5,5 | HPC.ST.0105.0550h7.3XD.140.HA | 6 | 66 | 28 | W0105055240 |
| 5,6 | HPC.ST.0105.0560h7.3XD.140.HA | 6 | 66 | 28 | W0105056240 |
| 5,7 | HPC.ST.0105.0570h7.3XD.140.HA | 6 | 66 | 28 | W0105057240 |

# W0105, beschichtet

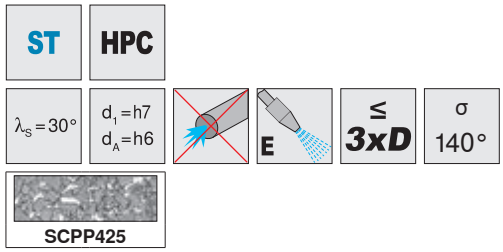
Schnittdatenempfehlung



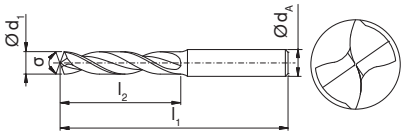
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 1,0 = Ø 1,5 | > Ø 1,5 = Ø 2,0 | > Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 90 | 0,05 | 0,067 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.1.2 | | | 80 | 0,05 | 0,067 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.2.1 | Baustahl | | 90 | 0,05 | 0,067 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.2.2 | | | 80 | 0,05 | 0,067 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.2.3 | | | 75 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.3.1 | Federstahl | | 50 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.3.2 | | | 40 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.3 | | | 20 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.1.1 | Einsatzstahl | | 80 | 0,05 | 0,067 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 2.1.2 | | | 75 | 0,05 | 0,067 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 2.1.3 | | | 70 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.2.1 | Nitrierstahl | | 70 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.2 | | | 70 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.1 | Vergütungsstahl | | 70 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.2 | | | 70 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.3 | | | 70 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.4 | | | 70 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.5 | | | 60 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.6 | | | 40 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.1.1 | Werkzeugstahl unlegiert | | 60 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 75 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.2.2 | | | 60 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.2.3 | | | 40 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.4 | | | | | | | | | | | |
| 3.2.5 | | | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 60 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.3.2 | | | 40 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.3 | | | | | | | | | | | |
| 3.3.4 | | | | | | | | | | | |
| 3.3.5 | | | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | | | |
| 4.1.2 | | | | | | | | | | | |
| 4.1.3 | | | | | | | | | | | |
| 4.1.4 | | | | | | | | | | | |
| 4.1.5 | | | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | | |
| 4.2.2 | | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 80 | 0,05 | 0,067 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 5.1.2 | | | 75 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.3 | | | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | | | | |
| 5.2.2 | | | | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 85 | 0,075 | 0,1 | 0,15 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.2 | | | 80 | 0,075 | 0,1 | 0,15 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.3 | | | 75 | 0,075 | 0,1 | 0,15 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.4 | | | | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 85 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.2.2 | | | 80 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.2.3 | | | 60 | 0,038 | 0,05 | 0,075 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 85 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.3.2 | | | 80 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.4.1 | GTS schwarzer Temperguss | | 85 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.4.2 | | | 80 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 7.1.1 | Aluminium | | | | | | | | | | |
| 7.1.2 | | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | | |
| 7.2.2 | | | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | | | |
| 7.3.2 | | | | | | | | | | | |
| 7.3.3 | | | | | | | | | | | |
| 7.3.4 | | | | | | | | | | | |
| 7.3.5 | | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | | |
| 7.4.2 | | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | | |
| 7.5.2 | | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | | |
| 7.6.2 | | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | | |
| 7.8.2 | | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | | |

# W0105, beschichtet

HPC-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 5,8 | HPC.ST.0105.0580h7.3XD.140.HA | 6 | 66 | 28 | W0105058240 |
| 5,9 | HPC.ST.0105.0590h7.3XD.140.HA | 6 | 66 | 28 | W0105059240 |
| 6,0 | HPC.ST.0105.0600h7.3XD.140.HA | 6 | 66 | 28 | W0105060240 |
| 6,1 | HPC.ST.0105.0610h7.3XD.140.HA | 8 | 79 | 34 | W0105061240 |
| 6,2 | HPC.ST.0105.0620h7.3XD.140.HA | 8 | 79 | 34 | W0105062240 |
| 6,3 | HPC.ST.0105.0630h7.3XD.140.HA | 8 | 79 | 34 | W0105063240 |
| 6,4 | HPC.ST.0105.0640h7.3XD.140.HA | 8 | 79 | 34 | W0105064240 |
| 6,5 | HPC.ST.0105.0650h7.3XD.140.HA | 8 | 79 | 34 | W0105065240 |
| 6,6 | HPC.ST.0105.0660h7.3XD.140.HA | 8 | 79 | 34 | W0105066240 |
| 6,7 | HPC.ST.0105.0670h7.3XD.140.HA | 8 | 79 | 34 | W0105067240 |
| 6,8 | HPC.ST.0105.0680h7.3XD.140.HA | 8 | 79 | 34 | W0105068240 |
| 6,9 | HPC.ST.0105.0690h7.3XD.140.HA | 8 | 79 | 34 | W0105069240 |
| 7,0 | HPC.ST.0105.0700h7.3XD.140.HA | 8 | 79 | 34 | W0105070240 |
| 7,1 | HPC.ST.0105.0710h7.3XD.140.HA | 8 | 79 | 41 | W0105071240 |
| 7,2 | HPC.ST.0105.0720h7.3XD.140.HA | 8 | 79 | 41 | W0105072240 |
| 7,3 | HPC.ST.0105.0730h7.3XD.140.HA | 8 | 79 | 41 | W0105073240 |
| 7,4 | HPC.ST.0105.0740h7.3XD.140.HA | 8 | 79 | 41 | W0105074240 |
| 7,5 | HPC.ST.0105.0750h7.3XD.140.HA | 8 | 79 | 41 | W0105075240 |
| 7,6 | HPC.ST.0105.0760h7.3XD.140.HA | 8 | 79 | 41 | W0105076240 |
| 7,7 | HPC.ST.0105.0770h7.3XD.140.HA | 8 | 79 | 41 | W0105077240 |
| 7,8 | HPC.ST.0105.0780h7.3XD.140.HA | 8 | 79 | 41 | W0105078240 |
| 7,9 | HPC.ST.0105.0790h7.3XD.140.HA | 8 | 79 | 41 | W0105079240 |
| 8,0 | HPC.ST.0105.0800h7.3XD.140.HA | 8 | 79 | 41 | W0105080240 |
| 8,1 | HPC.ST.0105.0810h7.3XD.140.HA | 10 | 89 | 47 | W0105081240 |
| 8,2 | HPC.ST.0105.0820h7.3XD.140.HA | 10 | 89 | 47 | W0105082240 |
| 8,3 | HPC.ST.0105.0830h7.3XD.140.HA | 10 | 89 | 47 | W0105083240 |
| 8,4 | HPC.ST.0105.0840h7.3XD.140.HA | 10 | 89 | 47 | W0105084240 |
| 8,5 | HPC.ST.0105.0850h7.3XD.140.HA | 10 | 89 | 47 | W0105085240 |
| 8,6 | HPC.ST.0105.0860h7.3XD.140.HA | 10 | 89 | 47 | W0105086240 |
| 8,7 | HPC.ST.0105.0870h7.3XD.140.HA | 10 | 89 | 47 | W0105087240 |
| 8,8 | HPC.ST.0105.0880h7.3XD.140.HA | 10 | 89 | 47 | W0105088240 |
| 8,9 | HPC.ST.0105.0890h7.3XD.140.HA | 10 | 89 | 47 | W0105089240 |
| 9,0 | HPC.ST.0105.0900h7.3XD.140.HA | 10 | 89 | 47 | W0105090240 |
| 9,1 | HPC.ST.0105.0910h7.3XD.140.HA | 10 | 89 | 47 | W0105091240 |
| 9,2 | HPC.ST.0105.0920h7.3XD.140.HA | 10 | 89 | 47 | W0105092240 |
| 9,3 | HPC.ST.0105.0930h7.3XD.140.HA | 10 | 89 | 47 | W0105093240 |
| 9,4 | HPC.ST.0105.0940h7.3XD.140.HA | 10 | 89 | 47 | W0105094240 |
| 9,5 | HPC.ST.0105.0950h7.3XD.140.HA | 10 | 89 | 47 | W0105095240 |
| 9,6 | HPC.ST.0105.0960h7.3XD.140.HA | 10 | 89 | 47 | W0105096240 |
| 9,7 | HPC.ST.0105.0970h7.3XD.140.HA | 10 | 89 | 47 | W0105097240 |
| 9,8 | HPC.ST.0105.0980h7.3XD.140.HA | 10 | 89 | 47 | W0105098240 |
| 9,9 | HPC.ST.0105.0990h7.3XD.140.HA | 10 | 89 | 47 | W0105099240 |
| 10,0 | HPC.ST.0105.1000h7.3XD.140.HA | 10 | 89 | 47 | W0105100240 |
| 10,2 | HPC.ST.0105.1020h7.3XD.140.HA | 12 | 102 | 55 | W0105102240 |
| 10,5 | HPC.ST.0105.1050h7.3XD.140.HA | 12 | 102 | 55 | W0105105240 |
| 10,8 | HPC.ST.0105.1080h7.3XD.140.HA | 12 | 102 | 55 | W0105108240 |
| 11,0 | HPC.ST.0105.1100h7.3XD.140.HA | 12 | 102 | 55 | W0105110240 |
| 11,2 | HPC.ST.0105.1120h7.3XD.140.HA | 12 | 102 | 55 | W0105112240 |

# W0105, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 1,0 = Ø 1,5 | > Ø 1,5 = Ø 2,0 | > Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 90 | 0,05 | 0,067 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.1.2 | | | 80 | 0,05 | 0,067 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.2.1 | Baustahl | | 90 | 0,05 | 0,067 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.2.2 | | | 80 | 0,05 | 0,067 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.2.3 | | | 75 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.3.1 | Federstahl | | 50 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.3.2 | | | 40 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.3 | | | 20 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.1.1 | Einsatzstahl | | 80 | 0,05 | 0,067 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 2.1.2 | | | 75 | 0,05 | 0,067 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 2.1.3 | | | 70 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.2.1 | Nitrierstahl | | 70 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.2 | | | 70 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.1 | Vergütungsstahl | | 70 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.2 | | | 70 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.3 | | | 70 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.4 | | | 70 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.5 | | | 60 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.6 | | | 40 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.1.1 | Werkzeugstahl unlegiert | | 60 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 75 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.2.2 | | | 60 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.2.3 | | | 40 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.4 | | | | | | | | | | | |
| 3.2.5 | | | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 60 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.3.2 | | | 40 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.3 | | | | | | | | | | | |
| 3.3.4 | | | | | | | | | | | |
| 3.3.5 | | | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | | | |
| 4.1.2 | | | | | | | | | | | |
| 4.1.3 | | | | | | | | | | | |
| 4.1.4 | | | | | | | | | | | |
| 4.1.5 | | | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | | |
| 4.2.2 | | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 80 | 0,05 | 0,067 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 5.1.2 | | | 75 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.3 | | | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | | | | |
| 5.2.2 | | | | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 85 | 0,075 | 0,1 | 0,15 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.2 | | | 80 | 0,075 | 0,1 | 0,15 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.3 | | | 75 | 0,075 | 0,1 | 0,15 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.4 | | | | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 85 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.2.2 | | | 80 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.2.3 | | | 60 | 0,038 | 0,05 | 0,075 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 85 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.3.2 | | | 80 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.4.1 | GTS schwarzer Temperguss | | 85 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.4.2 | | | 80 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 7.1.1 | Aluminium | | | | | | | | | | |
| 7.1.2 | | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | | |
| 7.2.2 | | | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | | | |
| 7.3.2 | | | | | | | | | | | |
| 7.3.3 | | | | | | | | | | | |
| 7.3.4 | | | | | | | | | | | |
| 7.3.5 | | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | | |
| 7.4.2 | | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | | |
| 7.5.2 | | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | | |
| 7.6.2 | | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | | |
| 7.8.2 | | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | | |

# W0105, beschichtet

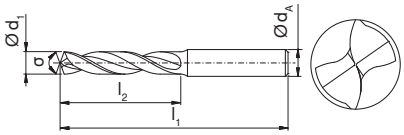
HPC-Spiralbohrer

ST | HPC

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 3xD | σ 140°

SCPP425






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 11,5 | HPC.ST.0105.1150h7.3XD.140.HA | 12 | 102 | 55 | W0105115240 |
| 11,8 | HPC.ST.0105.1180h7.3XD.140.HA | 12 | 102 | 55 | W0105118240 |
| 12,0 | HPC.ST.0105.1200h7.3XD.140.HA | 12 | 102 | 55 | W0105120240 |
| 12,2 | HPC.ST.0105.1220h7.3XD.140.HA | 14 | 107 | 60 | W0105122240 |
| 12,5 | HPC.ST.0105.1250h7.3XD.140.HA | 14 | 107 | 60 | W0105125240 |
| 12,8 | HPC.ST.0105.1280h7.3XD.140.HA | 14 | 107 | 60 | W0105128240 |
| 13,0 | HPC.ST.0105.1300h7.3XD.140.HA | 14 | 107 | 60 | W0105130240 |
| 13,5 | HPC.ST.0105.1350h7.3XD.140.HA | 14 | 107 | 60 | W0105135240 |
| 13,8 | HPC.ST.0105.1380h7.3XD.140.HA | 14 | 107 | 60 | W0105138240 |
| 14,0 | HPC.ST.0105.1400h7.3XD.140.HA | 14 | 107 | 60 | W0105140240 |
| 14,2 | HPC.ST.0105.1420h7.3XD.140.HA | 16 | 115 | 65 | W0105142240 |
| 14,5 | HPC.ST.0105.1450h7.3XD.140.HA | 16 | 115 | 65 | W0105145240 |
| 14,8 | HPC.ST.0105.1480h7.3XD.140.HA | 16 | 115 | 65 | W0105148240 |
| 15,0 | HPC.ST.0105.1500h7.3XD.140.HA | 16 | 115 | 65 | W0105150240 |
| 15,2 | HPC.ST.0105.1520h7.3XD.140.HA | 16 | 115 | 65 | W0105152240 |
| 15,5 | HPC.ST.0105.1550h7.3XD.140.HA | 16 | 115 | 65 | W0105155240 |
| 15,8 | HPC.ST.0105.1580h7.3XD.140.HA | 16 | 115 | 65 | W0105158240 |
| 16,0 | HPC.ST.0105.1600h7.3XD.140.HA | 16 | 115 | 65 | W0105160240 |
| 16,5 | HPC.ST.0105.1650h7.3XD.140.HA | 18 | 123 | 73 | W0105165240 |
| 16,8 | HPC.ST.0105.1680h7.3XD.140.HA | 18 | 123 | 73 | W0105168240 |
| 17,0 | HPC.ST.0105.1700h7.3XD.140.HA | 18 | 123 | 73 | W0105170240 |
| 17,5 | HPC.ST.0105.1750h7.3XD.140.HA | 18 | 123 | 73 | W0105175240 |
| 18,0 | HPC.ST.0105.1800h7.3XD.140.HA | 18 | 123 | 73 | W0105180240 |
| 18,5 | HPC.ST.0105.1850h7.3XD.140.HA | 20 | 131 | 79 | W0105185240 |
| 18,8 | HPC.ST.0105.1880h7.3XD.140.HA | 20 | 131 | 79 | W0105188240 |
| 19,0 | HPC.ST.0105.1900h7.3XD.140.HA | 20 | 131 | 79 | W0105190240 |
| 19,5 | HPC.ST.0105.1950h7.3XD.140.HA | 20 | 131 | 79 | W0105195240 |
| 20,0 | HPC.ST.0105.2000h7.3XD.140.HA | 20 | 131 | 79 | W0105200240 |

# W0107, beschichtet

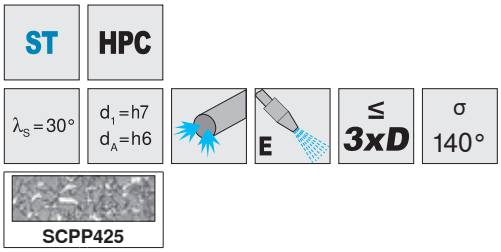
Schnittdatenempfehlung



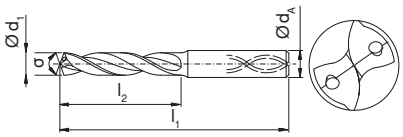
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 130 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.1.2 | | | 120 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.2.1 | Baustahl | | 130 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.2.2 | | | 120 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.2.3 | | | 75 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.3.1 | Federstahl | | 60 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.3.2 | | | 50 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.3 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.1.1 | Einsatzstahl | | 120 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 2.1.2 | | | 110 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 2.1.3 | | | 100 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.2.1 | Nitrierstahl | | 100 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.2 | | | 100 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.1 | Vergütungsstahl | | 110 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.3.2 | | | 100 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.3 | | | 100 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.3.4 | | | 100 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.5 | | | 85 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.6 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.1.1 | Werkzeugstahl unlegiert | | 80 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 95 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.2.2 | | | 80 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.2.3 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.4 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.5 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 80 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.3.2 | | | 45 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.3 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.4 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.5 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | |
| 4.1.2 | | | | | | | | |
| 4.1.3 | | | | | | | | |
| 4.1.4 | | | | | | | | |
| 4.1.5 | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | |
| 4.2.2 | | | | | | | | |
| 4.2.3 | | | | | | | | |
| 4.2.4 | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 100 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 5.1.2 | | | 95 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.3 | | | 80 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 5.2.1 | rostfreier Stahlguss | | | | | | | |
| 5.2.2 | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 115 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.2 | | | 95 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.3 | | | 85 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.4 | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 95 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.2.2 | | | 90 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.2.3 | | | 70 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 95 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.3.2 | | | 90 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.4.1 | GTS schwarzer Temperguss | | 95 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.4.2 | | | 90 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 7.1.1 | Aluminium | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |

# W0107, beschichtet

HPC-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | HPC.ST.0107.0300h7.3XD.140.IK.HA | 6 | 62 | 20 | W0107030240 |
| 3,1 | HPC.ST.0107.0310h7.3XD.140.IK.HA | 6 | 62 | 20 | W0107031240 |
| 3,2 | HPC.ST.0107.0320h7.3XD.140.IK.HA | 6 | 62 | 20 | W0107032240 |
| 3,3 | HPC.ST.0107.0330h7.3XD.140.IK.HA | 6 | 62 | 20 | W0107033240 |
| 3,4 | HPC.ST.0107.0340h7.3XD.140.IK.HA | 6 | 62 | 20 | W0107034240 |
| 3,5 | HPC.ST.0107.0350h7.3XD.140.IK.HA | 6 | 62 | 20 | W0107035240 |
| 3,6 | HPC.ST.0107.0360h7.3XD.140.IK.HA | 6 | 62 | 20 | W0107036240 |
| 3,7 | HPC.ST.0107.0370h7.3XD.140.IK.HA | 6 | 62 | 20 | W0107037240 |
| 3,8 | HPC.ST.0107.0380h7.3XD.140.IK.HA | 6 | 66 | 24 | W0107038240 |
| 3,9 | HPC.ST.0107.0390h7.3XD.140.IK.HA | 6 | 66 | 24 | W0107039240 |
| 4,0 | HPC.ST.0107.0400h7.3XD.140.IK.HA | 6 | 66 | 24 | W0107040240 |
| 4,1 | HPC.ST.0107.0410h7.3XD.140.IK.HA | 6 | 66 | 24 | W0107041240 |
| 4,2 | HPC.ST.0107.0420h7.3XD.140.IK.HA | 6 | 66 | 24 | W0107042240 |
| 4,3 | HPC.ST.0107.0430h7.3XD.140.IK.HA | 6 | 66 | 24 | W0107043240 |
| 4,4 | HPC.ST.0107.0440h7.3XD.140.IK.HA | 6 | 66 | 24 | W0107044240 |
| 4,5 | HPC.ST.0107.0450h7.3XD.140.IK.HA | 6 | 66 | 24 | W0107045240 |
| 4,6 | HPC.ST.0107.0460h7.3XD.140.IK.HA | 6 | 66 | 24 | W0107046240 |
| 4,7 | HPC.ST.0107.0470h7.3XD.140.IK.HA | 6 | 66 | 24 | W0107047240 |
| 4,8 | HPC.ST.0107.0480h7.3XD.140.IK.HA | 6 | 66 | 28 | W0107048240 |
| 4,9 | HPC.ST.0107.0490h7.3XD.140.IK.HA | 6 | 66 | 28 | W0107049240 |
| 5,0 | HPC.ST.0107.0500h7.3XD.140.IK.HA | 6 | 66 | 28 | W0107050240 |
| 5,1 | HPC.ST.0107.0510h7.3XD.140.IK.HA | 6 | 66 | 28 | W0107051240 |
| 5,2 | HPC.ST.0107.0520h7.3XD.140.IK.HA | 6 | 66 | 28 | W0107052240 |
| 5,3 | HPC.ST.0107.0530h7.3XD.140.IK.HA | 6 | 66 | 28 | W0107053240 |
| 5,4 | HPC.ST.0107.0540h7.3XD.140.IK.HA | 6 | 66 | 28 | W0107054240 |
| 5,5 | HPC.ST.0107.0550h7.3XD.140.IK.HA | 6 | 66 | 28 | W0107055240 |
| 5,6 | HPC.ST.0107.0560h7.3XD.140.IK.HA | 6 | 66 | 28 | W0107056240 |
| 5,7 | HPC.ST.0107.0570h7.3XD.140.IK.HA | 6 | 66 | 28 | W0107057240 |
| 5,8 | HPC.ST.0107.0580h7.3XD.140.IK.HA | 6 | 66 | 28 | W0107058240 |
| 5,9 | HPC.ST.0107.0590h7.3XD.140.IK.HA | 6 | 66 | 28 | W0107059240 |
| 6,0 | HPC.ST.0107.0600h7.3XD.140.IK.HA | 6 | 66 | 28 | W0107060240 |
| 6,1 | HPC.ST.0107.0610h7.3XD.140.IK.HA | 8 | 79 | 34 | W0107061240 |
| 6,2 | HPC.ST.0107.0620h7.3XD.140.IK.HA | 8 | 79 | 34 | W0107062240 |
| 6,3 | HPC.ST.0107.0630h7.3XD.140.IK.HA | 8 | 79 | 34 | W0107063240 |
| 6,4 | HPC.ST.0107.0640h7.3XD.140.IK.HA | 8 | 79 | 34 | W0107064240 |
| 6,5 | HPC.ST.0107.0650h7.3XD.140.IK.HA | 8 | 79 | 34 | W0107065240 |
| 6,6 | HPC.ST.0107.0660h7.3XD.140.IK.HA | 8 | 79 | 34 | W0107066240 |
| 6,7 | HPC.ST.0107.0670h7.3XD.140.IK.HA | 8 | 79 | 34 | W0107067240 |
| 6,8 | HPC.ST.0107.0680h7.3XD.140.IK.HA | 8 | 79 | 34 | W0107068240 |
| 6,9 | HPC.ST.0107.0690h7.3XD.140.IK.HA | 8 | 79 | 34 | W0107069240 |
| 7,0 | HPC.ST.0107.0700h7.3XD.140.IK.HA | 8 | 79 | 34 | W0107070240 |
| 7,1 | HPC.ST.0107.0710h7.3XD.140.IK.HA | 8 | 79 | 41 | W0107071240 |
| 7,2 | HPC.ST.0107.0720h7.3XD.140.IK.HA | 8 | 79 | 41 | W0107072240 |
| 7,3 | HPC.ST.0107.0730h7.3XD.140.IK.HA | 8 | 79 | 41 | W0107073240 |
| 7,4 | HPC.ST.0107.0740h7.3XD.140.IK.HA | 8 | 79 | 41 | W0107074240 |
| 7,5 | HPC.ST.0107.0750h7.3XD.140.IK.HA | 8 | 79 | 41 | W0107075240 |
| 7,6 | HPC.ST.0107.0760h7.3XD.140.IK.HA | 8 | 79 | 41 | W0107076240 |
| 7,7 | HPC.ST.0107.0770h7.3XD.140.IK.HA | 8 | 79 | 41 | W0107077240 |

# W0107, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 130 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.1.2 | | | 120 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.2.1 | Baustahl | | 130 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.2.2 | | | 120 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.2.3 | | | 75 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.3.1 | Federstahl | | 60 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.3.2 | | | 50 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.3 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.1.1 | Einsatzstahl | | 120 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 2.1.2 | | | 110 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 2.1.3 | | | 100 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.2.1 | Nitrierstahl | | 100 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.2 | | | 100 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.1 | Vergütungsstahl | | 110 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.3.2 | | | 100 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.3 | | | 100 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.3.4 | | | 100 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.5 | | | 85 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.6 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.1.1 | Werkzeugstahl unlegiert | | 80 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 95 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.2.2 | | | 80 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.2.3 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.4 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.5 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 80 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.3.2 | | | 45 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.3 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.4 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.5 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | |
| 4.1.2 | | | | | | | | |
| 4.1.3 | | | | | | | | |
| 4.1.4 | | | | | | | | |
| 4.1.5 | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | |
| 4.2.2 | | | | | | | | |
| 4.2.3 | | | | | | | | |
| 4.2.4 | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 100 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 5.1.2 | | | 95 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.3 | | | 80 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 5.2.1 | rostfreier Stahlguss | | | | | | | |
| 5.2.2 | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 115 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.2 | | | 95 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.3 | | | 85 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.4 | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 95 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.2.2 | | | 90 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.2.3 | | | 70 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 95 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.3.2 | | | 90 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.4.1 | GTS schwarzer Temperguss | | 95 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.4.2 | | | 90 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 7.1.1 | Aluminium | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |

# W0107, beschichtet

HPC-Spiralbohrer

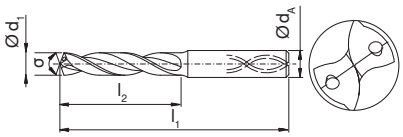


ST | HPC

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 3xD | σ 140°

SCPP425






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 7,8 | HPC.ST.0107.0780h7.3XD.140.IK.HA | 8 | 79 | 41 | W0107078240 |
| 7,9 | HPC.ST.0107.0790h7.3XD.140.IK.HA | 8 | 79 | 41 | W0107079240 |
| 8,0 | HPC.ST.0107.0800h7.3XD.140.IK.HA | 8 | 79 | 41 | W0107080240 |
| 8,1 | HPC.ST.0107.0810h7.3XD.140.IK.HA | 10 | 89 | 47 | W0107081240 |
| 8,2 | HPC.ST.0107.0820h7.3XD.140.IK.HA | 10 | 89 | 47 | W0107082240 |
| 8,3 | HPC.ST.0107.0830h7.3XD.140.IK.HA | 10 | 89 | 47 | W0107083240 |
| 8,4 | HPC.ST.0107.0840h7.3XD.140.IK.HA | 10 | 89 | 47 | W0107084240 |
| 8,5 | HPC.ST.0107.0850h7.3XD.140.IK.HA | 10 | 89 | 47 | W0107085240 |
| 8,6 | HPC.ST.0107.0860h7.3XD.140.IK.HA | 10 | 89 | 47 | W0107086240 |
| 8,7 | HPC.ST.0107.0870h7.3XD.140.IK.HA | 10 | 89 | 47 | W0107087240 |
| 8,8 | HPC.ST.0107.0880h7.3XD.140.IK.HA | 10 | 89 | 47 | W0107088240 |
| 8,9 | HPC.ST.0107.0890h7.3XD.140.IK.HA | 10 | 89 | 47 | W0107089240 |
| 9,0 | HPC.ST.0107.0900h7.3XD.140.IK.HA | 10 | 89 | 47 | W0107090240 |
| 9,1 | HPC.ST.0107.0910h7.3XD.140.IK.HA | 10 | 89 | 47 | W0107091240 |
| 9,2 | HPC.ST.0107.0920h7.3XD.140.IK.HA | 10 | 89 | 47 | W0107092240 |
| 9,3 | HPC.ST.0107.0930h7.3XD.140.IK.HA | 10 | 89 | 47 | W0107093240 |
| 9,4 | HPC.ST.0107.0940h7.3XD.140.IK.HA | 10 | 89 | 47 | W0107094240 |
| 9,5 | HPC.ST.0107.0950h7.3XD.140.IK.HA | 10 | 89 | 47 | W0107095240 |
| 9,6 | HPC.ST.0107.0960h7.3XD.140.IK.HA | 10 | 89 | 47 | W0107096240 |
| 9,7 | HPC.ST.0107.0970h7.3XD.140.IK.HA | 10 | 89 | 47 | W0107097240 |
| 9,8 | HPC.ST.0107.0980h7.3XD.140.IK.HA | 10 | 89 | 47 | W0107098240 |
| 9,9 | HPC.ST.0107.0990h7.3XD.140.IK.HA | 10 | 89 | 47 | W0107099240 |
| 10,0 | HPC.ST.0107.1000h7.3XD.140.IK.HA | 10 | 89 | 47 | W0107100240 |
| 10,2 | HPC.ST.0107.1020h7.3XD.140.IK.HA | 12 | 102 | 55 | W0107102240 |
| 10,5 | HPC.ST.0107.1050h7.3XD.140.IK.HA | 12 | 102 | 55 | W0107105240 |
| 10,8 | HPC.ST.0107.1080h7.3XD.140.IK.HA | 12 | 102 | 55 | W0107108240 |
| 11,0 | HPC.ST.0107.1100h7.3XD.140.IK.HA | 12 | 102 | 55 | W0107110240 |
| 11,2 | HPC.ST.0107.1120h7.3XD.140.IK.HA | 12 | 102 | 55 | W0107112240 |
| 11,5 | HPC.ST.0107.1150h7.3XD.140.IK.HA | 12 | 102 | 55 | W0107115240 |
| 11,8 | HPC.ST.0107.1180h7.3XD.140.IK.HA | 12 | 102 | 55 | W0107118240 |
| 12,0 | HPC.ST.0107.1200h7.3XD.140.IK.HA | 12 | 102 | 55 | W0107120240 |
| 12,2 | HPC.ST.0107.1220h7.3XD.140.IK.HA | 14 | 107 | 60 | W0107122240 |
| 12,5 | HPC.ST.0107.1250h7.3XD.140.IK.HA | 14 | 107 | 60 | W0107125240 |
| 12,8 | HPC.ST.0107.1280h7.3XD.140.IK.HA | 14 | 107 | 60 | W0107128240 |
| 13,0 | HPC.ST.0107.1300h7.3XD.140.IK.HA | 14 | 107 | 60 | W0107130240 |
| 13,5 | HPC.ST.0107.1350h7.3XD.140.IK.HA | 14 | 107 | 60 | W0107135240 |
| 13,8 | HPC.ST.0107.1380h7.3XD.140.IK.HA | 14 | 107 | 60 | W0107138240 |
| 14,0 | HPC.ST.0107.1400h7.3XD.140.IK.HA | 14 | 107 | 60 | W0107140240 |
| 14,2 | HPC.ST.0107.1420h7.3XD.140.IK.HA | 16 | 115 | 65 | W0107142240 |
| 14,5 | HPC.ST.0107.1450h7.3XD.140.IK.HA | 16 | 115 | 65 | W0107145240 |
| 14,8 | HPC.ST.0107.1480h7.3XD.140.IK.HA | 16 | 115 | 65 | W0107148240 |
| 15,0 | HPC.ST.0107.1500h7.3XD.140.IK.HA | 16 | 115 | 65 | W0107150240 |
| 15,2 | HPC.ST.0107.1520h7.3XD.140.IK.HA | 16 | 115 | 65 | W0107152240 |
| 15,5 | HPC.ST.0107.1550h7.3XD.140.IK.HA | 16 | 115 | 65 | W0107155240 |
| 15,8 | HPC.ST.0107.1580h7.3XD.140.IK.HA | 16 | 115 | 65 | W0107158240 |
| 16,0 | HPC.ST.0107.1600h7.3XD.140.IK.HA | 16 | 115 | 65 | W0107160240 |
| 16,5 | HPC.ST.0107.1650h7.3XD.140.IK.HA | 18 | 123 | 73 | W0107165240 |
| 16,8 | HPC.ST.0107.1680h7.3XD.140.IK.HA | 18 | 123 | 73 | W0107168240 |

# W0107, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 130 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.1.2 | | | 120 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.2.1 | Baustahl | | 130 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.2.2 | | | 120 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 1.2.3 | | | 75 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.3.1 | Federstahl | | 60 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.3.2 | | | 50 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.3 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.1.1 | Einsatzstahl | | 120 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 2.1.2 | | | 110 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 2.1.3 | | | 100 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.2.1 | Nitrierstahl | | 100 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.2 | | | 100 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.1 | Vergütungsstahl | | 110 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.3.2 | | | 100 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.3 | | | 100 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.3.4 | | | 100 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.5 | | | 85 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.6 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.1.1 | Werkzeugstahl unlegiert | | 80 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 95 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.2.2 | | | 80 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.2.3 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.4 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.2.5 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 80 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 3.3.2 | | | 45 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.3 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.4 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.3.5 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | |
| 4.1.2 | | | | | | | | |
| 4.1.3 | | | | | | | | |
| 4.1.4 | | | | | | | | |
| 4.1.5 | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | |
| 4.2.2 | | | | | | | | |
| 4.2.3 | | | | | | | | |
| 4.2.4 | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 100 | 0,18 | 0,24 | 0,3 | 0,35 | 0,4 |
| 5.1.2 | | | 95 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.3 | | | 80 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 5.2.1 | rostfreier Stahlguss | | | | | | | |
| 5.2.2 | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 115 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.2 | | | 95 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.3 | | | 85 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.4 | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 95 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.2.2 | | | 90 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.2.3 | | | 70 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 95 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.3.2 | | | 90 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.4.1 | GTS schwarzer Temperguss | | 95 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.4.2 | | | 90 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 7.1.1 | Aluminium | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |

# W0107, beschichtet

HPC-Spiralbohrer

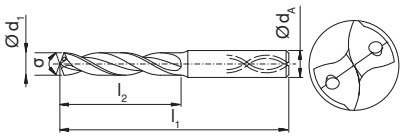


ST | HPC

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 3xD | σ 140°

SCPP425






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 17,0 | HPC.ST.0107.1700h7.3XD.140.IK.HA | 18 | 123 | 73 | W0107170240 |
| 17,5 | HPC.ST.0107.1750h7.3XD.140.IK.HA | 18 | 123 | 73 | W0107175240 |
| 18,0 | HPC.ST.0107.1800h7.3XD.140.IK.HA | 18 | 123 | 73 | W0107180240 |
| 18,5 | HPC.ST.0107.1850h7.3XD.140.IK.HA | 20 | 131 | 79 | W0107185240 |
| 18,8 | HPC.ST.0107.1880h7.3XD.140.IK.HA | 20 | 131 | 79 | W0107188240 |
| 19,0 | HPC.ST.0107.1900h7.3XD.140.IK.HA | 20 | 131 | 79 | W0107190240 |
| 19,5 | HPC.ST.0107.1950h7.3XD.140.IK.HA | 20 | 131 | 79 | W0107195240 |
| 20,0 | HPC.ST.0107.2000h7.3XD.140.IK.HA | 20 | 131 | 79 | W0107200240 |

# W0103, beschichtet

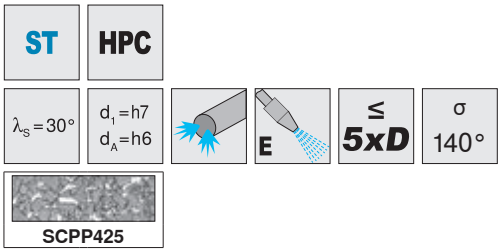
Schnittdatenempfehlung



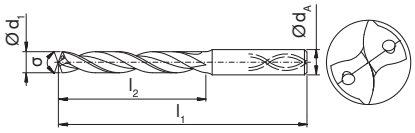
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 130 | 0,18 | 0,24 | 0,3 | 0,35 |
| 1.1.2 | | | 120 | 0,18 | 0,24 | 0,3 | 0,35 |
| 1.2.1 | Baustahl | | 130 | 0,18 | 0,24 | 0,3 | 0,35 |
| 1.2.2 | | | 120 | 0,18 | 0,24 | 0,3 | 0,35 |
| 1.2.3 | | | 75 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.3.1 | Federstahl | | 60 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.3.2 | | | 50 | 0,15 | 0,21 | 0,27 | 0,32 |
| 1.3.3 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.1.1 | Einsatzstahl | | 120 | 0,18 | 0,24 | 0,3 | 0,35 |
| 2.1.2 | | | 110 | 0,18 | 0,24 | 0,3 | 0,35 |
| 2.1.3 | | | 100 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.2.1 | Nitrierstahl | | 100 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.2.2 | | | 100 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.1 | Vergütungsstahl | | 110 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.3.2 | | | 100 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.3 | | | 100 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.3.4 | | | 100 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.5 | | | 85 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.6 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.1.1 | Werkzeugstahl unlegiert | | 80 | 0,15 | 0,21 | 0,27 | 0,32 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 95 | 0,15 | 0,21 | 0,27 | 0,32 |
| 3.2.2 | | | 80 | 0,15 | 0,21 | 0,27 | 0,32 |
| 3.2.3 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.4 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.5 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 80 | 0,15 | 0,21 | 0,27 | 0,32 |
| 3.3.2 | | | 45 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.3 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.4 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.5 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | |
| 4.1.2 | | | | | | | |
| 4.1.3 | | | | | | | |
| 4.1.4 | | | | | | | |
| 4.1.5 | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | |
| 4.2.2 | | | | | | | |
| 4.2.3 | | | | | | | |
| 4.2.4 | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 100 | 0,18 | 0,24 | 0,3 | 0,35 |
| 5.1.2 | | | 95 | 0,16 | 0,22 | 0,28 | 0,34 |
| 5.1.3 | | | 80 | 0,15 | 0,21 | 0,27 | 0,32 |
| 5.2.1 | rostfreier Stahlguss | | | | | | |
| 5.2.2 | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 115 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.2 | | | 95 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.3 | | | 85 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.4 | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 95 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.2.2 | | | 90 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.2.3 | | | 70 | 0,11 | 0,125 | 0,15 | 0,175 |
| 6.3.1 | GTW weisser Temperguss | | 95 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.3.2 | | | 90 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.4.1 | GTS schwarzer Temperguss | | 95 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.4.2 | | | 90 | 0,2 | 0,25 | 0,35 | 0,4 |
| 7.1.1 | Aluminium | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |

# W0103, beschichtet

HPC-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | HPC.ST.0103.0300h7.5XD.140.IK.HA | 6 | 66 | 28 | W0103030340 |
| 3,1 | HPC.ST.0103.0310h7.5XD.140.IK.HA | 6 | 66 | 28 | W0103031340 |
| 3,2 | HPC.ST.0103.0320h7.5XD.140.IK.HA | 6 | 66 | 28 | W0103032340 |
| 3,3 | HPC.ST.0103.0330h7.5XD.140.IK.HA | 6 | 66 | 28 | W0103033340 |
| 3,4 | HPC.ST.0103.0340h7.5XD.140.IK.HA | 6 | 66 | 28 | W0103034340 |
| 3,5 | HPC.ST.0103.0350h7.5XD.140.IK.HA | 6 | 66 | 28 | W0103035340 |
| 3,6 | HPC.ST.0103.0360h7.5XD.140.IK.HA | 6 | 66 | 28 | W0103036340 |
| 3,7 | HPC.ST.0103.0370h7.5XD.140.IK.HA | 6 | 66 | 28 | W0103037340 |
| 3,8 | HPC.ST.0103.0380h7.5XD.140.IK.HA | 6 | 74 | 36 | W0103038340 |
| 3,9 | HPC.ST.0103.0390h7.5XD.140.IK.HA | 6 | 74 | 36 | W0103039340 |
| 4,0 | HPC.ST.0103.0400h7.5XD.140.IK.HA | 6 | 74 | 36 | W0103040340 |
| 4,1 | HPC.ST.0103.0410h7.5XD.140.IK.HA | 6 | 74 | 36 | W0103041340 |
| 4,2 | HPC.ST.0103.0420h7.5XD.140.IK.HA | 6 | 74 | 36 | W0103042340 |
| 4,3 | HPC.ST.0103.0430h7.5XD.140.IK.HA | 6 | 74 | 36 | W0103043340 |
| 4,4 | HPC.ST.0103.0440h7.5XD.140.IK.HA | 6 | 74 | 36 | W0103044340 |
| 4,5 | HPC.ST.0103.0450h7.5XD.140.IK.HA | 6 | 74 | 36 | W0103045340 |
| 4,6 | HPC.ST.0103.0460h7.5XD.140.IK.HA | 6 | 74 | 36 | W0103046340 |
| 4,7 | HPC.ST.0103.0470h7.5XD.140.IK.HA | 6 | 74 | 36 | W0103047340 |
| 4,8 | HPC.ST.0103.0480h7.5XD.140.IK.HA | 6 | 82 | 44 | W0103048340 |
| 4,9 | HPC.ST.0103.0490h7.5XD.140.IK.HA | 6 | 82 | 44 | W0103049340 |
| 5,0 | HPC.ST.0103.0500h7.5XD.140.IK.HA | 6 | 82 | 44 | W0103050340 |
| 5,1 | HPC.ST.0103.0510h7.5XD.140.IK.HA | 6 | 82 | 44 | W0103051340 |
| 5,2 | HPC.ST.0103.0520h7.5XD.140.IK.HA | 6 | 82 | 44 | W0103052340 |
| 5,3 | HPC.ST.0103.0530h7.5XD.140.IK.HA | 6 | 82 | 44 | W0103053340 |
| 5,4 | HPC.ST.0103.0540h7.5XD.140.IK.HA | 6 | 82 | 44 | W0103054340 |
| 5,5 | HPC.ST.0103.0550h7.5XD.140.IK.HA | 6 | 82 | 44 | W0103055340 |
| 5,6 | HPC.ST.0103.0560h7.5XD.140.IK.HA | 6 | 82 | 44 | W0103056340 |
| 5,7 | HPC.ST.0103.0570h7.5XD.140.IK.HA | 6 | 82 | 44 | W0103057340 |
| 5,8 | HPC.ST.0103.0580h7.5XD.140.IK.HA | 6 | 82 | 44 | W0103058340 |
| 5,9 | HPC.ST.0103.0590h7.5XD.140.IK.HA | 6 | 82 | 44 | W0103059340 |
| 6,0 | HPC.ST.0103.0600h7.5XD.140.IK.HA | 6 | 82 | 44 | W0103060340 |
| 6,1 | HPC.ST.0103.0610h7.5XD.140.IK.HA | 8 | 91 | 53 | W0103061340 |
| 6,2 | HPC.ST.0103.0620h7.5XD.140.IK.HA | 8 | 91 | 53 | W0103062340 |
| 6,3 | HPC.ST.0103.0630h7.5XD.140.IK.HA | 8 | 91 | 53 | W0103063340 |
| 6,4 | HPC.ST.0103.0640h7.5XD.140.IK.HA | 8 | 91 | 53 | W0103064340 |
| 6,5 | HPC.ST.0103.0650h7.5XD.140.IK.HA | 8 | 91 | 53 | W0103065340 |
| 6,6 | HPC.ST.0103.0660h7.5XD.140.IK.HA | 8 | 91 | 53 | W0103066340 |
| 6,7 | HPC.ST.0103.0670h7.5XD.140.IK.HA | 8 | 91 | 53 | W0103067340 |
| 6,8 | HPC.ST.0103.0680h7.5XD.140.IK.HA | 8 | 91 | 53 | W0103068340 |
| 6,9 | HPC.ST.0103.0690h7.5XD.140.IK.HA | 8 | 91 | 53 | W0103069340 |
| 7,0 | HPC.ST.0103.0700h7.5XD.140.IK.HA | 8 | 91 | 53 | W0103070340 |
| 7,1 | HPC.ST.0103.0710h7.5XD.140.IK.HA | 8 | 91 | 53 | W0103071340 |
| 7,2 | HPC.ST.0103.0720h7.5XD.140.IK.HA | 8 | 91 | 53 | W0103072340 |
| 7,3 | HPC.ST.0103.0730h7.5XD.140.IK.HA | 8 | 91 | 53 | W0103073340 |
| 7,4 | HPC.ST.0103.0740h7.5XD.140.IK.HA | 8 | 91 | 53 | W0103074340 |
| 7,5 | HPC.ST.0103.0750h7.5XD.140.IK.HA | 8 | 91 | 53 | W0103075340 |
| 7,6 | HPC.ST.0103.0760h7.5XD.140.IK.HA | 8 | 91 | 53 | W0103076340 |
| 7,7 | HPC.ST.0103.0770h7.5XD.140.IK.HA | 8 | 91 | 53 | W0103077340 |

# W0103, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 130 | 0,18 | 0,24 | 0,3 | 0,35 |
| 1.1.2 | | | 120 | 0,18 | 0,24 | 0,3 | 0,35 |
| 1.2.1 | Baustahl | | 130 | 0,18 | 0,24 | 0,3 | 0,35 |
| 1.2.2 | | | 120 | 0,18 | 0,24 | 0,3 | 0,35 |
| 1.2.3 | | | 75 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.3.1 | Federstahl | | 60 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.3.2 | | | 50 | 0,15 | 0,21 | 0,27 | 0,32 |
| 1.3.3 | | | 30 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.1.1 | Einsatzstahl | | 120 | 0,18 | 0,24 | 0,3 | 0,35 |
| 2.1.2 | | | 110 | 0,18 | 0,24 | 0,3 | 0,35 |
| 2.1.3 | | | 100 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.2.1 | Nitrierstahl | | 100 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.2.2 | | | 100 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.1 | Vergütungsstahl | | 110 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.3.2 | | | 100 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.3 | | | 100 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.3.4 | | | 100 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.5 | | | 85 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.6 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.1.1 | Werkzeugstahl unlegiert | | 80 | 0,15 | 0,21 | 0,27 | 0,32 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 95 | 0,15 | 0,21 | 0,27 | 0,32 |
| 3.2.2 | | | 80 | 0,15 | 0,21 | 0,27 | 0,32 |
| 3.2.3 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.4 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.5 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 80 | 0,15 | 0,21 | 0,27 | 0,32 |
| 3.3.2 | | | 45 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.3 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.4 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.5 | | | 50 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | |
| 4.1.2 | | | | | | | |
| 4.1.3 | | | | | | | |
| 4.1.4 | | | | | | | |
| 4.1.5 | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | |
| 4.2.2 | | | | | | | |
| 4.2.3 | | | | | | | |
| 4.2.4 | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 100 | 0,18 | 0,24 | 0,3 | 0,35 |
| 5.1.2 | | | 95 | 0,16 | 0,22 | 0,28 | 0,34 |
| 5.1.3 | | | 80 | 0,15 | 0,21 | 0,27 | 0,32 |
| 5.2.1 | rostfreier Stahlguss | | | | | | |
| 5.2.2 | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 115 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.2 | | | 95 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.3 | | | 85 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.4 | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 95 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.2.2 | | | 90 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.2.3 | | | 70 | 0,11 | 0,125 | 0,15 | 0,175 |
| 6.3.1 | GTW weisser Temperguss | | 95 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.3.2 | | | 90 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.4.1 | GTS schwarzer Temperguss | | 95 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.4.2 | | | 90 | 0,2 | 0,25 | 0,35 | 0,4 |
| 7.1.1 | Aluminium | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |

# W0103, beschichtet

HPC-Spiralbohrer

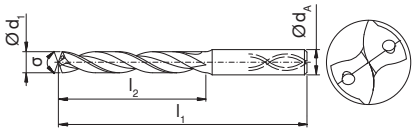


ST | HPC

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 5xD | σ 140°

SCPP425






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 7,8 | HPC.ST.0103.0780h7.5XD.140.IK.HA | 8 | 91 | 53 | W0103078340 |
| 7,9 | HPC.ST.0103.0790h7.5XD.140.IK.HA | 8 | 91 | 53 | W0103079340 |
| 8,0 | HPC.ST.0103.0800h7.5XD.140.IK.HA | 8 | 91 | 53 | W0103080340 |
| 8,1 | HPC.ST.0103.0810h7.5XD.140.IK.HA | 10 | 103 | 61 | W0103081340 |
| 8,2 | HPC.ST.0103.0820h7.5XD.140.IK.HA | 10 | 103 | 61 | W0103082340 |
| 8,3 | HPC.ST.0103.0830h7.5XD.140.IK.HA | 10 | 103 | 61 | W0103083340 |
| 8,4 | HPC.ST.0103.0840h7.5XD.140.IK.HA | 10 | 103 | 61 | W0103084340 |
| 8,5 | HPC.ST.0103.0850h7.5XD.140.IK.HA | 10 | 103 | 61 | W0103085340 |
| 8,6 | HPC.ST.0103.0860h7.5XD.140.IK.HA | 10 | 103 | 61 | W0103086340 |
| 8,7 | HPC.ST.0103.0870h7.5XD.140.IK.HA | 10 | 103 | 61 | W0103087340 |
| 8,8 | HPC.ST.0103.0880h7.5XD.140.IK.HA | 10 | 103 | 61 | W0103088340 |
| 8,9 | HPC.ST.0103.0890h7.5XD.140.IK.HA | 10 | 103 | 61 | W0103089340 |
| 9,0 | HPC.ST.0103.0900h7.5XD.140.IK.HA | 10 | 103 | 61 | W0103090340 |
| 9,1 | HPC.ST.0103.0910h7.5XD.140.IK.HA | 10 | 103 | 61 | W0103091340 |
| 9,2 | HPC.ST.0103.0920h7.5XD.140.IK.HA | 10 | 103 | 61 | W0103092340 |
| 9,3 | HPC.ST.0103.0930h7.5XD.140.IK.HA | 10 | 103 | 61 | W0103093340 |
| 9,4 | HPC.ST.0103.0940h7.5XD.140.IK.HA | 10 | 103 | 61 | W0103094340 |
| 9,5 | HPC.ST.0103.0950h7.5XD.140.IK.HA | 10 | 103 | 61 | W0103095340 |
| 9,6 | HPC.ST.0103.0960h7.5XD.140.IK.HA | 10 | 103 | 61 | W0103096340 |
| 9,7 | HPC.ST.0103.0970h7.5XD.140.IK.HA | 10 | 103 | 61 | W0103097340 |
| 9,8 | HPC.ST.0103.0980h7.5XD.140.IK.HA | 10 | 103 | 61 | W0103098340 |
| 9,9 | HPC.ST.0103.0990h7.5XD.140.IK.HA | 10 | 103 | 61 | W0103099340 |
| 10,0 | HPC.ST.0103.1000h7.5XD.140.IK.HA | 10 | 103 | 61 | W0103100340 |
| 10,2 | HPC.ST.0103.1020h7.5XD.140.IK.HA | 12 | 118 | 71 | W0103102340 |
| 10,5 | HPC.ST.0103.1050h7.5XD.140.IK.HA | 12 | 118 | 71 | W0103105340 |
| 10,8 | HPC.ST.0103.1080h7.5XD.140.IK.HA | 12 | 118 | 71 | W0103108340 |
| 11,0 | HPC.ST.0103.1100h7.5XD.140.IK.HA | 12 | 118 | 71 | W0103110340 |
| 11,2 | HPC.ST.0103.1120h7.5XD.140.IK.HA | 12 | 118 | 71 | W0103112340 |
| 11,5 | HPC.ST.0103.1150h7.5XD.140.IK.HA | 12 | 118 | 71 | W0103115340 |
| 11,8 | HPC.ST.0103.1180h7.5XD.140.IK.HA | 12 | 118 | 71 | W0103118340 |
| 12,0 | HPC.ST.0103.1200h7.5XD.140.IK.HA | 12 | 118 | 71 | W0103120340 |
| 12,2 | HPC.ST.0103.1220h7.5XD.140.IK.HA | 14 | 124 | 77 | W0103122340 |
| 12,5 | HPC.ST.0103.1250h7.5XD.140.IK.HA | 14 | 124 | 77 | W0103125340 |
| 12,8 | HPC.ST.0103.1280h7.5XD.140.IK.HA | 14 | 124 | 77 | W0103128340 |
| 13,0 | HPC.ST.0103.1300h7.5XD.140.IK.HA | 14 | 124 | 77 | W0103130340 |
| 13,2 | HPC.ST.0103.1320h7.5XD.140.IK.HA | 14 | 124 | 77 | W0103132340 |
| 13,5 | HPC.ST.0103.1350h7.5XD.140.IK.HA | 14 | 124 | 77 | W0103135340 |
| 13,8 | HPC.ST.0103.1380h7.5XD.140.IK.HA | 14 | 124 | 77 | W0103138340 |
| 14,0 | HPC.ST.0103.1400h7.5XD.140.IK.HA | 14 | 124 | 77 | W0103140340 |
| 14,2 | HPC.ST.0103.1420h7.5XD.140.IK.HA | 16 | 133 | 83 | W0103142340 |
| 14,5 | HPC.ST.0103.1450h7.5XD.140.IK.HA | 16 | 133 | 83 | W0103145340 |
| 14,8 | HPC.ST.0103.1480h7.5XD.140.IK.HA | 16 | 133 | 83 | W0103148340 |
| 15,0 | HPC.ST.0103.1500h7.5XD.140.IK.HA | 16 | 133 | 83 | W0103150340 |
| 15,2 | HPC.ST.0103.1520h7.5XD.140.IK.HA | 16 | 133 | 83 | W0103152340 |
| 15,5 | HPC.ST.0103.1550h7.5XD.140.IK.HA | 16 | 133 | 83 | W0103155340 |
| 15,8 | HPC.ST.0103.1580h7.5XD.140.IK.HA | 16 | 133 | 83 | W0103158340 |
| 16,0 | HPC.ST.0103.1600h7.5XD.140.IK.HA | 16 | 133 | 83 | W0103160340 |

# W0104, beschichtet

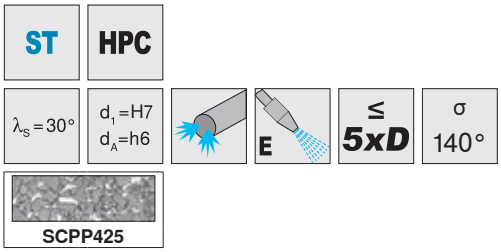
Schnittdatenempfehlung



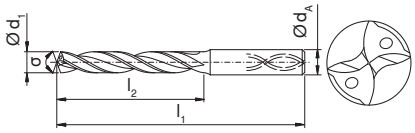
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 12,0 |
|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 130 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 |
| 1.1.2 | | | 120 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 |
| 1.2.1 | Baustahl | | 130 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 |
| 1.2.2 | | | 120 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 |
| 1.2.3 | | | 75 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.3.1 | Federstahl | | 60 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.3.2 | | | 50 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 |
| 1.3.3 | | | 30 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.1.1 | Einsatzstahl | | 120 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 |
| 2.1.2 | | | 110 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 |
| 2.1.3 | | | 100 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.2.1 | Nitrierstahl | | 100 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.2.2 | | | 100 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.1 | Vergütungsstahl | | 110 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.3.2 | | | 100 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.3 | | | 100 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.3.4 | | | 100 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.5 | | | 85 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.6 | | | 60 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.1.1 | Werkzeugstahl unlegiert | | 80 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 95 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 |
| 3.2.2 | | | 80 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 |
| 3.2.3 | | | 55 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.4 | | | 60 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.5 | | | 55 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 80 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 |
| 3.3.2 | | | 45 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.3 | | | 70 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.4 | | | 60 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.5 | | | 50 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | |
| 4.1.2 | | | | | | | | |
| 4.1.3 | | | | | | | | |
| 4.1.4 | | | | | | | | |
| 4.1.5 | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | |
| 4.2.2 | | | | | | | | |
| 4.2.3 | | | | | | | | |
| 4.2.4 | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 100 | 0,1 | 0,18 | 0,24 | 0,3 | 0,35 |
| 5.1.2 | | | 95 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 |
| 5.1.3 | | | 80 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 |
| 5.2.1 | rostfreier Stahlguss | | | | | | | |
| 5.2.2 | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 115 | 0,15 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.2 | | | 95 | 0,15 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.3 | | | 85 | 0,15 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.4 | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 95 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.2.2 | | | 90 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.2.3 | | | 70 | 0,075 | 0,11 | 0,125 | 0,15 | 0,175 |
| 6.3.1 | GTW weisser Temperguss | | 95 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.3.2 | | | 90 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.4.1 | GTS schwarzer Temperguss | | 95 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.4.2 | | | 90 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 |
| 7.1.1 | Aluminium | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |

# W0104, beschichtet

HPC-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 2,99 | HPC.ST.0104.0299H7.5XD.140.IK.HA | 4 | 57 | 21 | W0104029990 |
| 3,0 | HPC.ST.0104.0300H7.5XD.140.IK.HA | 6 | 66 | 28 | W0104030340 |
| 3,01 | HPC.ST.0104.0301H7.5XD.140.IK.HA | 6 | 66 | 28 | W0104030190 |
| 3,5 | HPC.ST.0104.0350H7.5XD.140.IK.HA | 6 | 66 | 28 | W0104035340 |
| 3,99 | HPC.ST.0104.0399H7.5XD.140.IK.HA | 6 | 74 | 36 | W0104039990 |
| 4,0 | HPC.ST.0104.0400H7.5XD.140.IK.HA | 6 | 74 | 36 | W0104040340 |
| 4,01 | HPC.ST.0104.0401H7.5XD.140.IK.HA | 6 | 74 | 36 | W0104040190 |
| 4,5 | HPC.ST.0104.0450H7.5XD.140.IK.HA | 6 | 74 | 36 | W0104045340 |
| 4,99 | HPC.ST.0104.0499H7.5XD.140.IK.HA | 6 | 82 | 44 | W0104049990 |
| 5,0 | HPC.ST.0104.0500H7.5XD.140.IK.HA | 6 | 82 | 44 | W0104050340 |
| 5,01 | HPC.ST.0104.0501H7.5XD.140.IK.HA | 6 | 82 | 44 | W0104050190 |
| 5,5 | HPC.ST.0104.0550H7.5XD.140.IK.HA | 6 | 82 | 44 | W0104055340 |
| 5,99 | HPC.ST.0104.0599H7.5XD.140.IK.HA | 6 | 82 | 44 | W0104059990 |
| 6,0 | HPC.ST.0104.0600H7.5XD.140.IK.HA | 6 | 82 | 44 | W0104060340 |
| 6,01 | HPC.ST.0104.0601H7.5XD.140.IK.HA | 6 | 82 | 44 | W0104060190 |
| 6,5 | HPC.ST.0104.0650H7.5XD.140.IK.HA | 8 | 91 | 53 | W0104065340 |
| 6,99 | HPC.ST.0104.0699H7.5XD.140.IK.HA | 8 | 91 | 53 | W0104069990 |
| 7,0 | HPC.ST.0104.0700H7.5XD.140.IK.HA | 8 | 91 | 53 | W0104070340 |
| 7,01 | HPC.ST.0104.0701H7.5XD.140.IK.HA | 8 | 91 | 53 | W0104070190 |
| 7,5 | HPC.ST.0104.0750H7.5XD.140.IK.HA | 8 | 91 | 53 | W0104075340 |
| 7,99 | HPC.ST.0104.0799H7.5XD.140.IK.HA | 8 | 91 | 53 | W0104079990 |
| 8,0 | HPC.ST.0104.0800H7.5XD.140.IK.HA | 8 | 91 | 53 | W0104080340 |
| 8,01 | HPC.ST.0104.0801H7.5XD.140.IK.HA | 8 | 91 | 53 | W0104080190 |
| 8,5 | HPC.ST.0104.0850H7.5XD.140.IK.HA | 10 | 103 | 61 | W0104085340 |
| 8,99 | HPC.ST.0104.0899H7.5XD.140.IK.HA | 10 | 103 | 61 | W0104089990 |
| 9,0 | HPC.ST.0104.0900H7.5XD.140.IK.HA | 10 | 103 | 61 | W0104090340 |
| 9,01 | HPC.ST.0104.0901H7.5XD.140.IK.HA | 10 | 103 | 61 | W0104090190 |
| 9,5 | HPC.ST.0104.0950H7.5XD.140.IK.HA | 10 | 103 | 61 | W0104095340 |
| 9,99 | HPC.ST.0104.0999H7.5XD.140.IK.HA | 10 | 103 | 61 | W0104099990 |
| 10,0 | HPC.ST.0104.1000H7.5XD.140.IK.HA | 10 | 103 | 61 | W0104100340 |
| 10,01 | HPC.ST.0104.1001H7.5XD.140.IK.HA | 10 | 103 | 61 | W0104100190 |
| 10,5 | HPC.ST.0104.1050H7.5XD.140.IK.HA | 12 | 118 | 71 | W0104105340 |
| 10,99 | HPC.ST.0104.1099H7.5XD.140.IK.HA | 12 | 118 | 71 | W0104109990 |
| 11,0 | HPC.ST.0104.1100H7.5XD.140.IK.HA | 12 | 118 | 71 | W0104110340 |
| 11,01 | HPC.ST.0104.1101H7.5XD.140.IK.HA | 12 | 118 | 71 | W0104110190 |
| 11,5 | HPC.ST.0104.1150H7.5XD.140.IK.HA | 12 | 118 | 71 | W0104115340 |
| 11,99 | HPC.ST.0104.1199H7.5XD.140.IK.HA | 12 | 118 | 71 | W0104119990 |
| 12,0 | HPC.ST.0104.1200H7.5XD.140.IK.HA | 12 | 118 | 71 | W0104120340 |
| 12,01 | HPC.ST.0104.1201H7.5XD.140.IK.HA | 12 | 118 | 71 | W0104120190 |

# W1103, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 170 | 0,18 | 0,24 | 0,3 | 0,35 |
| 1.1.2 | | | 150 | 0,18 | 0,24 | 0,3 | 0,35 |
| 1.2.1 | Baustahl | | 170 | 0,18 | 0,24 | 0,3 | 0,35 |
| 1.2.2 | | | 150 | 0,18 | 0,24 | 0,3 | 0,35 |
| 1.2.3 | | | 130 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.3.1 | Federstahl | | 105 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.3.2 | | | 90 | 0,15 | 0,21 | 0,27 | 0,32 |
| 1.3.3 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.1.1 | Einsatzstahl | | 160 | 0,18 | 0,24 | 0,3 | 0,35 |
| 2.1.2 | | | 145 | 0,18 | 0,24 | 0,3 | 0,35 |
| 2.1.3 | | | 130 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.2.1 | Nitrierstahl | | 130 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.2.2 | | | 130 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.1 | Vergütungsstahl | | 145 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.3.2 | | | 130 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.3 | | | 130 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.3.4 | | | 130 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.5 | | | 105 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.6 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.1.1 | Werkzeugstahl unlegiert | | 105 | 0,15 | 0,21 | 0,27 | 0,32 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 130 | 0,15 | 0,21 | 0,27 | 0,32 |
| 3.2.2 | | | 105 | 0,15 | 0,21 | 0,27 | 0,32 |
| 3.2.3 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.4 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.5 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 105 | 0,15 | 0,21 | 0,27 | 0,32 |
| 3.3.2 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.3 | | | 90 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.4 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.5 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | |
| 4.1.2 | | | | | | | |
| 4.1.3 | | | | | | | |
| 4.1.4 | | | | | | | |
| 4.1.5 | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | |
| 4.2.2 | | | | | | | |
| 4.2.3 | | | | | | | |
| 4.2.4 | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 135 | 0,18 | 0,24 | 0,3 | 0,35 |
| 5.1.2 | | | 130 | 0,16 | 0,22 | 0,28 | 0,34 |
| 5.1.3 | | | 105 | 0,15 | 0,21 | 0,27 | 0,32 |
| 5.2.1 | rostfreier Stahlguss | | | | | | |
| 5.2.2 | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 150 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.2 | | | 135 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.3 | | | 105 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.4 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 6.2.1 | GGG mit Kugelgraphit | | 120 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.2.2 | | | 105 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.2.3 | | | 80 | 0,08 | 0,12 | 0,15 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 120 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.3.2 | | | 110 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.4.1 | GTS schwarzer Temperguss | | 120 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.4.2 | | | 110 | 0,2 | 0,25 | 0,35 | 0,4 |
| 7.1.1 | Aluminium | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |

# W1103, beschichtet

HPC-Spiralbohrer

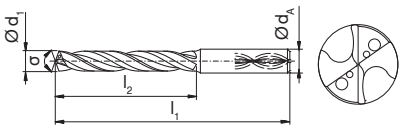


ST | HPC

$\lambda_S = 30°$ | $d_1$ = m6, $d_A$ = h6 | E | ≤ 5xD | σ 140°

SCPP415






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | HPC.ST.1103.0300m6.5XD.140.IK.HA | 6 | 66 | 28 | W1103030340 |
| 3,1 | HPC.ST.1103.0310m6.5XD.140.IK.HA | 6 | 66 | 28 | W1103031340 |
| 3,2 | HPC.ST.1103.0320m6.5XD.140.IK.HA | 6 | 66 | 28 | W1103032340 |
| 3,3 | HPC.ST.1103.0330m6.5XD.140.IK.HA | 6 | 66 | 28 | W1103033340 |
| 3,4 | HPC.ST.1103.0340m6.5XD.140.IK.HA | 6 | 66 | 28 | W1103034340 |
| 3,5 | HPC.ST.1103.0350m6.5XD.140.IK.HA | 6 | 66 | 28 | W1103035340 |
| 3,6 | HPC.ST.1103.0360m6.5XD.140.IK.HA | 6 | 66 | 28 | W1103036340 |
| 3,7 | HPC.ST.1103.0370m6.5XD.140.IK.HA | 6 | 66 | 28 | W1103037340 |
| 3,8 | HPC.ST.1103.0380m6.5XD.140.IK.HA | 6 | 74 | 36 | W1103038340 |
| 3,9 | HPC.ST.1103.0390m6.5XD.140.IK.HA | 6 | 74 | 36 | W1103039340 |
| 4,0 | HPC.ST.1103.0400m6.5XD.140.IK.HA | 6 | 74 | 36 | W1103040340 |
| 4,1 | HPC.ST.1103.0410m6.5XD.140.IK.HA | 6 | 74 | 36 | W1103041340 |
| 4,2 | HPC.ST.1103.0420m6.5XD.140.IK.HA | 6 | 74 | 36 | W1103042340 |
| 4,3 | HPC.ST.1103.0430m6.5XD.140.IK.HA | 6 | 74 | 36 | W1103043340 |
| 4,4 | HPC.ST.1103.0440m6.5XD.140.IK.HA | 6 | 74 | 36 | W1103044340 |
| 4,5 | HPC.ST.1103.0450m6.5XD.140.IK.HA | 6 | 74 | 36 | W1103045340 |
| 4,6 | HPC.ST.1103.0460m6.5XD.140.IK.HA | 6 | 74 | 36 | W1103046340 |
| 4,7 | HPC.ST.1103.0470m6.5XD.140.IK.HA | 6 | 74 | 36 | W1103047340 |
| 4,8 | HPC.ST.1103.0480m6.5XD.140.IK.HA | 6 | 82 | 44 | W1103048340 |
| 4,9 | HPC.ST.1103.0490m6.5XD.140.IK.HA | 6 | 82 | 44 | W1103049340 |
| 5,0 | HPC.ST.1103.0500m6.5XD.140.IK.HA | 6 | 82 | 44 | W1103050340 |
| 5,1 | HPC.ST.1103.0510m6.5XD.140.IK.HA | 6 | 82 | 44 | W1103051340 |
| 5,2 | HPC.ST.1103.0520m6.5XD.140.IK.HA | 6 | 82 | 44 | W1103052340 |
| 5,3 | HPC.ST.1103.0530m6.5XD.140.IK.HA | 6 | 82 | 44 | W1103053340 |
| 5,4 | HPC.ST.1103.0540m6.5XD.140.IK.HA | 6 | 82 | 44 | W1103054340 |
| 5,5 | HPC.ST.1103.0550m6.5XD.140.IK.HA | 6 | 82 | 44 | W1103055340 |
| 5,6 | HPC.ST.1103.0560m6.5XD.140.IK.HA | 6 | 82 | 44 | W1103056340 |
| 5,7 | HPC.ST.1103.0570m6.5XD.140.IK.HA | 6 | 82 | 44 | W1103057340 |
| 5,8 | HPC.ST.1103.0580m6.5XD.140.IK.HA | 6 | 82 | 44 | W1103058340 |
| 5,9 | HPC.ST.1103.0590m6.5XD.140.IK.HA | 6 | 82 | 44 | W1103059340 |
| 6,0 | HPC.ST.1103.0600m6.5XD.140.IK.HA | 6 | 82 | 44 | W1103060340 |
| 6,1 | HPC.ST.1103.0610m6.5XD.140.IK.HA | 8 | 91 | 53 | W1103061340 |
| 6,2 | HPC.ST.1103.0620m6.5XD.140.IK.HA | 8 | 91 | 53 | W1103062340 |
| 6,3 | HPC.ST.1103.0630m6.5XD.140.IK.HA | 8 | 91 | 53 | W1103063340 |
| 6,4 | HPC.ST.1103.0640m6.5XD.140.IK.HA | 8 | 91 | 53 | W1103064340 |
| 6,5 | HPC.ST.1103.0650m6.5XD.140.IK.HA | 8 | 91 | 53 | W1103065340 |
| 6,6 | HPC.ST.1103.0660m6.5XD.140.IK.HA | 8 | 91 | 53 | W1103066340 |
| 6,7 | HPC.ST.1103.0670m6.5XD.140.IK.HA | 8 | 91 | 53 | W1103067340 |
| 6,8 | HPC.ST.1103.0680m6.5XD.140.IK.HA | 8 | 91 | 53 | W1103068340 |
| 6,9 | HPC.ST.1103.0690m6.5XD.140.IK.HA | 8 | 91 | 53 | W1103069340 |
| 7,0 | HPC.ST.1103.0700m6.5XD.140.IK.HA | 8 | 91 | 53 | W1103070340 |
| 7,1 | HPC.ST.1103.0710m6.5XD.140.IK.HA | 8 | 91 | 53 | W1103071340 |
| 7,2 | HPC.ST.1103.0720m6.5XD.140.IK.HA | 8 | 91 | 53 | W1103072340 |
| 7,3 | HPC.ST.1103.0730m6.5XD.140.IK.HA | 8 | 91 | 53 | W1103073340 |
| 7,4 | HPC.ST.1103.0740m6.5XD.140.IK.HA | 8 | 91 | 53 | W1103074340 |
| 7,5 | HPC.ST.1103.0750m6.5XD.140.IK.HA | 8 | 91 | 53 | W1103075340 |
| 7,6 | HPC.ST.1103.0760m6.5XD.140.IK.HA | 8 | 91 | 53 | W1103076340 |
| 7,7 | HPC.ST.1103.0770m6.5XD.140.IK.HA | 8 | 91 | 53 | W1103077340 |

# W1103, beschichtet

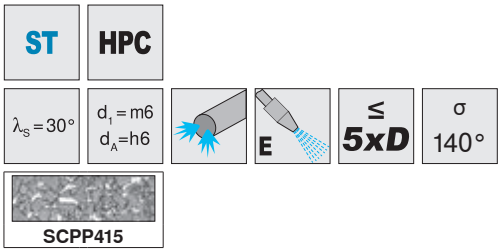
Schnittdatenempfehlung



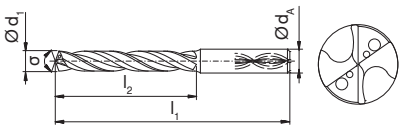
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 170 | 0,18 | 0,24 | 0,3 | 0,35 |
| 1.1.2 | | | 150 | 0,18 | 0,24 | 0,3 | 0,35 |
| 1.2.1 | Baustahl | | 170 | 0,18 | 0,24 | 0,3 | 0,35 |
| 1.2.2 | | | 150 | 0,18 | 0,24 | 0,3 | 0,35 |
| 1.2.3 | | | 130 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.3.1 | Federstahl | | 105 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.3.2 | | | 90 | 0,15 | 0,21 | 0,27 | 0,32 |
| 1.3.3 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.1.1 | Einsatzstahl | | 160 | 0,18 | 0,24 | 0,3 | 0,35 |
| 2.1.2 | | | 145 | 0,18 | 0,24 | 0,3 | 0,35 |
| 2.1.3 | | | 130 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.2.1 | Nitrierstahl | | 130 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.2.2 | | | 130 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.1 | Vergütungsstahl | | 145 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.3.2 | | | 130 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.3 | | | 130 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.3.4 | | | 130 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.5 | | | 105 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.6 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.1.1 | Werkzeugstahl unlegiert | | 105 | 0,15 | 0,21 | 0,27 | 0,32 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 130 | 0,15 | 0,21 | 0,27 | 0,32 |
| 3.2.2 | | | 105 | 0,15 | 0,21 | 0,27 | 0,32 |
| 3.2.3 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.4 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.5 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 105 | 0,15 | 0,21 | 0,27 | 0,32 |
| 3.3.2 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.3 | | | 90 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.4 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.3.5 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | |
| 4.1.2 | | | | | | | |
| 4.1.3 | | | | | | | |
| 4.1.4 | | | | | | | |
| 4.1.5 | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | |
| 4.2.2 | | | | | | | |
| 4.2.3 | | | | | | | |
| 4.2.4 | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 135 | 0,18 | 0,24 | 0,3 | 0,35 |
| 5.1.2 | | | 130 | 0,16 | 0,22 | 0,28 | 0,34 |
| 5.1.3 | | | 105 | 0,15 | 0,21 | 0,27 | 0,32 |
| 5.2.1 | rostfreier Stahlguss | | | | | | |
| 5.2.2 | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 150 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.2 | | | 135 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.3 | | | 105 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.4 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 6.2.1 | GGG mit Kugelgraphit | | 120 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.2.2 | | | 105 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.2.3 | | | 80 | 0,08 | 0,12 | 0,15 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 120 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.3.2 | | | 110 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.4.1 | GTS schwarzer Temperguss | | 120 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.4.2 | | | 110 | 0,2 | 0,25 | 0,35 | 0,4 |
| 7.1.1 | Aluminium | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |

# W1103, beschichtet

HPC-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 7,8 | HPC.ST.1103.0780m6.5XD.140.IK.HA | 8 | 91 | 53 | W1103078340 |
| 7,9 | HPC.ST.1103.0790m6.5XD.140.IK.HA | 8 | 91 | 53 | W1103079340 |
| 8,0 | HPC.ST.1103.0800m6.5XD.140.IK.HA | 8 | 91 | 53 | W1103080340 |
| 8,1 | HPC.ST.1103.0810m6.5XD.140.IK.HA | 10 | 103 | 61 | W1103081340 |
| 8,2 | HPC.ST.1103.0820m6.5XD.140.IK.HA | 10 | 103 | 61 | W1103082340 |
| 8,3 | HPC.ST.1103.0830m6.5XD.140.IK.HA | 10 | 103 | 61 | W1103083340 |
| 8,4 | HPC.ST.1103.0840m6.5XD.140.IK.HA | 10 | 103 | 61 | W1103084340 |
| 8,5 | HPC.ST.1103.0850m6.5XD.140.IK.HA | 10 | 103 | 61 | W1103085340 |
| 8,6 | HPC.ST.1103.0860m6.5XD.140.IK.HA | 10 | 103 | 61 | W1103086340 |
| 8,7 | HPC.ST.1103.0870m6.5XD.140.IK.HA | 10 | 103 | 61 | W1103087340 |
| 8,8 | HPC.ST.1103.0880m6.5XD.140.IK.HA | 10 | 103 | 61 | W1103088340 |
| 8,9 | HPC.ST.1103.0890m6.5XD.140.IK.HA | 10 | 103 | 61 | W1103089340 |
| 9,0 | HPC.ST.1103.0900m6.5XD.140.IK.HA | 10 | 103 | 61 | W1103090340 |
| 9,1 | HPC.ST.1103.0910m6.5XD.140.IK.HA | 10 | 103 | 61 | W1103091340 |
| 9,2 | HPC.ST.1103.0920m6.5XD.140.IK.HA | 10 | 103 | 61 | W1103092340 |
| 9,3 | HPC.ST.1103.0930m6.5XD.140.IK.HA | 10 | 103 | 61 | W1103093340 |
| 9,4 | HPC.ST.1103.0940m6.5XD.140.IK.HA | 10 | 103 | 61 | W1103094340 |
| 9,5 | HPC.ST.1103.0950m6.5XD.140.IK.HA | 10 | 103 | 61 | W1103095340 |
| 9,6 | HPC.ST.1103.0960m6.5XD.140.IK.HA | 10 | 103 | 61 | W1103096340 |
| 9,7 | HPC.ST.1103.0970m6.5XD.140.IK.HA | 10 | 103 | 61 | W1103097340 |
| 9,8 | HPC.ST.1103.0980m6.5XD.140.IK.HA | 10 | 103 | 61 | W1103098340 |
| 9,9 | HPC.ST.1103.0990m6.5XD.140.IK.HA | 10 | 103 | 61 | W1103099340 |
| 10,0 | HPC.ST.1103.1000m6.5XD.140.IK.HA | 10 | 103 | 61 | W1103100340 |
| 10,2 | HPC.ST.1103.1020m6.5XD.140.IK.HA | 12 | 118 | 71 | W1103102340 |
| 10,5 | HPC.ST.1103.1050m6.5XD.140.IK.HA | 12 | 118 | 71 | W1103105340 |
| 10,8 | HPC.ST.1103.1080m6.5XD.140.IK.HA | 12 | 118 | 71 | W1103108340 |
| 11,0 | HPC.ST.1103.1100m6.5XD.140.IK.HA | 12 | 118 | 71 | W1103110340 |
| 11,2 | HPC.ST.1103.1120m6.5XD.140.IK.HA | 12 | 118 | 71 | W1103112340 |
| 11,5 | HPC.ST.1103.1150m6.5XD.140.IK.HA | 12 | 118 | 71 | W1103115340 |
| 11,8 | HPC.ST.1103.1180m6.5XD.140.IK.HA | 12 | 118 | 71 | W1103118340 |
| 12,0 | HPC.ST.1103.1200m6.5XD.140.IK.HA | 12 | 118 | 71 | W1103120340 |
| 12,2 | HPC.ST.1103.1220m6.5XD.140.IK.HA | 14 | 124 | 77 | W1103122340 |
| 12,5 | HPC.ST.1103.1250m6.5XD.140.IK.HA | 14 | 124 | 77 | W1103125340 |
| 12,8 | HPC.ST.1103.1280m6.5XD.140.IK.HA | 14 | 124 | 77 | W1103128340 |
| 13,0 | HPC.ST.1103.1300m6.5XD.140.IK.HA | 14 | 124 | 77 | W1103130340 |
| 13,2 | HPC.ST.1103.1320m6.5XD.140.IK.HA | 14 | 124 | 77 | W1103132340 |
| 13,5 | HPC.ST.1103.1350m6.5XD.140.IK.HA | 14 | 124 | 77 | W1103135340 |
| 13,8 | HPC.ST.1103.1380m6.5XD.140.IK.HA | 14 | 124 | 77 | W1103138340 |
| 14,0 | HPC.ST.1103.1400m6.5XD.140.IK.HA | 14 | 124 | 77 | W1103140340 |
| 14,2 | HPC.ST.1103.1420m6.5XD.140.IK.HA | 16 | 133 | 83 | W1103142340 |
| 14,5 | HPC.ST.1103.1450m6.5XD.140.IK.HA | 16 | 133 | 83 | W1103145340 |
| 14,8 | HPC.ST.1103.1480m6.5XD.140.IK.HA | 16 | 133 | 83 | W1103148340 |
| 15,0 | HPC.ST.1103.1500m6.5XD.140.IK.HA | 16 | 133 | 83 | W1103150340 |
| 15,2 | HPC.ST.1103.1520m6.5XD.140.IK.HA | 16 | 133 | 83 | W1103152340 |
| 15,5 | HPC.ST.1103.1550m6.5XD.140.IK.HA | 16 | 133 | 83 | W1103155340 |
| 15,8 | HPC.ST.1103.1580m6.5XD.140.IK.HA | 16 | 133 | 83 | W1103158340 |
| 16,0 | HPC.ST.1103.1600m6.5XD.140.IK.HA | 16 | 133 | 83 | W1103160340 |

# W1102, beschichtet

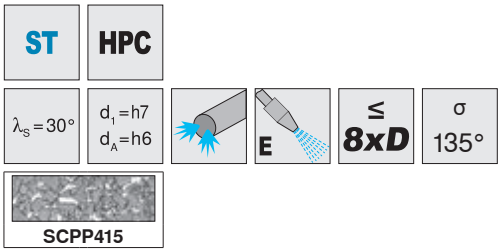
Schnittdatenempfehlung



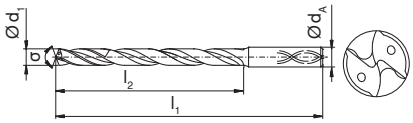
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,14 | 0,2 | 0,275 | 0,35 |
| 1.1.2 | | | 85 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.2.1 | Baustahl | | 100 | 0,14 | 0,2 | 0,275 | 0,35 |
| 1.2.2 | | | 85 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.2.3 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.3.1 | Federstahl | | | | | | |
| 1.3.2 | | | | | | | |
| 1.3.3 | | | | | | | |
| 2.1.1 | Einsatzstahl | | 95 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.1.2 | | | 85 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.1.3 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.2.1 | Nitrierstahl | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.2.2 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.1 | Vergütungsstahl | | 80 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.3.2 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.3 | | | 80 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.3.4 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.5 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.6 | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.2 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.3 | | | 45 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.4 | | | | | | | |
| 3.2.5 | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.3.2 | | | | | | | |
| 3.3.3 | | | | | | | |
| 3.3.4 | | | | | | | |
| 3.3.5 | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | |
| 4.1.2 | | | | | | | |
| 4.1.3 | | | | | | | |
| 4.1.4 | | | | | | | |
| 4.1.5 | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | |
| 4.2.2 | | | | | | | |
| 4.2.3 | | | | | | | |
| 4.2.4 | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 85 | 0,14 | 0,2 | 0,275 | 0,35 |
| 5.1.2 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 5.1.3 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 5.2.1 | rostfreier Stahlguss | | | | | | |
| 5.2.2 | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 95 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.1.2 | | | 85 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.1.3 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.1.4 | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 95 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.2.2 | | | 85 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.2.3 | | | 65 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.3.1 | GTW weisser Temperguss | | 95 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.3.2 | | | 85 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.4.1 | GTS schwarzer Temperguss | | 90 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.4.2 | | | 85 | 0,125 | 0,175 | 0,225 | 0,3 |
| 7.1.1 | Aluminium | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |

# W1102, beschichtet

HPC-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | HPC.ST.1102.0300h7.8XD.135.IK.HA | 6 | 72 | 34 | W1102030440 |
| 3,1 | HPC.ST.1102.0310h7.8XD.135.IK.HA | 6 | 72 | 34 | W1102031440 |
| 3,2 | HPC.ST.1102.0320h7.8XD.135.IK.HA | 6 | 72 | 34 | W1102032440 |
| 3,3 | HPC.ST.1102.0330h7.8XD.135.IK.HA | 6 | 72 | 34 | W1102033440 |
| 3,4 | HPC.ST.1102.0340h7.8XD.135.IK.HA | 6 | 72 | 34 | W1102034440 |
| 3,5 | HPC.ST.1102.0350h7.8XD.135.IK.HA | 6 | 72 | 34 | W1102035440 |
| 3,6 | HPC.ST.1102.0360h7.8XD.135.IK.HA | 6 | 72 | 34 | W1102036440 |
| 3,7 | HPC.ST.1102.0370h7.8XD.135.IK.HA | 6 | 72 | 34 | W1102037440 |
| 3,8 | HPC.ST.1102.0380h7.8XD.135.IK.HA | 6 | 81 | 43 | W1102038440 |
| 3,9 | HPC.ST.1102.0390h7.8XD.135.IK.HA | 6 | 81 | 43 | W1102039440 |
| 4,0 | HPC.ST.1102.0400h7.8XD.135.IK.HA | 6 | 81 | 43 | W1102040440 |
| 4,1 | HPC.ST.1102.0410h7.8XD.135.IK.HA | 6 | 81 | 43 | W1102041440 |
| 4,2 | HPC.ST.1102.0420h7.8XD.135.IK.HA | 6 | 81 | 43 | W1102042440 |
| 4,3 | HPC.ST.1102.0430h7.8XD.135.IK.HA | 6 | 81 | 43 | W1102043440 |
| 4,4 | HPC.ST.1102.0440h7.8XD.135.IK.HA | 6 | 81 | 43 | W1102044440 |
| 4,5 | HPC.ST.1102.0450h7.8XD.135.IK.HA | 6 | 81 | 43 | W1102045440 |
| 4,6 | HPC.ST.1102.0460h7.8XD.135.IK.HA | 6 | 81 | 43 | W1102046440 |
| 4,7 | HPC.ST.1102.0470h7.8XD.135.IK.HA | 6 | 81 | 43 | W1102047440 |
| 4,8 | HPC.ST.1102.0480h7.8XD.135.IK.HA | 6 | 95 | 57 | W1102048440 |
| 4,9 | HPC.ST.1102.0490h7.8XD.135.IK.HA | 6 | 95 | 57 | W1102049440 |
| 5,0 | HPC.ST.1102.0500h7.8XD.135.IK.HA | 6 | 95 | 57 | W1102050440 |
| 5,1 | HPC.ST.1102.0510h7.8XD.135.IK.HA | 6 | 95 | 57 | W1102051440 |
| 5,2 | HPC.ST.1102.0520h7.8XD.135.IK.HA | 6 | 95 | 57 | W1102052440 |
| 5,3 | HPC.ST.1102.0530h7.8XD.135.IK.HA | 6 | 95 | 57 | W1102053440 |
| 5,4 | HPC.ST.1102.0540h7.8XD.135.IK.HA | 6 | 95 | 57 | W1102054440 |
| 5,5 | HPC.ST.1102.0550h7.8XD.135.IK.HA | 6 | 95 | 57 | W1102055440 |
| 5,6 | HPC.ST.1102.0560h7.8XD.135.IK.HA | 6 | 95 | 57 | W1102056440 |
| 5,7 | HPC.ST.1102.0570h7.8XD.135.IK.HA | 6 | 95 | 57 | W1102057440 |
| 5,8 | HPC.ST.1102.0580h7.8XD.135.IK.HA | 6 | 95 | 57 | W1102058440 |
| 5,9 | HPC.ST.1102.0590h7.8XD.135.IK.HA | 6 | 95 | 57 | W1102059440 |
| 6,0 | HPC.ST.1102.0600h7.8XD.135.IK.HA | 6 | 95 | 57 | W1102060440 |
| 6,1 | HPC.ST.1102.0610h7.8XD.135.IK.HA | 8 | 114 | 76 | W1102061440 |
| 6,2 | HPC.ST.1102.0620h7.8XD.135.IK.HA | 8 | 114 | 76 | W1102062440 |
| 6,3 | HPC.ST.1102.0630h7.8XD.135.IK.HA | 8 | 114 | 76 | W1102063440 |
| 6,4 | HPC.ST.1102.0640h7.8XD.135.IK.HA | 8 | 114 | 76 | W1102064440 |
| 6,5 | HPC.ST.1102.0650h7.8XD.135.IK.HA | 8 | 114 | 76 | W1102065440 |
| 6,6 | HPC.ST.1102.0660h7.8XD.135.IK.HA | 8 | 114 | 76 | W1102066440 |
| 6,7 | HPC.ST.1102.0670h7.8XD.135.IK.HA | 8 | 114 | 76 | W1102067440 |
| 6,8 | HPC.ST.1102.0680h7.8XD.135.IK.HA | 8 | 114 | 76 | W1102068440 |
| 6,9 | HPC.ST.1102.0690h7.8XD.135.IK.HA | 8 | 114 | 76 | W1102069440 |
| 7,0 | HPC.ST.1102.0700h7.8XD.135.IK.HA | 8 | 114 | 76 | W1102070440 |
| 7,1 | HPC.ST.1102.0710h7.8XD.135.IK.HA | 8 | 114 | 76 | W1102071440 |
| 7,2 | HPC.ST.1102.0720h7.8XD.135.IK.HA | 8 | 114 | 76 | W1102072440 |
| 7,3 | HPC.ST.1102.0730h7.8XD.135.IK.HA | 8 | 114 | 76 | W1102073440 |
| 7,4 | HPC.ST.1102.0740h7.8XD.135.IK.HA | 8 | 114 | 76 | W1102074440 |
| 7,5 | HPC.ST.1102.0750h7.8XD.135.IK.HA | 8 | 114 | 76 | W1102075440 |
| 7,6 | HPC.ST.1102.0760h7.8XD.135.IK.HA | 8 | 114 | 76 | W1102076440 |
| 7,7 | HPC.ST.1102.0770h7.8XD.135.IK.HA | 8 | 114 | 76 | W1102077440 |

# W1102, beschichtet

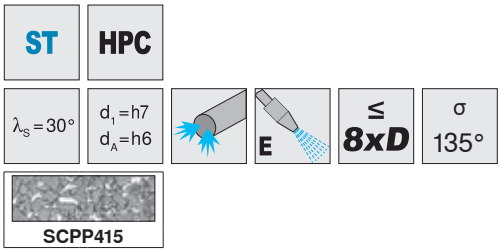
Schnittdatenempfehlung



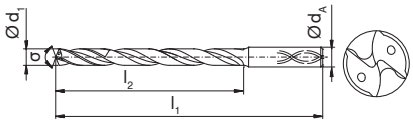
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,14 | 0,2 | 0,275 | 0,35 |
| 1.1.2 | | | 85 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.2.1 | Baustahl | | 100 | 0,14 | 0,2 | 0,275 | 0,35 |
| 1.2.2 | | | 85 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.2.3 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.3.1 | Federstahl | | | | | | |
| 1.3.2 | | | | | | | |
| 1.3.3 | | | | | | | |
| 2.1.1 | Einsatzstahl | | 95 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.1.2 | | | 85 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.1.3 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.2.1 | Nitrierstahl | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.2.2 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.1 | Vergütungsstahl | | 80 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.3.2 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.3 | | | 80 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.3.4 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.5 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.6 | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.2 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.3 | | | 45 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.4 | | | | | | | |
| 3.2.5 | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.3.2 | | | | | | | |
| 3.3.3 | | | | | | | |
| 3.3.4 | | | | | | | |
| 3.3.5 | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | |
| 4.1.2 | | | | | | | |
| 4.1.3 | | | | | | | |
| 4.1.4 | | | | | | | |
| 4.1.5 | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | |
| 4.2.2 | | | | | | | |
| 4.2.3 | | | | | | | |
| 4.2.4 | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 85 | 0,14 | 0,2 | 0,275 | 0,35 |
| 5.1.2 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 5.1.3 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 5.2.1 | rostfreier Stahlguss | | | | | | |
| 5.2.2 | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 95 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.1.2 | | | 85 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.1.3 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.1.4 | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 95 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.2.2 | | | 85 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.2.3 | | | 65 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.3.1 | GTW weisser Temperguss | | 95 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.3.2 | | | 85 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.4.1 | GTS schwarzer Temperguss | | 90 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.4.2 | | | 85 | 0,125 | 0,175 | 0,225 | 0,3 |
| 7.1.1 | Aluminium | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |

# W1102, beschichtet

HPC-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 7,8 | HPC.ST.1102.0780h7.8XD.135.IK.HA | 8 | 114 | 76 | W1102078440 |
| 7,9 | HPC.ST.1102.0790h7.8XD.135.IK.HA | 8 | 114 | 76 | W1102079440 |
| 8,0 | HPC.ST.1102.0800h7.8XD.135.IK.HA | 8 | 114 | 76 | W1102080440 |
| 8,1 | HPC.ST.1102.0810h7.8XD.135.IK.HA | 10 | 142 | 95 | W1102081440 |
| 8,2 | HPC.ST.1102.0820h7.8XD.135.IK.HA | 10 | 142 | 95 | W1102082440 |
| 8,3 | HPC.ST.1102.0830h7.8XD.135.IK.HA | 10 | 142 | 95 | W1102083440 |
| 8,4 | HPC.ST.1102.0840h7.8XD.135.IK.HA | 10 | 142 | 95 | W1102084440 |
| 8,5 | HPC.ST.1102.0850h7.8XD.135.IK.HA | 10 | 142 | 95 | W1102085440 |
| 8,6 | HPC.ST.1102.0860h7.8XD.135.IK.HA | 10 | 142 | 95 | W1102086440 |
| 8,7 | HPC.ST.1102.0870h7.8XD.135.IK.HA | 10 | 142 | 95 | W1102087440 |
| 8,8 | HPC.ST.1102.0880h7.8XD.135.IK.HA | 10 | 142 | 95 | W1102088440 |
| 8,9 | HPC.ST.1102.0890h7.8XD.135.IK.HA | 10 | 142 | 95 | W1102089440 |
| 9,0 | HPC.ST.1102.0900h7.8XD.135.IK.HA | 10 | 142 | 95 | W1102090440 |
| 9,1 | HPC.ST.1102.0910h7.8XD.135.IK.HA | 10 | 142 | 95 | W1102091440 |
| 9,2 | HPC.ST.1102.0920h7.8XD.135.IK.HA | 10 | 142 | 95 | W1102092440 |
| 9,3 | HPC.ST.1102.0930h7.8XD.135.IK.HA | 10 | 142 | 95 | W1102093440 |
| 9,4 | HPC.ST.1102.0940h7.8XD.135.IK.HA | 10 | 142 | 95 | W1102094440 |
| 9,5 | HPC.ST.1102.0950h7.8XD.135.IK.HA | 10 | 142 | 95 | W1102095440 |
| 9,6 | HPC.ST.1102.0960h7.8XD.135.IK.HA | 10 | 142 | 95 | W1102096440 |
| 9,7 | HPC.ST.1102.0970h7.8XD.135.IK.HA | 10 | 142 | 95 | W1102097440 |
| 9,8 | HPC.ST.1102.0980h7.8XD.135.IK.HA | 10 | 142 | 95 | W1102098440 |
| 9,9 | HPC.ST.1102.0990h7.8XD.135.IK.HA | 10 | 142 | 95 | W1102099440 |
| 10,0 | HPC.ST.1102.1000h7.8XD.135.IK.HA | 10 | 142 | 95 | W1102100440 |
| 10,2 | HPC.ST.1102.1020h7.8XD.135.IK.HA | 12 | 162 | 114 | W1102102440 |
| 10,5 | HPC.ST.1102.1050h7.8XD.135.IK.HA | 12 | 162 | 114 | W1102105440 |
| 10,8 | HPC.ST.1102.1080h7.8XD.135.IK.HA | 12 | 162 | 114 | W1102108440 |
| 11,0 | HPC.ST.1102.1100h7.8XD.135.IK.HA | 12 | 162 | 114 | W1102110440 |
| 11,2 | HPC.ST.1102.1120h7.8XD.135.IK.HA | 12 | 162 | 114 | W1102112440 |
| 11,5 | HPC.ST.1102.1150h7.8XD.135.IK.HA | 12 | 162 | 114 | W1102115440 |
| 11,8 | HPC.ST.1102.1180h7.8XD.135.IK.HA | 12 | 162 | 114 | W1102118440 |
| 12,0 | HPC.ST.1102.1200h7.8XD.135.IK.HA | 12 | 162 | 114 | W1102120440 |
| 12,5 | HPC.ST.1102.1250h7.8XD.135.IK.HA | 14 | 178 | 131 | W1102125440 |
| 12,8 | HPC.ST.1102.1280h7.8XD.135.IK.HA | 14 | 178 | 131 | W1102128440 |
| 13,0 | HPC.ST.1102.1300h7.8XD.135.IK.HA | 14 | 178 | 131 | W1102130440 |
| 13,5 | HPC.ST.1102.1350h7.8XD.135.IK.HA | 14 | 178 | 131 | W1102135440 |
| 13,8 | HPC.ST.1102.1380h7.8XD.135.IK.HA | 14 | 178 | 131 | W1102138440 |
| 14,0 | HPC.ST.1102.1400h7.8XD.135.IK.HA | 14 | 178 | 131 | W1102140440 |
| 14,5 | HPC.ST.1102.1450h7.8XD.135.IK.HA | 16 | 203 | 152 | W1102145440 |
| 14,8 | HPC.ST.1102.1480h7.8XD.135.IK.HA | 16 | 203 | 152 | W1102148440 |
| 15,0 | HPC.ST.1102.1500h7.8XD.135.IK.HA | 16 | 203 | 152 | W1102150440 |
| 15,5 | HPC.ST.1102.1550h7.8XD.135.IK.HA | 16 | 203 | 152 | W1102155440 |
| 15,8 | HPC.ST.1102.1580h7.8XD.135.IK.HA | 16 | 203 | 152 | W1102158440 |
| 16,0 | HPC.ST.1102.1600h7.8XD.135.IK.HA | 16 | 203 | 152 | W1102160440 |

# W1104, beschichtet

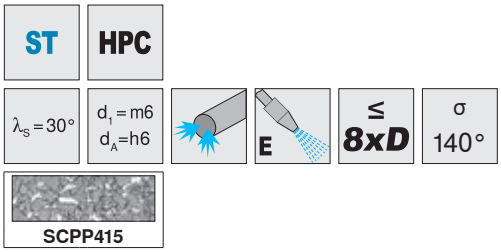
Schnittdatenempfehlung



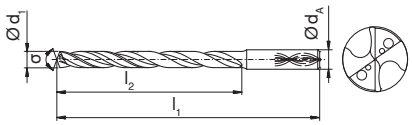
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 90 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 1.1.2 | | | 75 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 1.2.1 | Baustahl | | 90 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 1.2.2 | | | 75 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 1.2.3 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 1.3.1 | Federstahl | | | | | | | |
| 1.3.2 | | | | | | | | |
| 1.3.3 | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 80 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 2.1.2 | | | 75 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 2.1.3 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 2.2.1 | Nitrierstahl | | 70 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 2.2.2 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 2.3.1 | Vergütungsstahl | | 75 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 2.3.2 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 2.3.3 | | | 70 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 2.3.4 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 2.3.5 | | | 55 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 2.3.6 | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 55 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 70 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 3.2.2 | | | 55 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 3.2.3 | | | 32 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 3.2.4 | | | | | | | | |
| 3.2.5 | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 55 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 3.3.2 | | | | | | | | |
| 3.3.3 | | | | | | | | |
| 3.3.4 | | | | | | | | |
| 3.3.5 | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | |
| 4.1.2 | | | | | | | | |
| 4.1.3 | | | | | | | | |
| 4.1.4 | | | | | | | | |
| 4.1.5 | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | |
| 4.2.2 | | | | | | | | |
| 4.2.3 | | | | | | | | |
| 4.2.4 | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 75 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 5.1.2 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 5.1.3 | | | 55 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 5.2.1 | rostfreier Stahlguss | | | | | | | |
| 5.2.2 | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 85 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.2 | | | 75 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.3 | | | 70 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.4 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.2.1 | GGG mit Kugelgraphit | | 80 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.2.2 | | | 75 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.2.3 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.3.1 | GTW weisser Temperguss | | 80 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.3.2 | | | 75 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.4.1 | GTS schwarzer Temperguss | | 80 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.4.2 | | | 75 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 7.1.1 | Aluminium | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |

# W1104, beschichtet

HPC-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | HPC.ST.1104.0300m6.8XD.140.IK.HA | 6 | 72 | 34 | W1104030440 |
| 3,3 | HPC.ST.1104.0330m6.8XD.140.IK.HA | 6 | 72 | 34 | W1104033440 |
| 3,4 | HPC.ST.1104.0340m6.8XD.140.IK.HA | 6 | 72 | 34 | W1104034440 |
| 3,5 | HPC.ST.1104.0350m6.8XD.140.IK.HA | 6 | 72 | 34 | W1104035440 |
| 3,7 | HPC.ST.1104.0370m6.8XD.140.IK.HA | 6 | 72 | 34 | W1104037440 |
| 3,8 | HPC.ST.1104.0380m6.8XD.140.IK.HA | 6 | 81 | 43 | W1104038440 |
| 4,0 | HPC.ST.1104.0400m6.8XD.140.IK.HA | 6 | 81 | 43 | W1104040440 |
| 4,1 | HPC.ST.1104.0410m6.8XD.140.IK.HA | 6 | 81 | 43 | W1104041440 |
| 4,2 | HPC.ST.1104.0420m6.8XD.140.IK.HA | 6 | 81 | 43 | W1104042440 |
| 4,3 | HPC.ST.1104.0430m6.8XD.140.IK.HA | 6 | 81 | 43 | W1104043440 |
| 4,5 | HPC.ST.1104.0450m6.8XD.140.IK.HA | 6 | 81 | 43 | W1104045440 |
| 4,6 | HPC.ST.1104.0460m6.8XD.140.IK.HA | 6 | 81 | 43 | W1104046440 |
| 4,7 | HPC.ST.1104.0470m6.8XD.140.IK.HA | 6 | 81 | 43 | W1104047440 |
| 4,8 | HPC.ST.1104.0480m6.8XD.140.IK.HA | 6 | 95 | 57 | W1104048440 |
| 5,0 | HPC.ST.1104.0500m6.8XD.140.IK.HA | 6 | 95 | 57 | W1104050440 |
| 5,1 | HPC.ST.1104.0510m6.8XD.140.IK.HA | 6 | 95 | 57 | W1104051440 |
| 5,2 | HPC.ST.1104.0520m6.8XD.140.IK.HA | 6 | 95 | 57 | W1104052440 |
| 5,3 | HPC.ST.1104.0530m6.8XD.140.IK.HA | 6 | 95 | 57 | W1104053440 |
| 5,5 | HPC.ST.1104.0550m6.8XD.140.IK.HA | 6 | 95 | 57 | W1104055440 |
| 5,8 | HPC.ST.1104.0580m6.8XD.140.IK.HA | 6 | 95 | 57 | W1104058440 |
| 5,9 | HPC.ST.1104.0590m6.8XD.140.IK.HA | 6 | 95 | 57 | W1104059440 |
| 6,0 | HPC.ST.1104.0600m6.8XD.140.IK.HA | 6 | 95 | 57 | W1104060440 |
| 6,1 | HPC.ST.1104.0610m6.8XD.140.IK.HA | 8 | 114 | 76 | W1104061440 |
| 6,2 | HPC.ST.1104.0620m6.8XD.140.IK.HA | 8 | 114 | 76 | W1104062440 |
| 6,3 | HPC.ST.1104.0630m6.8XD.140.IK.HA | 8 | 114 | 76 | W1104063440 |
| 6,5 | HPC.ST.1104.0650m6.8XD.140.IK.HA | 8 | 114 | 76 | W1104065440 |
| 6,6 | HPC.ST.1104.0660m6.8XD.140.IK.HA | 8 | 114 | 76 | W1104066440 |
| 6,8 | HPC.ST.1104.0680m6.8XD.140.IK.HA | 8 | 114 | 76 | W1104068440 |
| 7,0 | HPC.ST.1104.0700m6.8XD.140.IK.HA | 8 | 114 | 76 | W1104070440 |
| 7,4 | HPC.ST.1104.0740m6.8XD.140.IK.HA | 8 | 114 | 76 | W1104074440 |
| 7,5 | HPC.ST.1104.0750m6.8XD.140.IK.HA | 8 | 114 | 76 | W1104075440 |
| 7,7 | HPC.ST.1104.0770m6.8XD.140.IK.HA | 8 | 114 | 76 | W1104077440 |
| 7,8 | HPC.ST.1104.0780m6.8XD.140.IK.HA | 8 | 114 | 76 | W1104078440 |
| 7,9 | HPC.ST.1104.0790m6.8XD.140.IK.HA | 8 | 114 | 76 | W1104079440 |
| 8,0 | HPC.ST.1104.0800m6.8XD.140.IK.HA | 8 | 114 | 76 | W1104080440 |
| 8,1 | HPC.ST.1104.0810m6.8XD.140.IK.HA | 10 | 142 | 95 | W1104081440 |
| 8,2 | HPC.ST.1104.0820m6.8XD.140.IK.HA | 10 | 142 | 95 | W1104082440 |
| 8,3 | HPC.ST.1104.0830m6.8XD.140.IK.HA | 10 | 142 | 95 | W1104083440 |
| 8,5 | HPC.ST.1104.0850m6.8XD.140.IK.HA | 10 | 142 | 95 | W1104085440 |
| 8,6 | HPC.ST.1104.0860m6.8XD.140.IK.HA | 10 | 142 | 95 | W1104086440 |
| 8,7 | HPC.ST.1104.0870m6.8XD.140.IK.HA | 10 | 142 | 95 | W1104087440 |
| 8,8 | HPC.ST.1104.0880m6.8XD.140.IK.HA | 10 | 142 | 95 | W1104088440 |
| 9,0 | HPC.ST.1104.0900m6.8XD.140.IK.HA | 10 | 142 | 95 | W1104090440 |
| 9,1 | HPC.ST.1104.0910m6.8XD.140.IK.HA | 10 | 142 | 95 | W1104091440 |
| 9,2 | HPC.ST.1104.0920m6.8XD.140.IK.HA | 10 | 142 | 95 | W1104092440 |
| 9,3 | HPC.ST.1104.0930m6.8XD.140.IK.HA | 10 | 142 | 95 | W1104093440 |
| 9,4 | HPC.ST.1104.0940m6.8XD.140.IK.HA | 10 | 142 | 95 | W1104094440 |
| 9,5 | HPC.ST.1104.0950m6.8XD.140.IK.HA | 10 | 142 | 95 | W1104095440 |

# W1104, beschichtet

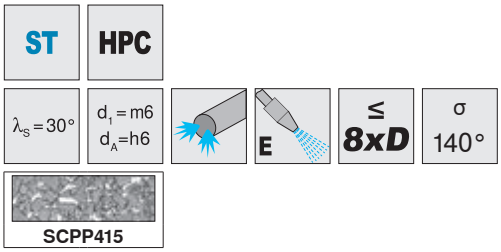
Schnittdatenempfehlung



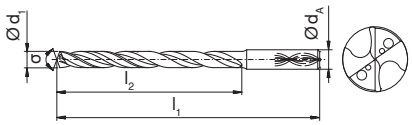
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 90 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 1.1.2 | | | 75 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 1.2.1 | Baustahl | | 90 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 1.2.2 | | | 75 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 1.2.3 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 1.3.1 | Federstahl | | | | | | | |
| 1.3.2 | | | | | | | | |
| 1.3.3 | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 80 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 2.1.2 | | | 75 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 2.1.3 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 2.2.1 | Nitrierstahl | | 70 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 2.2.2 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 2.3.1 | Vergütungsstahl | | 75 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 2.3.2 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 2.3.3 | | | 70 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 2.3.4 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 2.3.5 | | | 55 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 2.3.6 | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 55 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 70 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 3.2.2 | | | 55 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 3.2.3 | | | 32 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 3.2.4 | | | | | | | | |
| 3.2.5 | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 55 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 3.3.2 | | | | | | | | |
| 3.3.3 | | | | | | | | |
| 3.3.4 | | | | | | | | |
| 3.3.5 | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | |
| 4.1.2 | | | | | | | | |
| 4.1.3 | | | | | | | | |
| 4.1.4 | | | | | | | | |
| 4.1.5 | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | |
| 4.2.2 | | | | | | | | |
| 4.2.3 | | | | | | | | |
| 4.2.4 | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 75 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 5.1.2 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 5.1.3 | | | 55 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 5.2.1 | rostfreier Stahlguss | | | | | | | |
| 5.2.2 | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 85 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.2 | | | 75 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.3 | | | 70 | 0,23 | 0,335 | 0,425 | 0,52 | 0,58 |
| 6.1.4 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.2.1 | GGG mit Kugelgraphit | | 80 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.2.2 | | | 75 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.2.3 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.3.1 | GTW weisser Temperguss | | 80 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.3.2 | | | 75 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.4.1 | GTS schwarzer Temperguss | | 80 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.4.2 | | | 75 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 7.1.1 | Aluminium | | | | | | | |
| 7.1.2 | | | | | | | | |
| 7.1.3 | | | | | | | | |
| 7.1.4 | | | | | | | | |
| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | |
| 7.2.2 | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | |
| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |

# W1104, beschichtet

HPC-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 9,7 | HPC.ST.1104.0970m6.8XD.140.IK.HA | 10 | 142 | 95 | W1104097440 |
| 9,8 | HPC.ST.1104.0980m6.8XD.140.IK.HA | 10 | 142 | 95 | W1104098440 |
| 9,9 | HPC.ST.1104.0990m6.8XD.140.IK.HA | 10 | 142 | 95 | W1104099440 |
| 10,0 | HPC.ST.1104.1000m6.8XD.140.IK.HA | 10 | 142 | 95 | W1104100440 |
| 10,2 | HPC.ST.1104.1020m6.8XD.140.IK.HA | 12 | 162 | 114 | W1104102440 |
| 10,5 | HPC.ST.1104.1050m6.8XD.140.IK.HA | 12 | 162 | 114 | W1104105440 |
| 10,8 | HPC.ST.1104.1080m6.8XD.140.IK.HA | 12 | 162 | 114 | W1104108440 |
| 11,0 | HPC.ST.1104.1100m6.8XD.140.IK.HA | 12 | 162 | 114 | W1104110440 |
| 11,2 | HPC.ST.1104.1120m6.8XD.140.IK.HA | 12 | 162 | 114 | W1104112440 |
| 11,5 | HPC.ST.1104.1150m6.8XD.140.IK.HA | 12 | 162 | 114 | W1104115440 |
| 11,8 | HPC.ST.1104.1180m6.8XD.140.IK.HA | 12 | 162 | 114 | W1104118440 |
| 12,0 | HPC.ST.1104.1200m6.8XD.140.IK.HA | 12 | 162 | 114 | W1104120440 |
| 12,2 | HPC.ST.1104.1220m6.8XD.140.IK.HA | 14 | 178 | 131 | W1104122440 |
| 12,5 | HPC.ST.1104.1250m6.8XD.140.IK.HA | 14 | 178 | 131 | W1104125440 |
| 12,8 | HPC.ST.1104.1280m6.8XD.140.IK.HA | 14 | 178 | 131 | W1104128440 |
| 13,0 | HPC.ST.1104.1300m6.8XD.140.IK.HA | 14 | 178 | 131 | W1104130440 |
| 13,2 | HPC.ST.1104.1320m6.8XD.140.IK.HA | 14 | 178 | 131 | W1104132440 |
| 13,5 | HPC.ST.1104.1350m6.8XD.140.IK.HA | 14 | 178 | 131 | W1104135440 |
| 13,8 | HPC.ST.1104.1380m6.8XD.140.IK.HA | 14 | 178 | 131 | W1104138440 |
| 14,0 | HPC.ST.1104.1400m6.8XD.140.IK.HA | 14 | 178 | 131 | W1104140440 |
| 14,2 | HPC.ST.1104.1420m6.8XD.140.IK.HA | 16 | 203 | 152 | W1104142440 |
| 14,5 | HPC.ST.1104.1450m6.8XD.140.IK.HA | 16 | 203 | 152 | W1104145440 |
| 14,8 | HPC.ST.1104.1480m6.8XD.140.IK.HA | 16 | 203 | 152 | W1104148440 |
| 15,0 | HPC.ST.1104.1500m6.8XD.140.IK.HA | 16 | 203 | 152 | W1104150440 |
| 15,5 | HPC.ST.1104.1550m6.8XD.140.IK.HA | 16 | 203 | 152 | W1104155440 |
| 15,8 | HPC.ST.1104.1580m6.8XD.140.IK.HA | 16 | 203 | 152 | W1104158440 |
| 16,0 | HPC.ST.1104.1600m6.8XD.140.IK.HA | 16 | 203 | 152 | W1104160440 |
| 16,5 | HPC.ST.1104.1650m6.8XD.140.IK.HA | 18 | 222 | 171 | W1104165440 |
| 17,0 | HPC.ST.1104.1700m6.8XD.140.IK.HA | 18 | 222 | 171 | W1104170440 |
| 17,5 | HPC.ST.1104.1750m6.8XD.140.IK.HA | 18 | 222 | 171 | W1104175440 |
| 18,0 | HPC.ST.1104.1800m6.8XD.140.IK.HA | 18 | 222 | 171 | W1104180440 |
| 18,5 | HPC.ST.1104.1850m6.8XD.140.IK.HA | 20 | 243 | 190 | W1104185440 |
| 19,0 | HPC.ST.1104.1900m6.8XD.140.IK.HA | 20 | 243 | 190 | W1104190440 |
| 19,5 | HPC.ST.1104.1950m6.8XD.140.IK.HA | 20 | 243 | 190 | W1104195440 |
| 20,0 | HPC.ST.1104.2000m6.8XD.140.IK.HA | 20 | 243 | 190 | W1104200440 |

# W1101, beschichtet

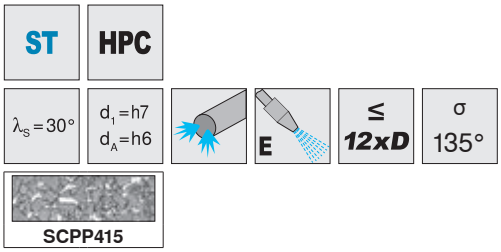
Schnittdatenempfehlung



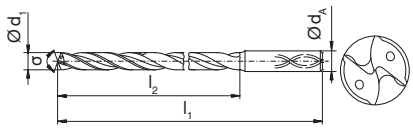
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,14 | 0,2 | 0,275 | 0,35 |
| 1.1.2 | | | 85 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.2.1 | Baustahl | | 100 | 0,14 | 0,2 | 0,275 | 0,35 |
| 1.2.2 | | | 85 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.2.3 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.3.1 | Federstahl | | | | | | |
| 1.3.2 | | | | | | | |
| 1.3.3 | | | | | | | |
| 2.1.1 | Einsatzstahl | | 95 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.1.2 | | | 85 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.1.3 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.2.1 | Nitrierstahl | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.2.2 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.1 | Vergütungsstahl | | 80 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.3.2 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.3 | | | 80 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.3.4 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.5 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.6 | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.2 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.3 | | | 45 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.4 | | | | | | | |
| 3.2.5 | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.3.2 | | | | | | | |
| 3.3.3 | | | | | | | |
| 3.3.4 | | | | | | | |
| 3.3.5 | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | |
| 4.1.2 | | | | | | | |
| 4.1.3 | | | | | | | |
| 4.1.4 | | | | | | | |
| 4.1.5 | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | |
| 4.2.2 | | | | | | | |
| 4.2.3 | | | | | | | |
| 4.2.4 | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 85 | 0,14 | 0,2 | 0,275 | 0,35 |
| 5.1.2 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 5.1.3 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 5.2.1 | rostfreier Stahlguss | | | | | | |
| 5.2.2 | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 95 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.1.2 | | | 85 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.1.3 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.1.4 | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 95 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.2.2 | | | 85 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.2.3 | | | 65 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.3.1 | GTW weisser Temperguss | | 95 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.3.2 | | | 85 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.4.1 | GTS schwarzer Temperguss | | 90 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.4.2 | | | 85 | 0,125 | 0,175 | 0,225 | 0,3 |
| 7.1.1 | Aluminium | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |

# W1101, beschichtet

HPC-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | HPC.ST.1101.0300h7.12XD.135.IK.HA | 6 | 92 | 54 | W1101030540 |
| 3,1 | HPC.ST.1101.0310h7.12XD.135.IK.HA | 6 | 92 | 54 | W1101031540 |
| 3,2 | HPC.ST.1101.0320h7.12XD.135.IK.HA | 6 | 92 | 54 | W1101032540 |
| 3,3 | HPC.ST.1101.0330h7.12XD.135.IK.HA | 6 | 92 | 54 | W1101033540 |
| 3,4 | HPC.ST.1101.0340h7.12XD.135.IK.HA | 6 | 92 | 54 | W1101034540 |
| 3,5 | HPC.ST.1101.0350h7.12XD.135.IK.HA | 6 | 92 | 54 | W1101035540 |
| 3,6 | HPC.ST.1101.0360h7.12XD.135.IK.HA | 6 | 92 | 54 | W1101036540 |
| 3,7 | HPC.ST.1101.0370h7.12XD.135.IK.HA | 6 | 92 | 54 | W1101037540 |
| 3,8 | HPC.ST.1101.0380h7.12XD.135.IK.HA | 6 | 102 | 64 | W1101038540 |
| 3,9 | HPC.ST.1101.0390h7.12XD.135.IK.HA | 6 | 102 | 64 | W1101039540 |
| 4,0 | HPC.ST.1101.0400h7.12XD.135.IK.HA | 6 | 102 | 64 | W1101040540 |
| 4,1 | HPC.ST.1101.0410h7.12XD.135.IK.HA | 6 | 102 | 64 | W1101041540 |
| 4,2 | HPC.ST.1101.0420h7.12XD.135.IK.HA | 6 | 102 | 64 | W1101042540 |
| 4,3 | HPC.ST.1101.0430h7.12XD.135.IK.HA | 6 | 102 | 64 | W1101043540 |
| 4,4 | HPC.ST.1101.0440h7.12XD.135.IK.HA | 6 | 102 | 64 | W1101044540 |
| 4,5 | HPC.ST.1101.0450h7.12XD.135.IK.HA | 6 | 102 | 64 | W1101045540 |
| 4,6 | HPC.ST.1101.0460h7.12XD.135.IK.HA | 6 | 102 | 64 | W1101046540 |
| 4,7 | HPC.ST.1101.0470h7.12XD.135.IK.HA | 6 | 102 | 64 | W1101047540 |
| 4,8 | HPC.ST.1101.0480h7.12XD.135.IK.HA | 6 | 116 | 78 | W1101048540 |
| 4,9 | HPC.ST.1101.0490h7.12XD.135.IK.HA | 6 | 116 | 78 | W1101049540 |
| 5,0 | HPC.ST.1101.0500h7.12XD.135.IK.HA | 6 | 116 | 78 | W1101050540 |
| 5,1 | HPC.ST.1101.0510h7.12XD.135.IK.HA | 6 | 116 | 78 | W1101051540 |
| 5,2 | HPC.ST.1101.0520h7.12XD.135.IK.HA | 6 | 116 | 78 | W1101052540 |
| 5,3 | HPC.ST.1101.0530h7.12XD.135.IK.HA | 6 | 116 | 78 | W1101053540 |
| 5,4 | HPC.ST.1101.0540h7.12XD.135.IK.HA | 6 | 116 | 78 | W1101054540 |
| 5,5 | HPC.ST.1101.0550h7.12XD.135.IK.HA | 6 | 116 | 78 | W1101055540 |
| 5,6 | HPC.ST.1101.0560h7.12XD.135.IK.HA | 6 | 116 | 78 | W1101056540 |
| 5,7 | HPC.ST.1101.0570h7.12XD.135.IK.HA | 6 | 116 | 78 | W1101057540 |
| 5,8 | HPC.ST.1101.0580h7.12XD.135.IK.HA | 6 | 116 | 78 | W1101058540 |
| 5,9 | HPC.ST.1101.0590h7.12XD.135.IK.HA | 6 | 116 | 78 | W1101059540 |
| 6,0 | HPC.ST.1101.0600h7.12XD.135.IK.HA | 6 | 116 | 78 | W1101060540 |
| 6,1 | HPC.ST.1101.0610h7.12XD.135.IK.HA | 8 | 146 | 108 | W1101061540 |
| 6,2 | HPC.ST.1101.0620h7.12XD.135.IK.HA | 8 | 146 | 108 | W1101062540 |
| 6,3 | HPC.ST.1101.0630h7.12XD.135.IK.HA | 8 | 146 | 108 | W1101063540 |
| 6,4 | HPC.ST.1101.0640h7.12XD.135.IK.HA | 8 | 146 | 108 | W1101064540 |
| 6,5 | HPC.ST.1101.0650h7.12XD.135.IK.HA | 8 | 146 | 108 | W1101065540 |
| 6,6 | HPC.ST.1101.0660h7.12XD.135.IK.HA | 8 | 146 | 108 | W1101066540 |
| 6,7 | HPC.ST.1101.0670h7.12XD.135.IK.HA | 8 | 146 | 108 | W1101067540 |
| 6,8 | HPC.ST.1101.0680h7.12XD.135.IK.HA | 8 | 146 | 108 | W1101068540 |
| 6,9 | HPC.ST.1101.0690h7.12XD.135.IK.HA | 8 | 146 | 108 | W1101069540 |
| 7,0 | HPC.ST.1101.0700h7.12XD.135.IK.HA | 8 | 146 | 108 | W1101070540 |
| 7,1 | HPC.ST.1101.0710h7.12XD.135.IK.HA | 8 | 146 | 108 | W1101071540 |
| 7,2 | HPC.ST.1101.0720h7.12XD.135.IK.HA | 8 | 146 | 108 | W1101072540 |
| 7,3 | HPC.ST.1101.0730h7.12XD.135.IK.HA | 8 | 146 | 108 | W1101073540 |
| 7,4 | HPC.ST.1101.0740h7.12XD.135.IK.HA | 8 | 146 | 108 | W1101074540 |
| 7,5 | HPC.ST.1101.0750h7.12XD.135.IK.HA | 8 | 146 | 108 | W1101075540 |
| 7,6 | HPC.ST.1101.0760h7.12XD.135.IK.HA | 8 | 146 | 108 | W1101076540 |
| 7,7 | HPC.ST.1101.0770h7.12XD.135.IK.HA | 8 | 146 | 108 | W1101077540 |

# W1101, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,14 | 0,2 | 0,275 | 0,35 |
| 1.1.2 | | | 85 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.2.1 | Baustahl | | 100 | 0,14 | 0,2 | 0,275 | 0,35 |
| 1.2.2 | | | 85 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.2.3 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.3.1 | Federstahl | | | | | | |
| 1.3.2 | | | | | | | |
| 1.3.3 | | | | | | | |
| 2.1.1 | Einsatzstahl | | 95 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.1.2 | | | 85 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.1.3 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.2.1 | Nitrierstahl | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.2.2 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.1 | Vergütungsstahl | | 80 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.3.2 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.3 | | | 80 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.3.4 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.5 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.6 | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.2 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.3 | | | 45 | 0,08 | 0,12 | 0,15 | 0,2 |
| 3.2.4 | | | | | | | |
| 3.2.5 | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.3.2 | | | | | | | |
| 3.3.3 | | | | | | | |
| 3.3.4 | | | | | | | |
| 3.3.5 | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | |
| 4.1.2 | | | | | | | |
| 4.1.3 | | | | | | | |
| 4.1.4 | | | | | | | |
| 4.1.5 | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | |
| 4.2.2 | | | | | | | |
| 4.2.3 | | | | | | | |
| 4.2.4 | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 85 | 0,14 | 0,2 | 0,275 | 0,35 |
| 5.1.2 | | | 80 | 0,1 | 0,15 | 0,2 | 0,26 |
| 5.1.3 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 5.2.1 | rostfreier Stahlguss | | | | | | |
| 5.2.2 | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 95 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.1.2 | | | 85 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.1.3 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.1.4 | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 95 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.2.2 | | | 85 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.2.3 | | | 65 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.3.1 | GTW weisser Temperguss | | 95 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.3.2 | | | 85 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.4.1 | GTS schwarzer Temperguss | | 90 | 0,14 | 0,2 | 0,275 | 0,35 |
| 6.4.2 | | | 85 | 0,125 | 0,175 | 0,225 | 0,3 |
| 7.1.1 | Aluminium | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |

# W1101, beschichtet

HPC-Spiralbohrer

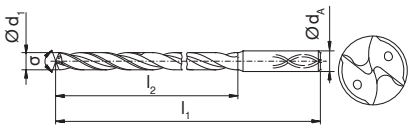


ST | HPC

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 12xD | σ 135°

SCPP415






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 7,8 | HPC.ST.1101.0780h7.12XD.135.IK.HA | 8 | 146 | 108 | W1101078540 |
| 7,9 | HPC.ST.1101.0790h7.12XD.135.IK.HA | 8 | 146 | 108 | W1101079540 |
| 8,0 | HPC.ST.1101.0800h7.12XD.135.IK.HA | 8 | 146 | 108 | W1101080540 |
| 8,1 | HPC.ST.1101.0810h7.12XD.135.IK.HA | 10 | 162 | 120 | W1101081540 |
| 8,2 | HPC.ST.1101.0820h7.12XD.135.IK.HA | 10 | 162 | 120 | W1101082540 |
| 8,3 | HPC.ST.1101.0830h7.12XD.135.IK.HA | 10 | 162 | 120 | W1101083540 |
| 8,4 | HPC.ST.1101.0840h7.12XD.135.IK.HA | 10 | 162 | 120 | W1101084540 |
| 8,5 | HPC.ST.1101.0850h7.12XD.135.IK.HA | 10 | 162 | 120 | W1101085540 |
| 8,6 | HPC.ST.1101.0860h7.12XD.135.IK.HA | 10 | 162 | 120 | W1101086540 |
| 8,7 | HPC.ST.1101.0870h7.12XD.135.IK.HA | 10 | 162 | 120 | W1101087540 |
| 8,8 | HPC.ST.1101.0880h7.12XD.135.IK.HA | 10 | 162 | 120 | W1101088540 |
| 8,9 | HPC.ST.1101.0890h7.12XD.135.IK.HA | 10 | 162 | 120 | W1101089540 |
| 9,0 | HPC.ST.1101.0900h7.12XD.135.IK.HA | 10 | 162 | 120 | W1101090540 |
| 9,1 | HPC.ST.1101.0910h7.12XD.135.IK.HA | 10 | 162 | 120 | W1101091540 |
| 9,2 | HPC.ST.1101.0920h7.12XD.135.IK.HA | 10 | 162 | 120 | W1101092540 |
| 9,3 | HPC.ST.1101.0930h7.12XD.135.IK.HA | 10 | 162 | 120 | W1101093540 |
| 9,4 | HPC.ST.1101.0940h7.12XD.135.IK.HA | 10 | 162 | 120 | W1101094540 |
| 9,5 | HPC.ST.1101.0950h7.12XD.135.IK.HA | 10 | 162 | 120 | W1101095540 |
| 9,6 | HPC.ST.1101.0960h7.12XD.135.IK.HA | 10 | 162 | 120 | W1101096540 |
| 9,7 | HPC.ST.1101.0970h7.12XD.135.IK.HA | 10 | 162 | 120 | W1101097540 |
| 9,8 | HPC.ST.1101.0980h7.12XD.135.IK.HA | 10 | 162 | 120 | W1101098540 |
| 9,9 | HPC.ST.1101.0990h7.12XD.135.IK.HA | 10 | 162 | 120 | W1101099540 |
| 10,0 | HPC.ST.1101.1000h7.12XD.135.IK.HA | 10 | 162 | 120 | W1101100540 |
| 10,2 | HPC.ST.1101.1020h7.12XD.135.IK.HA | 12 | 204 | 156 | W1101102540 |
| 10,5 | HPC.ST.1101.1050h7.12XD.135.IK.HA | 12 | 204 | 156 | W1101105540 |
| 10,8 | HPC.ST.1101.1080h7.12XD.135.IK.HA | 12 | 204 | 156 | W1101108540 |
| 11,0 | HPC.ST.1101.1100h7.12XD.135.IK.HA | 12 | 204 | 156 | W1101110540 |
| 11,2 | HPC.ST.1101.1120h7.12XD.135.IK.HA | 12 | 204 | 156 | W1101112540 |
| 11,5 | HPC.ST.1101.1150h7.12XD.135.IK.HA | 12 | 204 | 156 | W1101115540 |
| 11,8 | HPC.ST.1101.1180h7.12XD.135.IK.HA | 12 | 204 | 156 | W1101118540 |
| 12,0 | HPC.ST.1101.1200h7.12XD.135.IK.HA | 12 | 204 | 156 | W1101120540 |
| 12,5 | HPC.ST.1101.1250h7.12XD.135.IK.HA | 14 | 230 | 182 | W1101125540 |
| 12,8 | HPC.ST.1101.1280h7.12XD.135.IK.HA | 14 | 230 | 182 | W1101128540 |
| 13,0 | HPC.ST.1101.1300h7.12XD.135.IK.HA | 14 | 230 | 182 | W1101130540 |
| 13,5 | HPC.ST.1101.1350h7.12XD.135.IK.HA | 14 | 230 | 182 | W1101135540 |
| 13,8 | HPC.ST.1101.1380h7.12XD.135.IK.HA | 14 | 230 | 182 | W1101138540 |
| 14,0 | HPC.ST.1101.1400h7.12XD.135.IK.HA | 14 | 230 | 182 | W1101140540 |
| 14,5 | HPC.ST.1101.1450h7.12XD.135.IK.HA | 16 | 260 | 208 | W1101145540 |
| 14,8 | HPC.ST.1101.1480h7.12XD.135.IK.HA | 16 | 260 | 208 | W1101148540 |
| 15,0 | HPC.ST.1101.1500h7.12XD.135.IK.HA | 16 | 260 | 208 | W1101150540 |
| 15,5 | HPC.ST.1101.1550h7.12XD.135.IK.HA | 16 | 260 | 208 | W1101155540 |
| 15,8 | HPC.ST.1101.1580h7.12XD.135.IK.HA | 16 | 260 | 208 | W1101158540 |
| 16,0 | HPC.ST.1101.1600h7.12XD.135.IK.HA | 16 | 260 | 208 | W1101160540 |

# W1105, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 90 | 0,14 | 0,2 | 0,275 | 0,35 |
| 1.1.2 | | | 75 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.2.1 | Baustahl | | 90 | 0,14 | 0,2 | 0,275 | 0,35 |
| 1.2.2 | | | 75 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.2.3 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.3.1 | Federstahl | | | | | | |
| 1.3.2 | | | | | | | |
| 1.3.3 | | | | | | | |
| 2.1.1 | Einsatzstahl | | 80 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.1.2 | | | 75 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.1.3 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.2.1 | Nitrierstahl | | 70 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.2.2 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.1 | Vergütungsstahl | | 75 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.3.2 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.3 | | | 70 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.3.4 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.5 | | | 55 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.6 | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 55 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 70 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.2 | | | 55 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.3 | | | 32 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.4 | | | | | | | |
| 3.2.5 | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 55 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.3.2 | | | | | | | |
| 3.3.3 | | | | | | | |
| 3.3.4 | | | | | | | |
| 3.3.5 | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | |
| 4.1.2 | | | | | | | |
| 4.1.3 | | | | | | | |
| 4.1.4 | | | | | | | |
| 4.1.5 | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | |
| 4.2.2 | | | | | | | |
| 4.2.3 | | | | | | | |
| 4.2.4 | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 75 | 0,14 | 0,2 | 0,275 | 0,35 |
| 5.1.2 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 |
| 5.1.3 | | | 55 | 0,1 | 0,15 | 0,2 | 0,26 |
| 5.2.1 | rostfreier Stahlguss | | | | | | |
| 5.2.2 | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 85 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.2 | | | 75 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.3 | | | 70 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.4 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 6.2.1 | GGG mit Kugelgraphit | | 80 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.2.2 | | | 75 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.2.3 | | | 55 | 0,08 | 0,12 | 0,15 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 80 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.3.2 | | | 75 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.4.1 | GTS schwarzer Temperguss | | 80 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.4.2 | | | 75 | 0,2 | 0,25 | 0,35 | 0,4 |
| 7.1.1 | Aluminium | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | | | | | |
| 7.8.2 | | | | | | | |
| 7.8.3 | | | | | | | |

# W1105, beschichtet

HPC-Spiralbohrer

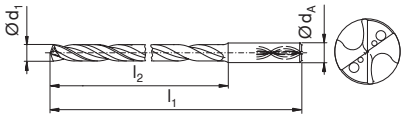


ST | HPC

$\lambda_S = 30°$ | $d_1$ = m6, $d_A$ = h6 | E | ≤ 12xD | σ 140°

SCPP415






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | HPC.ST.1105.0300m6.12XD.140.IK.HA | 6 | 92 | 54 | W1105030540 |
| 3,3 | HPC.ST.1105.0330m6.12XD.140.IK.HA | 6 | 92 | 54 | W1105033540 |
| 3,4 | HPC.ST.1105.0340m6.12XD.140.IK.HA | 6 | 92 | 54 | W1105034540 |
| 3,5 | HPC.ST.1105.0350m6.12XD.140.IK.HA | 6 | 92 | 54 | W1105035540 |
| 3,7 | HPC.ST.1105.0370m6.12XD.140.IK.HA | 6 | 92 | 54 | W1105037540 |
| 3,8 | HPC.ST.1105.0380m6.12XD.140.IK.HA | 6 | 102 | 64 | W1105038540 |
| 4,0 | HPC.ST.1105.0400m6.12XD.140.IK.HA | 6 | 102 | 64 | W1105040540 |
| 4,2 | HPC.ST.1105.0420m6.12XD.140.IK.HA | 6 | 102 | 64 | W1105042540 |
| 4,5 | HPC.ST.1105.0450m6.12XD.140.IK.HA | 6 | 102 | 64 | W1105045540 |
| 4,8 | HPC.ST.1105.0480m6.12XD.140.IK.HA | 6 | 116 | 78 | W1105048540 |
| 5,0 | HPC.ST.1105.0500m6.12XD.140.IK.HA | 6 | 116 | 78 | W1105050540 |
| 5,5 | HPC.ST.1105.0550m6.12XD.140.IK.HA | 6 | 116 | 78 | W1105055540 |
| 5,8 | HPC.ST.1105.0580m6.12XD.140.IK.HA | 6 | 116 | 78 | W1105058540 |
| 6,0 | HPC.ST.1105.0600m6.12XD.140.IK.HA | 6 | 116 | 78 | W1105060540 |
| 6,3 | HPC.ST.1105.0630m6.12XD.140.IK.HA | 8 | 146 | 108 | W1105063540 |
| 6,5 | HPC.ST.1105.0650m6.12XD.140.IK.HA | 8 | 146 | 108 | W1105065540 |
| 6,8 | HPC.ST.1105.0680m6.12XD.140.IK.HA | 8 | 146 | 108 | W1105068540 |
| 7,0 | HPC.ST.1105.0700m6.12XD.140.IK.HA | 8 | 146 | 108 | W1105070540 |
| 7,5 | HPC.ST.1105.0750m6.12XD.140.IK.HA | 8 | 146 | 108 | W1105075540 |
| 7,8 | HPC.ST.1105.0780m6.12XD.140.IK.HA | 8 | 146 | 108 | W1105078540 |
| 8,0 | HPC.ST.1105.0800m6.12XD.140.IK.HA | 8 | 146 | 108 | W1105080540 |
| 8,2 | HPC.ST.1105.0820m6.12XD.140.IK.HA | 10 | 162 | 120 | W1105082540 |
| 8,5 | HPC.ST.1105.0850m6.12XD.140.IK.HA | 10 | 162 | 120 | W1105085540 |
| 9,0 | HPC.ST.1105.0900m6.12XD.140.IK.HA | 10 | 162 | 120 | W1105090540 |
| 9,5 | HPC.ST.1105.0950m6.12XD.140.IK.HA | 10 | 162 | 120 | W1105095540 |
| 9,8 | HPC.ST.1105.0980m6.12XD.140.IK.HA | 10 | 162 | 120 | W1105098540 |
| 10,0 | HPC.ST.1105.1000m6.12XD.140.IK.HA | 10 | 162 | 120 | W1105100540 |
| 10,2 | HPC.ST.1105.1020m6.12XD.140.IK.HA | 12 | 204 | 156 | W1105102540 |
| 10,5 | HPC.ST.1105.1050m6.12XD.140.IK.HA | 12 | 204 | 156 | W1105105540 |
| 11,0 | HPC.ST.1105.1100m6.12XD.140.IK.HA | 12 | 204 | 156 | W1105110540 |
| 11,5 | HPC.ST.1105.1150m6.12XD.140.IK.HA | 12 | 204 | 156 | W1105115540 |
| 11,8 | HPC.ST.1105.1180m6.12XD.140.IK.HA | 12 | 204 | 156 | W1105118540 |
| 12,0 | HPC.ST.1105.1200m6.12XD.140.IK.HA | 12 | 204 | 156 | W1105120540 |
| 12,5 | HPC.ST.1105.1250m6.12XD.140.IK.HA | 14 | 230 | 182 | W1105125540 |
| 13,0 | HPC.ST.1105.1300m6.12XD.140.IK.HA | 14 | 230 | 182 | W1105130540 |
| 13,5 | HPC.ST.1105.1350m6.12XD.140.IK.HA | 14 | 230 | 182 | W1105135540 |
| 14,0 | HPC.ST.1105.1400m6.12XD.140.IK.HA | 14 | 230 | 182 | W1105140540 |
| 14,5 | HPC.ST.1105.1450m6.12XD.140.IK.HA | 16 | 260 | 208 | W1105145540 |
| 14,8 | HPC.ST.1105.1480m6.12XD.140.IK.HA | 16 | 260 | 208 | W1105148540 |
| 15,0 | HPC.ST.1105.1500m6.12XD.140.IK.HA | 16 | 260 | 208 | W1105150540 |
| 15,5 | HPC.ST.1105.1550m6.12XD.140.IK.HA | 16 | 260 | 208 | W1105155540 |
| 15,8 | HPC.ST.1105.1580m6.12XD.140.IK.HA | 16 | 260 | 208 | W1105158540 |
| 16,0 | HPC.ST.1105.1600m6.12XD.140.IK.HA | 16 | 260 | 208 | W1105160540 |

# W0141 und W0142, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 80 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 1.1.2 | | | 70 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 1.2.1 | Baustahl | | 80 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 1.2.2 | | | 70 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 1.2.3 | | | 65 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 1.3.1 | Federstahl | | | | | | | | |
| 1.3.2 | | | | | | | | | |
| 1.3.3 | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 75 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 2.1.2 | | | 70 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 2.1.3 | | | 65 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 2.2.1 | Nitrierstahl | | 65 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 2.2.2 | | | 65 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 2.3.1 | Vergütungsstahl | | 65 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 2.3.2 | | | 65 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 2.3.3 | | | 65 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 2.3.4 | | | 65 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 2.3.5 | | | 50 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 2.3.6 | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 50 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 65 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 3.2.2 | | | 50 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 3.2.3 | | | | | | | | | |
| 3.2.4 | | | | | | | | | |
| 3.2.5 | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 50 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 3.3.2 | | | | | | | | | |
| 3.3.3 | | | | | | | | | |
| 3.3.4 | | | | | | | | | |
| 3.3.5 | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | 28 | 0,04 | 0,055 | 0,065 | 0,075 | 0,09 | 0,11 |
| 3.5.2 | | 55–58 HRC | 20 | 0,04 | 0,055 | 0,065 | 0,075 | 0,09 | 0,11 |
| 3.5.3 | | 58–60 HRC | 16 | 0,04 | 0,055 | 0,065 | 0,075 | 0,09 | 0,11 |
| 3.5.4 | | 60–62 HRC | 14 | 0,04 | 0,055 | 0,065 | 0,075 | 0,09 | 0,11 |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | |
| 4.1.2 | | | | | | | | | |
| 4.1.3 | | | | | | | | | |
| 4.1.4 | | | | | | | | | |
| 4.1.5 | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | |
| 4.2.2 | | | | | | | | | |
| 4.2.3 | | | | | | | | | |
| 4.2.4 | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 75 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 5.1.2 | | | 70 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 | 0,45 |
| 5.1.3 | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | | |
| 5.2.2 | | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 70 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.1.2 | | | 70 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 6.1.3 | | | | | | | | | |
| 6.1.4 | | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 70 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 6.2.2 | | | 70 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 6.2.3 | | | | | | | | | |
| 6.3.1 | GTW weisser Temperguss | | 70 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 6.3.2 | | | 70 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 6.4.1 | GTS schwarzer Temperguss | | 70 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 6.4.2 | | | 70 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 | 0,325 |
| 7.1.1 | Aluminium | | 200 | 0,02 | 0,03 | 0,07 | 0,11 | 0,15 | 0,2 |
| 7.1.2 | | | 200 | 0,02 | 0,03 | 0,07 | 0,11 | 0,15 | 0,2 |
| 7.1.3 | | | 200 | 0,02 | 0,03 | 0,07 | 0,11 | 0,15 | 0,2 |
| 7.1.4 | | | 180 | 0,02 | 0,03 | 0,07 | 0,11 | 0,15 | 0,2 |
| 7.1.5 | | | 160 | 0,02 | 0,03 | 0,07 | 0,11 | 0,15 | 0,2 |
| 7.1.6 | | | 130 | 0,02 | 0,03 | 0,07 | 0,11 | 0,15 | 0,2 |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | 100 | 0,01 | 0,02 | 0,06 | 0,11 | 0,16 | 0,2 |
| 7.3.2 | | | 100 | 0,01 | 0,02 | 0,06 | 0,11 | 0,16 | 0,2 |
| 7.3.3 | | | 100 | 0,01 | 0,02 | 0,06 | 0,11 | 0,16 | 0,2 |
| 7.3.4 | | | 60 | 0,01 | 0,02 | 0,06 | 0,11 | 0,16 | 0,2 |
| 7.3.5 | | | 60 | 0,01 | 0,02 | 0,06 | 0,11 | 0,16 | 0,2 |
| 7.3.6 | | | 60 | 0,01 | 0,02 | 0,06 | 0,11 | 0,16 | 0,2 |
| 7.4.1 | CuZn (Messing) | | 120 | 0,01 | 0,02 | 0,06 | 0,11 | 0,16 | 0,2 |
| 7.4.2 | | | 160 | 0,01 | 0,02 | 0,06 | 0,11 | 0,16 | 0,2 |
| 7.5.1 | CuSn (Bronze) | | 60 | 0,01 | 0,02 | 0,06 | 0,11 | 0,16 | 0,2 |
| 7.5.2 | | | 70 | 0,01 | 0,02 | 0,06 | 0,11 | 0,16 | 0,2 |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |

# W0141 und W0142, beschichtet

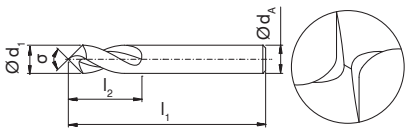
Anbohrer



| ST | A | | | | |
|---|---|---|---|---|---|
| $\lambda_S = 30°$ | $d_1$ = h6<br>$d_A$ = h6 | | E | σ<br>142° | σ<br>90° |

SCPP425






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | σ [°] | HA Material | HB Material |
|---|---|---|---|---|---|---|---|
| 2,0 | A.ST.0141.0200.90.HA | 2 | 32 | 6 | 90 | W0141020140 | |
| 3,0 | A.ST.0141.0300.90.HA | 3 | 32 | 8 | 90 | W0141030140 | |
| 3,0 | A.ST.0142.0300.142.HA | 3 | 32 | 8 | 142 | W0142030140 | |
| 4,0 | A.ST.0141.0400.90.HA | 4 | 40 | 10 | 90 | W0141040140 | |
| 4,0 | A.ST.0142.0400.142.HA | 4 | 40 | 10 | 142 | W0142040140 | |
| 5,0 | A.ST.0141.0500.90.HA | 5 | 50 | 13 | 90 | W0141050140 | |
| 5,0 | A.ST.0142.0500.142.HA | 5 | 50 | 13 | 142 | W0142050140 | |
| 6,0 | A.ST.0141.0600.90.HA | 6 | 50 | 13 | 90 | W0141060140 | |
| 6,0 | A.ST.0142.0600.142.HB | 6 | 50 | 13 | 142 | | W0142060141 |
| 8,0 | A.ST.0141.0800.90.HA | 8 | 60 | 23 | 90 | W0141080140 | |
| 8,0 | A.ST.0142.0800.142.HB | 8 | 60 | 23 | 142 | | W0142080141 |
| 10,0 | A.ST.0141.1000.90.HA | 10 | 70 | 24 | 90 | W0141100140 | |
| 10,0 | A.ST.0142.1000.142.HB | 10 | 70 | 24 | 142 | | W0142100141 |
| 12,0 | A.ST.0141.1200.90.HA | 12 | 70 | 24 | 90 | W0141120140 | |
| 12,0 | A.ST.0142.1200.142.HB | 12 | 70 | 24 | 142 | | W0142120141 |
| 16,0 | A.ST.0141.1600.90.HA | 16 | 75 | 29 | 90 | W0141160140 | |
| 16,0 | A.ST.0142.1600.142.HB | 16 | 75 | 29 | 142 | | W0142160141 |
| 20,0 | A.ST.0142.2000.142.HB | 20 | 100 | 35 | 142 | | W0142200141 |

# W0144, beschichtet

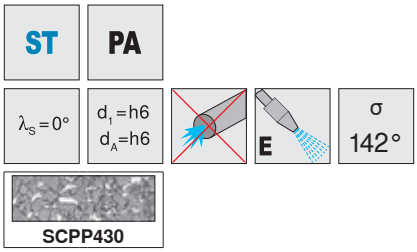
Schnittdatenempfehlung



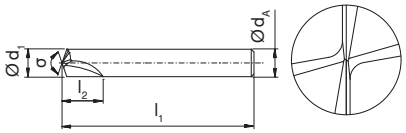
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 1.1.2 | | | 85 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 1.2.1 | Baustahl | | 100 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 1.2.2 | | | 85 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 1.2.3 | | | 80 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 1.3.1 | Federstahl | | | | | | | | |
| 1.3.2 | | | | | | | | | |
| 1.3.3 | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 95 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 2.1.2 | | | 85 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 2.1.3 | | | 80 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 2.2.1 | Nitrierstahl | | 80 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 2.2.2 | | | 80 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 2.3.1 | Vergütungsstahl | | 80 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 2.3.2 | | | 80 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 2.3.3 | | | 80 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 2.3.4 | | | 80 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 2.3.5 | | | 60 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 2.3.6 | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 60 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 80 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 3.2.2 | | | 60 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 3.2.3 | | | | | | | | | |
| 3.2.4 | | | | | | | | | |
| 3.2.5 | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 60 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 3.3.2 | | | | | | | | | |
| 3.3.3 | | | | | | | | | |
| 3.3.4 | | | | | | | | | |
| 3.3.5 | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | |
| 4.1.2 | | | | | | | | | |
| 4.1.3 | | | | | | | | | |
| 4.1.4 | | | | | | | | | |
| 4.1.5 | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | |
| 4.2.2 | | | | | | | | | |
| 4.2.3 | | | | | | | | | |
| 4.2.4 | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 95 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 5.1.2 | | | 85 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 5.1.3 | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | | |
| 5.2.2 | | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 85 | 0,014 | 0,022 | 0,035 | 0,053 | 0,063 | 0,07 |
| 6.1.2 | | | 85 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 6.1.3 | | | | | | | | | |
| 6.1.4 | | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 85 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 6.2.2 | | | 85 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 6.2.3 | | | | | | | | | |
| 6.3.1 | GTW weisser Temperguss | | 85 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 6.3.2 | | | 85 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 6.4.1 | GTS schwarzer Temperguss | | 85 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 6.4.2 | | | 85 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 7.1.1 | Aluminium | | 250 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 7.1.2 | | | 250 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 7.1.3 | | | 250 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 7.1.4 | | | 225 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 7.1.5 | | | 200 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 7.1.6 | | | 160 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | 125 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 7.3.2 | | | 125 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 7.3.3 | | | 125 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 7.3.4 | | | 75 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 7.3.5 | | | 75 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 7.3.6 | | | 75 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 7.4.1 | CuZn (Messing) | | 150 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 7.4.2 | | | 200 | 0,014 | 0,022 | 0,035 | 0,053 | 0,063 | 0,07 |
| 7.5.1 | CuSn (Bronze) | | 75 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 7.5.2 | | | 85 | 0,014 | 0,022 | 0,035 | 0,053 | 0,063 | 0,07 |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |

# W0144, beschichtet

Präzisionsanbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | σ [°] | HA Material | HB Material |
|---|---|---|---|---|---|---|---|
| 2,0 | PA.ST.0144.0200.142.HA | 2 | 32 | 3 | 142 | W0144020340 | |
| 3,0 | PA.ST.0144.0300.142.HA | 3 | 32 | 4,5 | 142 | W0144030340 | |
| 4,0 | PA.ST.0144.0400.142.HA | 4 | 40 | 6 | 142 | W0144040340 | |
| 5,0 | PA.ST.0144.0500.142.HA | 5 | 50 | 7,5 | 142 | W0144050340 | |
| 6,0 | PA.ST.0144.0600.142.HB | 6 | 50 | 9 | 142 | | W0144060341 |
| 8,0 | PA.ST.0144.0800.142.HB | 8 | 60 | 12 | 142 | | W0144080341 |
| 10,0 | PA.ST.0144.1000.142.HB | 10 | 70 | 15 | 142 | | W0144100341 |
| 12,0 | PA.ST.0144.1200.142.HB | 12 | 70 | 18 | 142 | | W0144120341 |
| 16,0 | PA.ST.0144.1600.142.HB | 16 | 75 | 24 | 142 | | W0144160341 |
| 20,0 | PA.ST.0144.2000.142.HB | 20 | 100 | 30 | 142 | | W0144200341 |

# W0109, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.1.2 | | | 90 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.2.1 | Baustahl | | 100 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.2.2 | | | 90 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.2.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 |
| 1.3.1 | Federstahl | | | | | | |
| 1.3.2 | | | | | | | |
| 1.3.3 | | | | | | | |
| 2.1.1 | Einsatzstahl | | 95 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.1.2 | | | 85 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.1.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.2.1 | Nitrierstahl | | 75 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.2.2 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.3.1 | Vergütungsstahl | | 85 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.2 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.3.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.4 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.3.5 | | | | | | | |
| 2.3.6 | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | |
| 3.2.2 | | | | | | | |
| 3.2.3 | | | | | | | |
| 3.2.4 | | | | | | | |
| 3.2.5 | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | |
| 3.3.2 | | | | | | | |
| 3.3.3 | | | | | | | |
| 3.3.4 | | | | | | | |
| 3.3.5 | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | 75 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.2 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.3 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.4 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.5 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | |
| 4.2.2 | | | | | | | |
| 4.2.3 | | | | | | | |
| 4.2.4 | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 80 | 0,16 | 0,22 | 0,28 | 0,34 |
| 5.1.2 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 |
| 5.1.3 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 |
| 5.2.1 | rostfreier Stahlguss | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 5.2.2 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 6.1.1 | GG mit lamellarem Graphit | | 105 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.1.2 | | | 85 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.1.3 | | | 75 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.1.4 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 6.2.1 | GGG mit Kugelgraphit | | 85 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.2.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.2.3 | | | 60 | 0,11 | 0,125 | 0,15 | 0,175 |
| 6.3.1 | GTW weisser Temperguss | | 85 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.3.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.4.1 | GTS schwarzer Temperguss | | 85 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.4.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 |
| 7.1.1 | Aluminium | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | 30 | 0,04 | 0,08 | 0,12 | 0,16 |
| 7.8.2 | | | 25 | 0,04 | 0,08 | 0,12 | 0,16 |
| 7.8.3 | | | 25 | 0,04 | 0,08 | 0,12 | 0,16 |

# W0109, beschichtet

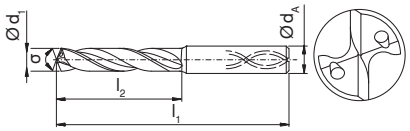
Hochleistungs-Spiralbohrer

VA | HL

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 3xD | σ 135°

SCPM410






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | HL.VA.0109.0300h7.3XD.135.IK.HA | 6 | 62 | 20 | W0109030240 |
| 3,1 | HL.VA.0109.0310h7.3XD.135.IK.HA | 6 | 62 | 20 | W0109031240 |
| 3,2 | HL.VA.0109.0320h7.3XD.135.IK.HA | 6 | 62 | 20 | W0109032240 |
| 3,3 | HL.VA.0109.0330h7.3XD.135.IK.HA | 6 | 62 | 20 | W0109033240 |
| 3,4 | HL.VA.0109.0340h7.3XD.135.IK.HA | 6 | 62 | 20 | W0109034240 |
| 3,5 | HL.VA.0109.0350h7.3XD.135.IK.HA | 6 | 62 | 20 | W0109035240 |
| 3,6 | HL.VA.0109.0360h7.3XD.135.IK.HA | 6 | 62 | 20 | W0109036240 |
| 3,7 | HL.VA.0109.0370h7.3XD.135.IK.HA | 6 | 62 | 20 | W0109037240 |
| 3,8 | HL.VA.0109.0380h7.3XD.135.IK.HA | 6 | 66 | 24 | W0109038240 |
| 3,9 | HL.VA.0109.0390h7.3XD.135.IK.HA | 6 | 66 | 24 | W0109039240 |
| 4,0 | HL.VA.0109.0400h7.3XD.135.IK.HA | 6 | 66 | 24 | W0109040240 |
| 4,1 | HL.VA.0109.0410h7.3XD.135.IK.HA | 6 | 66 | 24 | W0109041240 |
| 4,2 | HL.VA.0109.0420h7.3XD.135.IK.HA | 6 | 66 | 24 | W0109042240 |
| 4,3 | HL.VA.0109.0430h7.3XD.135.IK.HA | 6 | 66 | 24 | W0109043240 |
| 4,4 | HL.VA.0109.0440h7.3XD.135.IK.HA | 6 | 66 | 24 | W0109044240 |
| 4,5 | HL.VA.0109.0450h7.3XD.135.IK.HA | 6 | 66 | 24 | W0109045240 |
| 4,6 | HL.VA.0109.0460h7.3XD.135.IK.HA | 6 | 66 | 24 | W0109046240 |
| 4,7 | HL.VA.0109.0470h7.3XD.135.IK.HA | 6 | 66 | 24 | W0109047240 |
| 4,8 | HL.VA.0109.0480h7.3XD.135.IK.HA | 6 | 66 | 28 | W0109048240 |
| 4,9 | HL.VA.0109.0490h7.3XD.135.IK.HA | 6 | 66 | 28 | W0109049240 |
| 5,0 | HL.VA.0109.0500h7.3XD.135.IK.HA | 6 | 66 | 28 | W0109050240 |
| 5,1 | HL.VA.0109.0510h7.3XD.135.IK.HA | 6 | 66 | 28 | W0109051240 |
| 5,2 | HL.VA.0109.0520h7.3XD.135.IK.HA | 6 | 66 | 28 | W0109052240 |
| 5,3 | HL.VA.0109.0530h7.3XD.135.IK.HA | 6 | 66 | 28 | W0109053240 |
| 5,4 | HL.VA.0109.0540h7.3XD.135.IK.HA | 6 | 66 | 28 | W0109054240 |
| 5,5 | HL.VA.0109.0550h7.3XD.135.IK.HA | 6 | 66 | 28 | W0109055240 |
| 5,6 | HL.VA.0109.0560h7.3XD.135.IK.HA | 6 | 66 | 28 | W0109056240 |
| 5,7 | HL.VA.0109.0570h7.3XD.135.IK.HA | 6 | 66 | 28 | W0109057240 |
| 5,8 | HL.VA.0109.0580h7.3XD.135.IK.HA | 6 | 66 | 28 | W0109058240 |
| 5,9 | HL.VA.0109.0590h7.3XD.135.IK.HA | 6 | 66 | 28 | W0109059240 |
| 6,0 | HL.VA.0109.0600h7.3XD.135.IK.HA | 6 | 66 | 28 | W0109060240 |
| 6,1 | HL.VA.0109.0610h7.3XD.135.IK.HA | 8 | 79 | 34 | W0109061240 |
| 6,2 | HL.VA.0109.0620h7.3XD.135.IK.HA | 8 | 79 | 34 | W0109062240 |
| 6,3 | HL.VA.0109.0630h7.3XD.135.IK.HA | 8 | 79 | 34 | W0109063240 |
| 6,4 | HL.VA.0109.0640h7.3XD.135.IK.HA | 8 | 79 | 34 | W0109064240 |
| 6,5 | HL.VA.0109.0650h7.3XD.135.IK.HA | 8 | 79 | 34 | W0109065240 |
| 6,6 | HL.VA.0109.0660h7.3XD.135.IK.HA | 8 | 79 | 34 | W0109066240 |
| 6,7 | HL.VA.0109.0670h7.3XD.135.IK.HA | 8 | 79 | 34 | W0109067240 |
| 6,8 | HL.VA.0109.0680h7.3XD.135.IK.HA | 8 | 79 | 34 | W0109068240 |
| 6,9 | HL.VA.0109.0690h7.3XD.135.IK.HA | 8 | 79 | 34 | W0109069240 |
| 7,0 | HL.VA.0109.0700h7.3XD.135.IK.HA | 8 | 79 | 34 | W0109070240 |
| 7,1 | HL.VA.0109.0710h7.3XD.135.IK.HA | 8 | 79 | 41 | W0109071240 |
| 7,2 | HL.VA.0109.0720h7.3XD.135.IK.HA | 8 | 79 | 41 | W0109072240 |
| 7,3 | HL.VA.0109.0730h7.3XD.135.IK.HA | 8 | 79 | 41 | W0109073240 |
| 7,4 | HL.VA.0109.0740h7.3XD.135.IK.HA | 8 | 79 | 41 | W0109074240 |
| 7,5 | HL.VA.0109.0750h7.3XD.135.IK.HA | 8 | 79 | 41 | W0109075240 |
| 7,6 | HL.VA.0109.0760h7.3XD.135.IK.HA | 8 | 79 | 41 | W0109076240 |
| 7,7 | HL.VA.0109.0770h7.3XD.135.IK.HA | 8 | 79 | 41 | W0109077240 |

# W0109, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.1.2 | | | 90 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.2.1 | Baustahl | | 100 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.2.2 | | | 90 | 0,16 | 0,22 | 0,28 | 0,34 |
| 1.2.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 |
| 1.3.1 | Federstahl | | | | | | |
| 1.3.2 | | | | | | | |
| 1.3.3 | | | | | | | |
| 2.1.1 | Einsatzstahl | | 95 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.1.2 | | | 85 | 0,16 | 0,22 | 0,28 | 0,34 |
| 2.1.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.2.1 | Nitrierstahl | | 75 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.2.2 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.3.1 | Vergütungsstahl | | 85 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.2 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.3.3 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 |
| 2.3.4 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 |
| 2.3.5 | | | | | | | |
| 2.3.6 | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | |
| 3.2.2 | | | | | | | |
| 3.2.3 | | | | | | | |
| 3.2.4 | | | | | | | |
| 3.2.5 | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | |
| 3.3.2 | | | | | | | |
| 3.3.3 | | | | | | | |
| 3.3.4 | | | | | | | |
| 3.3.5 | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | 75 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.2 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.3 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.4 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.5 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | |
| 4.2.2 | | | | | | | |
| 4.2.3 | | | | | | | |
| 4.2.4 | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 80 | 0,16 | 0,22 | 0,28 | 0,34 |
| 5.1.2 | | | 75 | 0,15 | 0,21 | 0,27 | 0,32 |
| 5.1.3 | | | 60 | 0,08 | 0,12 | 0,15 | 0,2 |
| 5.2.1 | rostfreier Stahlguss | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 5.2.2 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 6.1.1 | GG mit lamellarem Graphit | | 105 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.1.2 | | | 85 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.1.3 | | | 75 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.1.4 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 6.2.1 | GGG mit Kugelgraphit | | 85 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.2.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.2.3 | | | 60 | 0,11 | 0,125 | 0,15 | 0,175 |
| 6.3.1 | GTW weisser Temperguss | | 85 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.3.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.4.1 | GTS schwarzer Temperguss | | 85 | 0,125 | 0,175 | 0,225 | 0,3 |
| 6.4.2 | | | 80 | 0,125 | 0,175 | 0,225 | 0,3 |
| 7.1.1 | Aluminium | | | | | | |
| 7.1.2 | | | | | | | |
| 7.1.3 | | | | | | | |
| 7.1.4 | | | | | | | |
| 7.1.5 | | | | | | | |
| 7.1.6 | | | | | | | |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | 30 | 0,04 | 0,08 | 0,12 | 0,16 |
| 7.8.2 | | | 25 | 0,04 | 0,08 | 0,12 | 0,16 |
| 7.8.3 | | | 25 | 0,04 | 0,08 | 0,12 | 0,16 |

# W0109, beschichtet

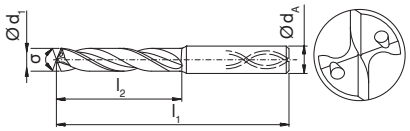
Hochleistungs-Spiralbohrer

VA | HL

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 3xD | σ 135°

SCPM410






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 7,8 | HL.VA.0109.0780h7.3XD.135.IK.HA | 8 | 79 | 41 | W0109078240 |
| 7,9 | HL.VA.0109.0790h7.3XD.135.IK.HA | 8 | 79 | 41 | W0109079240 |
| 8,0 | HL.VA.0109.0800h7.3XD.135.IK.HA | 8 | 79 | 41 | W0109080240 |
| 8,1 | HL.VA.0109.0810h7.3XD.135.IK.HA | 10 | 89 | 47 | W0109081240 |
| 8,2 | HL.VA.0109.0820h7.3XD.135.IK.HA | 10 | 89 | 47 | W0109082240 |
| 8,3 | HL.VA.0109.0830h7.3XD.135.IK.HA | 10 | 89 | 47 | W0109083240 |
| 8,4 | HL.VA.0109.0840h7.3XD.135.IK.HA | 10 | 89 | 47 | W0109084240 |
| 8,5 | HL.VA.0109.0850h7.3XD.135.IK.HA | 10 | 89 | 47 | W0109085240 |
| 8,6 | HL.VA.0109.0860h7.3XD.135.IK.HA | 10 | 89 | 47 | W0109086240 |
| 8,7 | HL.VA.0109.0870h7.3XD.135.IK.HA | 10 | 89 | 47 | W0109087240 |
| 8,8 | HL.VA.0109.0880h7.3XD.135.IK.HA | 10 | 89 | 47 | W0109088240 |
| 8,9 | HL.VA.0109.0890h7.3XD.135.IK.HA | 10 | 89 | 47 | W0109089240 |
| 9,0 | HL.VA.0109.0900h7.3XD.135.IK.HA | 10 | 89 | 47 | W0109090240 |
| 9,1 | HL.VA.0109.0910h7.3XD.135.IK.HA | 10 | 89 | 47 | W0109091240 |
| 9,2 | HL.VA.0109.0920h7.3XD.135.IK.HA | 10 | 89 | 47 | W0109092240 |
| 9,3 | HL.VA.0109.0930h7.3XD.135.IK.HA | 10 | 89 | 47 | W0109093240 |
| 9,4 | HL.VA.0109.0940h7.3XD.135.IK.HA | 10 | 89 | 47 | W0109094240 |
| 9,5 | HL.VA.0109.0950h7.3XD.135.IK.HA | 10 | 89 | 47 | W0109095240 |
| 9,6 | HL.VA.0109.0960h7.3XD.135.IK.HA | 10 | 89 | 47 | W0109096240 |
| 9,7 | HL.VA.0109.0970h7.3XD.135.IK.HA | 10 | 89 | 47 | W0109097240 |
| 9,8 | HL.VA.0109.0980h7.3XD.135.IK.HA | 10 | 89 | 47 | W0109098240 |
| 9,9 | HL.VA.0109.0990h7.3XD.135.IK.HA | 10 | 89 | 47 | W0109099240 |
| 10,0 | HL.VA.0109.1000h7.3XD.135.IK.HA | 10 | 89 | 47 | W0109100240 |
| 10,2 | HL.VA.0109.1020h7.3XD.135.IK.HA | 12 | 102 | 55 | W0109102240 |
| 10,5 | HL.VA.0109.1050h7.3XD.135.IK.HA | 12 | 102 | 55 | W0109105240 |
| 10,8 | HL.VA.0109.1080h7.3XD.135.IK.HA | 12 | 102 | 55 | W0109108240 |
| 11,0 | HL.VA.0109.1100h7.3XD.135.IK.HA | 12 | 102 | 55 | W0109110240 |
| 11,2 | HL.VA.0109.1120h7.3XD.135.IK.HA | 12 | 102 | 55 | W0109112240 |
| 11,5 | HL.VA.0109.1150h7.3XD.135.IK.HA | 12 | 102 | 55 | W0109115240 |
| 11,8 | HL.VA.0109.1180h7.3XD.135.IK.HA | 12 | 102 | 55 | W0109118240 |
| 12,0 | HL.VA.0109.1200h7.3XD.135.IK.HA | 12 | 102 | 55 | W0109120240 |
| 12,2 | HL.VA.0109.1220h7.3XD.135.IK.HA | 14 | 107 | 60 | W0109122240 |
| 12,5 | HL.VA.0109.1250h7.3XD.135.IK.HA | 14 | 107 | 60 | W0109125240 |
| 12,8 | HL.VA.0109.1280h7.3XD.135.IK.HA | 14 | 107 | 60 | W0109128240 |
| 13,0 | HL.VA.0109.1300h7.3XD.135.IK.HA | 14 | 107 | 60 | W0109130240 |
| 13,5 | HL.VA.0109.1350h7.3XD.135.IK.HA | 14 | 107 | 60 | W0109135240 |
| 13,8 | HL.VA.0109.1380h7.3XD.135.IK.HA | 14 | 107 | 60 | W0109138240 |
| 14,0 | HL.VA.0109.1400h7.3XD.135.IK.HA | 14 | 107 | 60 | W0109140240 |
| 14,2 | HL.VA.0109.1420h7.3XD.135.IK.HA | 16 | 115 | 65 | W0109142240 |
| 14,5 | HL.VA.0109.1450h7.3XD.135.IK.HA | 16 | 115 | 65 | W0109145240 |
| 14,8 | HL.VA.0109.1480h7.3XD.135.IK.HA | 16 | 115 | 65 | W0109148240 |
| 15,0 | HL.VA.0109.1500h7.3XD.135.IK.HA | 16 | 115 | 65 | W0109150240 |
| 15,2 | HL.VA.0109.1520h7.3XD.135.IK.HA | 16 | 115 | 65 | W0109152240 |
| 15,5 | HL.VA.0109.1550h7.3XD.135.IK.HA | 16 | 115 | 65 | W0109155240 |
| 15,8 | HL.VA.0109.1580h7.3XD.135.IK.HA | 16 | 115 | 65 | W0109158240 |
| 16,0 | HL.VA.0109.1600h7.3XD.135.IK.HA | 16 | 115 | 65 | W0109160240 |

# W0108, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 1,0 = Ø 1,5 | > Ø 1,5 = Ø 2,0 | > Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.1.2 | | | 90 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.1 | Baustahl | | 100 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.2 | | | 90 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.3 | | | 75 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.1 | Federstahl | | | | | | | | | | |
| 1.3.2 | | | | | | | | | | | |
| 1.3.3 | | | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 95 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.2 | | | 85 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.3 | | | 75 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.1 | Nitrierstahl | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.2.2 | | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.1 | Vergütungsstahl | | 85 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.2 | | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.3 | | | 75 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.4 | | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.5 | | | | | | | | | | | |
| 2.3.6 | | | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | | | | | |
| 3.2.2 | | | | | | | | | | | |
| 3.2.3 | | | | | | | | | | | |
| 3.2.4 | | | | | | | | | | | |
| 3.2.5 | | | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | | | |
| 3.3.2 | | | | | | | | | | | |
| 3.3.3 | | | | | | | | | | | |
| 3.3.4 | | | | | | | | | | | |
| 3.3.5 | | | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.2 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.3 | | | 70 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.4 | | | 70 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.5 | | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | | |
| 4.2.2 | | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 80 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.2 | | | 75 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 5.1.3 | | | 60 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.1 | rostfreier Stahlguss | | 70 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.2 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.1.1 | GG mit lamellarem Graphit | | 105 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.2 | | | 85 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.3 | | | 75 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.4 | | | 70 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.2.1 | GGG mit Kugelgraphit | | 85 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.2 | | | 80 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.3 | | | 60 | 0,038 | 0,05 | 0,075 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 85 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.3.2 | | | 80 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.1 | GTS schwarzer Temperguss | | 85 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.2 | | | 80 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 7.1.1 | Aluminium | | | | | | | | | | |
| 7.1.2 | | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | | |
| 7.2.2 | | | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | | | |
| 7.3.2 | | | | | | | | | | | |
| 7.3.3 | | | | | | | | | | | |
| 7.3.4 | | | | | | | | | | | |
| 7.3.5 | | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | | |
| 7.4.2 | | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | | |
| 7.5.2 | | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | | |
| 7.6.2 | | | | | | | | | | | |
| 7.8.1 | Titan | | 30 | 0,01 | 0,013 | 0,02 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.2 | | | 25 | 0,01 | 0,013 | 0,02 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.3 | | | 25 | 0,01 | 0,013 | 0,02 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |

# W0108, beschichtet

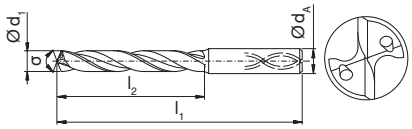
Hochleistungs-Spiralbohrer

VA | HL

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 5xD | σ 135°

SCPM415






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 1,0 | HL.VA.0108.0100h7.5XD.135.IK.HA | 4 | 55 | 8 | W0108010340 |
| 1,1 | HL.VA.0108.0110h7.5XD.135.IK.HA | 4 | 55 | 12 | W0108011340 |
| 1,2 | HL.VA.0108.0120h7.5XD.135.IK.HA | 4 | 55 | 12 | W0108012340 |
| 1,3 | HL.VA.0108.0130h7.5XD.135.IK.HA | 4 | 55 | 12 | W0108013340 |
| 1,4 | HL.VA.0108.0140h7.5XD.135.IK.HA | 4 | 55 | 12 | W0108014340 |
| 1,5 | HL.VA.0108.0150h7.5XD.135.IK.HA | 4 | 55 | 12 | W0108015340 |
| 1,6 | HL.VA.0108.0160h7.5XD.135.IK.HA | 4 | 55 | 16 | W0108016340 |
| 1,7 | HL.VA.0108.0170h7.5XD.135.IK.HA | 4 | 55 | 16 | W0108017340 |
| 1,8 | HL.VA.0108.0180h7.5XD.135.IK.HA | 4 | 55 | 16 | W0108018340 |
| 1,9 | HL.VA.0108.0190h7.5XD.135.IK.HA | 4 | 55 | 16 | W0108019340 |
| 2,0 | HL.VA.0108.0200h7.5XD.135.IK.HA | 4 | 57 | 21 | W0108020340 |
| 2,02 | HL.VA.0108.0202h7.5XD.135.IK.HA | 4 | 57 | 21 | W0108020290 |
| 2,1 | HL.VA.0108.0210h7.5XD.135.IK.HA | 4 | 57 | 21 | W0108021340 |
| 2,2 | HL.VA.0108.0220h7.5XD.135.IK.HA | 4 | 57 | 21 | W0108022340 |
| 2,22 | HL.VA.0108.0222h7.5XD.135.IK.HA | 4 | 57 | 21 | W0108022290 |
| 2,3 | HL.VA.0108.0230h7.5XD.135.IK.HA | 4 | 57 | 21 | W0108023340 |
| 2,32 | HL.VA.0108.0232h7.5XD.135.IK.HA | 4 | 57 | 21 | W0108023290 |
| 2,4 | HL.VA.0108.0240h7.5XD.135.IK.HA | 4 | 57 | 21 | W0108024340 |
| 2,42 | HL.VA.0108.0242h7.5XD.135.IK.HA | 4 | 57 | 21 | W0108024290 |
| 2,5 | HL.VA.0108.0250h7.5XD.135.IK.HA | 4 | 57 | 21 | W0108025340 |
| 2,52 | HL.VA.0108.0252h7.5XD.135.IK.HA | 4 | 57 | 21 | W0108025290 |
| 2,6 | HL.VA.0108.0260h7.5XD.135.IK.HA | 4 | 57 | 21 | W0108026340 |
| 2,7 | HL.VA.0108.0270h7.5XD.135.IK.HA | 4 | 57 | 21 | W0108027340 |
| 2,72 | HL.VA.0108.0272h7.5XD.135.IK.HA | 4 | 57 | 21 | W0108027290 |
| 2,8 | HL.VA.0108.0280h7.5XD.135.IK.HA | 4 | 57 | 21 | W0108028340 |
| 2,82 | HL.VA.0108.0282h7.5XD.135.IK.HA | 4 | 57 | 21 | W0108028290 |
| 2,9 | HL.VA.0108.0290h7.5XD.135.IK.HA | 4 | 57 | 21 | W0108029340 |
| 3,0 | HL.VA.0108.0300h7.5XD.135.IK.HA | 6 | 66 | 28 | W0108030340 |
| 3,02 | HL.VA.0108.0302h7.5XD.135.IK.HA | 6 | 66 | 28 | W0108030290 |
| 3,1 | HL.VA.0108.0310h7.5XD.135.IK.HA | 6 | 66 | 28 | W0108031340 |
| 3,2 | HL.VA.0108.0320h7.5XD.135.IK.HA | 6 | 66 | 28 | W0108032340 |
| 3,22 | HL.VA.0108.0322h7.5XD.135.IK.HA | 6 | 66 | 28 | W0108032290 |
| 3,3 | HL.VA.0108.0330h7.5XD.135.IK.HA | 6 | 66 | 28 | W0108033340 |
| 3,32 | HL.VA.0108.0332h7.5XD.135.IK.HA | 6 | 66 | 28 | W0108033290 |
| 3,4 | HL.VA.0108.0340h7.5XD.135.IK.HA | 6 | 66 | 28 | W0108034340 |
| 3,5 | HL.VA.0108.0350h7.5XD.135.IK.HA | 6 | 66 | 28 | W0108035340 |
| 3,52 | HL.VA.0108.0352h7.5XD.135.IK.HA | 6 | 66 | 28 | W0108035290 |
| 3,6 | HL.VA.0108.0360h7.5XD.135.IK.HA | 6 | 66 | 28 | W0108036340 |
| 3,7 | HL.VA.0108.0370h7.5XD.135.IK.HA | 6 | 66 | 28 | W0108037340 |
| 3,8 | HL.VA.0108.0380h7.5XD.135.IK.HA | 6 | 74 | 36 | W0108038340 |
| 3,82 | HL.VA.0108.0382h7.5XD.135.IK.HA | 6 | 74 | 36 | W0108038290 |
| 3,9 | HL.VA.0108.0390h7.5XD.135.IK.HA | 6 | 74 | 36 | W0108039340 |
| 4,0 | HL.VA.0108.0400h7.5XD.135.IK.HA | 6 | 74 | 36 | W0108040340 |
| 4,02 | HL.VA.0108.0402h7.5XD.135.IK.HA | 6 | 74 | 36 | W0108040290 |
| 4,1 | HL.VA.0108.0410h7.5XD.135.IK.HA | 6 | 74 | 36 | W0108041340 |
| 4,2 | HL.VA.0108.0420h7.5XD.135.IK.HA | 6 | 74 | 36 | W0108042340 |
| 4,22 | HL.VA.0108.0422h7.5XD.135.IK.HA | 6 | 74 | 36 | W0108042290 |
| 4,3 | HL.VA.0108.0430h7.5XD.135.IK.HA | 6 | 74 | 36 | W0108043340 |

# W0108, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 1,0 = Ø 1,5 | > Ø 1,5 = Ø 2,0 | > Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.1.2 | | | 90 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.1 | Baustahl | | 100 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.2 | | | 90 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.3 | | | 75 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.1 | Federstahl | | | | | | | | | | |
| 1.3.2 | | | | | | | | | | | |
| 1.3.3 | | | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 95 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.2 | | | 85 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.3 | | | 75 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.1 | Nitrierstahl | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.2.2 | | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.1 | Vergütungsstahl | | 85 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.2 | | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.3 | | | 75 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.4 | | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.5 | | | | | | | | | | | |
| 2.3.6 | | | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | | | | | |
| 3.2.2 | | | | | | | | | | | |
| 3.2.3 | | | | | | | | | | | |
| 3.2.4 | | | | | | | | | | | |
| 3.2.5 | | | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | | | |
| 3.3.2 | | | | | | | | | | | |
| 3.3.3 | | | | | | | | | | | |
| 3.3.4 | | | | | | | | | | | |
| 3.3.5 | | | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.2 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.3 | | | 70 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.4 | | | 70 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.5 | | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | | |
| 4.2.2 | | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 80 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.2 | | | 75 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 5.1.3 | | | 60 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.1 | rostfreier Stahlguss | | 70 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.2 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.1.1 | GG mit lamellarem Graphit | | 105 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.2 | | | 85 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.3 | | | 75 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.4 | | | 70 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.2.1 | GGG mit Kugelgraphit | | 85 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.2 | | | 80 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.3 | | | 60 | 0,038 | 0,05 | 0,075 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 85 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.3.2 | | | 80 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.1 | GTS schwarzer Temperguss | | 85 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.2 | | | 80 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 7.1.1 | Aluminium | | | | | | | | | | |
| 7.1.2 | | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | | |
| 7.2.2 | | | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | | | |
| 7.3.2 | | | | | | | | | | | |
| 7.3.3 | | | | | | | | | | | |
| 7.3.4 | | | | | | | | | | | |
| 7.3.5 | | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | | |
| 7.4.2 | | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | | |
| 7.5.2 | | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | | |
| 7.6.2 | | | | | | | | | | | |
| 7.8.1 | Titan | | 30 | 0,01 | 0,013 | 0,02 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.2 | | | 25 | 0,01 | 0,013 | 0,02 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.3 | | | 25 | 0,01 | 0,013 | 0,02 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |

# W0108, beschichtet

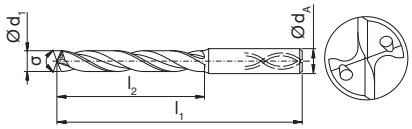
Hochleistungs-Spiralbohrer

VA | HL

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 5xD | σ 135°

SCPM415






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 4,4 | HL.VA.0108.0440h7.5XD.135.IK.HA | 6 | 74 | 36 | W0108044340 |
| 4,5 | HL.VA.0108.0450h7.5XD.135.IK.HA | 6 | 74 | 36 | W0108045340 |
| 4,52 | HL.VA.0108.0452h7.5XD.135.IK.HA | 6 | 74 | 36 | W0108045290 |
| 4,6 | HL.VA.0108.0460h7.5XD.135.IK.HA | 6 | 74 | 36 | W0108046340 |
| 4,7 | HL.VA.0108.0470h7.5XD.135.IK.HA | 6 | 74 | 36 | W0108047340 |
| 4,8 | HL.VA.0108.0480h7.5XD.135.IK.HA | 6 | 82 | 44 | W0108048340 |
| 4,82 | HL.VA.0108.0482h7.5XD.135.IK.HA | 6 | 82 | 44 | W0108048290 |
| 4,9 | HL.VA.0108.0490h7.5XD.135.IK.HA | 6 | 82 | 44 | W0108049340 |
| 5,0 | HL.VA.0108.0500h7.5XD.135.IK.HA | 6 | 82 | 44 | W0108050340 |
| 5,02 | HL.VA.0108.0502h7.5XD.135.IK.HA | 6 | 82 | 44 | W0108050290 |
| 5,1 | HL.VA.0108.0510h7.5XD.135.IK.HA | 6 | 82 | 44 | W0108051340 |
| 5,2 | HL.VA.0108.0520h7.5XD.135.IK.HA | 6 | 82 | 44 | W0108052340 |
| 5,3 | HL.VA.0108.0530h7.5XD.135.IK.HA | 6 | 82 | 44 | W0108053340 |
| 5,4 | HL.VA.0108.0540h7.5XD.135.IK.HA | 6 | 82 | 44 | W0108054340 |
| 5,5 | HL.VA.0108.0550h7.5XD.135.IK.HA | 6 | 82 | 44 | W0108055340 |
| 5,52 | HL.VA.0108.0552h7.5XD.135.IK.HA | 6 | 82 | 44 | W0108055290 |
| 5,6 | HL.VA.0108.0560h7.5XD.135.IK.HA | 6 | 82 | 44 | W0108056340 |
| 5,7 | HL.VA.0108.0570h7.5XD.135.IK.HA | 6 | 82 | 44 | W0108057340 |
| 5,8 | HL.VA.0108.0580h7.5XD.135.IK.HA | 6 | 82 | 44 | W0108058340 |
| 5,82 | HL.VA.0108.0582h7.5XD.135.IK.HA | 6 | 82 | 44 | W0108058290 |
| 5,9 | HL.VA.0108.0590h7.5XD.135.IK.HA | 6 | 82 | 44 | W0108059340 |
| 6,0 | HL.VA.0108.0600h7.5XD.135.IK.HA | 6 | 82 | 44 | W0108060340 |
| 6,02 | HL.VA.0108.0602h7.5XD.135.IK.HA | 6 | 82 | 44 | W0108060290 |
| 6,1 | HL.VA.0108.0610h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108061340 |
| 6,2 | HL.VA.0108.0620h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108062340 |
| 6,3 | HL.VA.0108.0630h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108063340 |
| 6,4 | HL.VA.0108.0640h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108064340 |
| 6,5 | HL.VA.0108.0650h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108065340 |
| 6,52 | HL.VA.0108.0652h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108065290 |
| 6,6 | HL.VA.0108.0660h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108066340 |
| 6,7 | HL.VA.0108.0670h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108067340 |
| 6,8 | HL.VA.0108.0680h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108068340 |
| 6,82 | HL.VA.0108.0682h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108068290 |
| 6,9 | HL.VA.0108.0690h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108069340 |
| 7,0 | HL.VA.0108.0700h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108070340 |
| 7,02 | HL.VA.0108.0702h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108070290 |
| 7,1 | HL.VA.0108.0710h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108071340 |
| 7,2 | HL.VA.0108.0720h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108072340 |
| 7,3 | HL.VA.0108.0730h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108073340 |
| 7,4 | HL.VA.0108.0740h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108074340 |
| 7,5 | HL.VA.0108.0750h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108075340 |
| 7,52 | HL.VA.0108.0752h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108075290 |
| 7,55 | HL.VA.0108.0755h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108075590 |
| 7,6 | HL.VA.0108.0760h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108076340 |
| 7,7 | HL.VA.0108.0770h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108077340 |
| 7,8 | HL.VA.0108.0780h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108078340 |
| 7,82 | HL.VA.0108.0782h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108078290 |
| 7,9 | HL.VA.0108.0790h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108079340 |

# W0108, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 1,0 = Ø 1,5 | > Ø 1,5 = Ø 2,0 | > Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.1.2 | | | 90 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.1 | Baustahl | | 100 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.2 | | | 90 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.3 | | | 75 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.1 | Federstahl | | | | | | | | | | |
| 1.3.2 | | | | | | | | | | | |
| 1.3.3 | | | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 95 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.2 | | | 85 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.3 | | | 75 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.1 | Nitrierstahl | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.2.2 | | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.1 | Vergütungsstahl | | 85 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.2 | | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.3 | | | 75 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.4 | | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.5 | | | | | | | | | | | |
| 2.3.6 | | | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | | | | | |
| 3.2.2 | | | | | | | | | | | |
| 3.2.3 | | | | | | | | | | | |
| 3.2.4 | | | | | | | | | | | |
| 3.2.5 | | | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | | | |
| 3.3.2 | | | | | | | | | | | |
| 3.3.3 | | | | | | | | | | | |
| 3.3.4 | | | | | | | | | | | |
| 3.3.5 | | | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.2 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.3 | | | 70 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.4 | | | 70 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.5 | | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | | |
| 4.2.2 | | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 80 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.2 | | | 75 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 5.1.3 | | | 60 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.1 | rostfreier Stahlguss | | 70 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.2 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.1.1 | GG mit lamellarem Graphit | | 105 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.2 | | | 85 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.3 | | | 75 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.4 | | | 70 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.2.1 | GGG mit Kugelgraphit | | 85 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.2 | | | 80 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.3 | | | 60 | 0,038 | 0,05 | 0,075 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 85 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.3.2 | | | 80 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.1 | GTS schwarzer Temperguss | | 85 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.2 | | | 80 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 7.1.1 | Aluminium | | | | | | | | | | |
| 7.1.2 | | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | | |
| 7.2.2 | | | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | | | |
| 7.3.2 | | | | | | | | | | | |
| 7.3.3 | | | | | | | | | | | |
| 7.3.4 | | | | | | | | | | | |
| 7.3.5 | | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | | |
| 7.4.2 | | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | | |
| 7.5.2 | | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | | |
| 7.6.2 | | | | | | | | | | | |
| 7.8.1 | Titan | | 30 | 0,01 | 0,013 | 0,02 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.2 | | | 25 | 0,01 | 0,013 | 0,02 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.3 | | | 25 | 0,01 | 0,013 | 0,02 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |

# W0108, beschichtet

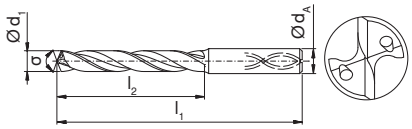
Hochleistungs-Spiralbohrer

VA | HL

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 5xD | σ 135°

SCPM415






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 8,0 | HL.VA.0108.0800h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108080340 |
| 8,02 | HL.VA.0108.0802h7.5XD.135.IK.HA | 8 | 91 | 53 | W0108080290 |
| 8,1 | HL.VA.0108.0810h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108081340 |
| 8,2 | HL.VA.0108.0820h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108082340 |
| 8,3 | HL.VA.0108.0830h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108083340 |
| 8,4 | HL.VA.0108.0840h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108084340 |
| 8,5 | HL.VA.0108.0850h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108085340 |
| 8,52 | HL.VA.0108.0852h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108085290 |
| 8,6 | HL.VA.0108.0860h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108086340 |
| 8,7 | HL.VA.0108.0870h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108087340 |
| 8,8 | HL.VA.0108.0880h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108088340 |
| 8,82 | HL.VA.0108.0882h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108088290 |
| 8,9 | HL.VA.0108.0890h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108089340 |
| 9,0 | HL.VA.0108.0900h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108090340 |
| 9,02 | HL.VA.0108.0902h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108090290 |
| 9,1 | HL.VA.0108.0910h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108091340 |
| 9,2 | HL.VA.0108.0920h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108092340 |
| 9,3 | HL.VA.0108.0930h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108093340 |
| 9,4 | HL.VA.0108.0940h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108094340 |
| 9,5 | HL.VA.0108.0950h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108095340 |
| 9,55 | HL.VA.0108.0955h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108095590 |
| 9,6 | HL.VA.0108.0960h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108096340 |
| 9,7 | HL.VA.0108.0970h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108097340 |
| 9,8 | HL.VA.0108.0980h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108098340 |
| 9,82 | HL.VA.0108.0982h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108098290 |
| 9,9 | HL.VA.0108.0990h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108099340 |
| 10,0 | HL.VA.0108.1000h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108100340 |
| 10,02 | HL.VA.0108.1002h7.5XD.135.IK.HA | 10 | 103 | 61 | W0108100290 |
| 10,2 | HL.VA.0108.1020h7.5XD.135.IK.HA | 12 | 118 | 71 | W0108102340 |
| 10,22 | HL.VA.0108.1022h7.5XD.135.IK.HA | 12 | 118 | 71 | W0108102290 |
| 10,5 | HL.VA.0108.1050h7.5XD.135.IK.HA | 12 | 118 | 71 | W0108105340 |
| 10,8 | HL.VA.0108.1080h7.5XD.135.IK.HA | 12 | 118 | 71 | W0108108340 |
| 10,82 | HL.VA.0108.1082h7.5XD.135.IK.HA | 12 | 118 | 71 | W0108108290 |
| 11,0 | HL.VA.0108.1100h7.5XD.135.IK.HA | 12 | 118 | 71 | W0108110340 |
| 11,2 | HL.VA.0108.1120h7.5XD.135.IK.HA | 12 | 118 | 71 | W0108112340 |
| 11,5 | HL.VA.0108.1150h7.5XD.135.IK.HA | 12 | 118 | 71 | W0108115340 |
| 11,55 | HL.VA.0108.1155h7.5XD.135.IK.HA | 12 | 118 | 71 | W0108115590 |
| 11,8 | HL.VA.0108.1180h7.5XD.135.IK.HA | 12 | 118 | 71 | W0108118340 |
| 11,82 | HL.VA.0108.1182h7.5XD.135.IK.HA | 12 | 118 | 71 | W0108118290 |
| 12,0 | HL.VA.0108.1200h7.5XD.135.IK.HA | 12 | 118 | 71 | W0108120340 |
| 12,02 | HL.VA.0108.1202h7.5XD.135.IK.HA | 12 | 118 | 71 | W0108120290 |
| 12,2 | HL.VA.0108.1220h7.5XD.135.IK.HA | 14 | 124 | 77 | W0108122340 |
| 12,5 | HL.VA.0108.1250h7.5XD.135.IK.HA | 14 | 124 | 77 | W0108125340 |
| 12,55 | HL.VA.0108.1255h7.5XD.135.IK.HA | 14 | 124 | 77 | W0108125590 |
| 12,8 | HL.VA.0108.1280h7.5XD.135.IK.HA | 14 | 124 | 77 | W0108128340 |
| 13,0 | HL.VA.0108.1300h7.5XD.135.IK.HA | 14 | 124 | 77 | W0108130340 |
| 13,5 | HL.VA.0108.1350h7.5XD.135.IK.HA | 14 | 124 | 77 | W0108135340 |
| 13,8 | HL.VA.0108.1380h7.5XD.135.IK.HA | 14 | 124 | 77 | W0108138340 |

# W0108, beschichtet

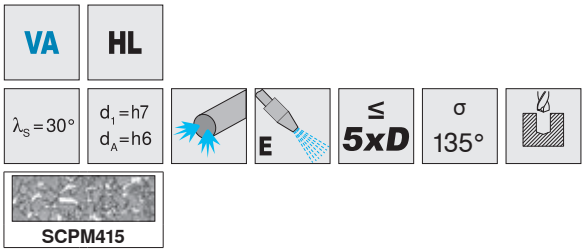
Schnittdatenempfehlung



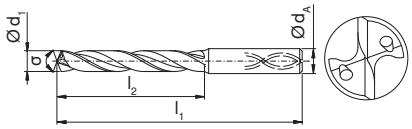
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 1,0 = Ø 1,5 | > Ø 1,5 = Ø 2,0 | > Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 100 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.1.2 | | | 90 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.1 | Baustahl | | 100 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.2 | | | 90 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 1.2.3 | | | 75 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 1.3.1 | Federstahl | | | | | | | | | | |
| 1.3.2 | | | | | | | | | | | |
| 1.3.3 | | | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 95 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.2 | | | 85 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 2.1.3 | | | 75 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.2.1 | Nitrierstahl | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.2.2 | | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.1 | Vergütungsstahl | | 85 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.2 | | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.3 | | | 75 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 2.3.4 | | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 2.3.5 | | | | | | | | | | | |
| 2.3.6 | | | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | | | | | |
| 3.2.2 | | | | | | | | | | | |
| 3.2.3 | | | | | | | | | | | |
| 3.2.4 | | | | | | | | | | | |
| 3.2.5 | | | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | | | |
| 3.3.2 | | | | | | | | | | | |
| 3.3.3 | | | | | | | | | | | |
| 3.3.4 | | | | | | | | | | | |
| 3.3.5 | | | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.2 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.3 | | | 70 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.4 | | | 70 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.1.5 | | | 75 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | | |
| 4.2.2 | | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 80 | 0,045 | 0,06 | 0,09 | 0,16 | 0,22 | 0,28 | 0,34 | 0,38 |
| 5.1.2 | | | 75 | 0,04 | 0,053 | 0,08 | 0,15 | 0,21 | 0,27 | 0,32 | 0,37 |
| 5.1.3 | | | 60 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.1 | rostfreier Stahlguss | | 70 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 5.2.2 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.1.1 | GG mit lamellarem Graphit | | 105 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.2 | | | 85 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.3 | | | 75 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 | 0,46 |
| 6.1.4 | | | 70 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 | 0,25 |
| 6.2.1 | GGG mit Kugelgraphit | | 85 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.2 | | | 80 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.2.3 | | | 60 | 0,038 | 0,05 | 0,075 | 0,11 | 0,125 | 0,15 | 0,175 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 85 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.3.2 | | | 80 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.1 | GTS schwarzer Temperguss | | 85 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 6.4.2 | | | 80 | 0,038 | 0,05 | 0,075 | 0,125 | 0,175 | 0,225 | 0,3 | 0,375 |
| 7.1.1 | Aluminium | | | | | | | | | | |
| 7.1.2 | | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | | |
| 7.2.2 | | | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | | | |
| 7.3.2 | | | | | | | | | | | |
| 7.3.3 | | | | | | | | | | | |
| 7.3.4 | | | | | | | | | | | |
| 7.3.5 | | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | | |
| 7.4.2 | | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | | |
| 7.5.2 | | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | | |
| 7.6.2 | | | | | | | | | | | |
| 7.8.1 | Titan | | 30 | 0,01 | 0,013 | 0,02 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.2 | | | 25 | 0,01 | 0,013 | 0,02 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |
| 7.8.3 | | | 25 | 0,01 | 0,013 | 0,02 | 0,04 | 0,08 | 0,12 | 0,16 | 0,2 |

# W0108, beschichtet

Hochleistungs-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 14,0 | HL.VA.0108.1400h7.5XD.135.IK.HA | 14 | 124 | 77 | W0108140340 |
| 14,2 | HL.VA.0108.1420h7.5XD.135.IK.HA | 16 | 133 | 83 | W0108142340 |
| 14,5 | HL.VA.0108.1450h7.5XD.135.IK.HA | 16 | 133 | 83 | W0108145340 |
| 14,8 | HL.VA.0108.1480h7.5XD.135.IK.HA | 16 | 133 | 83 | W0108148340 |
| 15,0 | HL.VA.0108.1500h7.5XD.135.IK.HA | 16 | 133 | 83 | W0108150340 |
| 15,2 | HL.VA.0108.1520h7.5XD.135.IK.HA | 16 | 133 | 83 | W0108152340 |
| 15,5 | HL.VA.0108.1550h7.5XD.135.IK.HA | 16 | 133 | 83 | W0108155340 |
| 15,8 | HL.VA.0108.1580h7.5XD.135.IK.HA | 16 | 133 | 83 | W0108158340 |
| 16,0 | HL.VA.0108.1600h7.5XD.135.IK.HA | 16 | 133 | 83 | W0108160340 |
| 16,05 | HL.VA.0108.1605h7.5XD.135.IK.HA | 16 | 133 | 83 | W0108160590 |
| 16,5 | HL.VA.0108.1650h7.5XD.135.IK.HA | 18 | 143 | 93 | W0108165340 |
| 16,8 | HL.VA.0108.1680h7.5XD.135.IK.HA | 18 | 143 | 93 | W0108168340 |
| 17,0 | HL.VA.0108.1700h7.5XD.135.IK.HA | 18 | 143 | 93 | W0108170340 |
| 17,5 | HL.VA.0108.1750h7.5XD.135.IK.HA | 18 | 143 | 93 | W0108175340 |
| 17,8 | HL.VA.0108.1780h7.5XD.135.IK.HA | 18 | 143 | 93 | W0108178340 |
| 18,0 | HL.VA.0108.1800h7.5XD.135.IK.HA | 18 | 143 | 93 | W0108180340 |
| 18,5 | HL.VA.0108.1850h7.5XD.135.IK.HA | 20 | 153 | 101 | W0108185340 |
| 18,8 | HL.VA.0108.1880h7.5XD.135.IK.HA | 20 | 153 | 101 | W0108188340 |
| 19,0 | HL.VA.0108.1900h7.5XD.135.IK.HA | 20 | 153 | 101 | W0108190340 |
| 19,5 | HL.VA.0108.1950h7.5XD.135.IK.HA | 20 | 153 | 101 | W0108195340 |
| 19,8 | HL.VA.0108.1980h7.5XD.135.IK.HA | 20 | 153 | 101 | W0108198340 |
| 20,0 | HL.VA.0108.2000h7.5XD.135.IK.HA | 20 | 153 | 101 | W0108200340 |
| 20,15 | HL.VA.0108.2015h7.5XD.135.IK.HA | 25 | 205 | 140 | W0108201590 |
| 20,5 | HL.VA.0108.2050h7.5XD.135.IK.HA | 25 | 205 | 140 | W0108205340 |
| 20,75 | HL.VA.0108.2075h7.5XD.135.IK.HA | 25 | 205 | 140 | W0108207590 |
| 21,0 | HL.VA.0108.2100h7.5XD.135.IK.HA | 25 | 205 | 140 | W0108210340 |
| 21,5 | HL.VA.0108.2150h7.5XD.135.IK.HA | 25 | 205 | 140 | W0108215340 |
| 21,75 | HL.VA.0108.2175h7.5XD.135.IK.HA | 25 | 205 | 140 | W0108217590 |
| 22,0 | HL.VA.0108.2200h7.5XD.135.IK.HA | 25 | 205 | 140 | W0108220340 |
| 22,5 | HL.VA.0108.2250h7.5XD.135.IK.HA | 25 | 205 | 140 | W0108225340 |
| 22,75 | HL.VA.0108.2275h7.5XD.135.IK.HA | 25 | 205 | 140 | W0108227590 |
| 23,0 | HL.VA.0108.2300h7.5XD.135.IK.HA | 25 | 205 | 140 | W0108230340 |
| 23,5 | HL.VA.0108.2350h7.5XD.135.IK.HA | 25 | 205 | 140 | W0108235340 |
| 23,75 | HL.VA.0108.2375h7.5XD.135.IK.HA | 25 | 205 | 140 | W0108237590 |
| 24,0 | HL.VA.0108.2400h7.5XD.135.IK.HA | 25 | 205 | 140 | W0108240340 |
| 24,5 | HL.VA.0108.2450h7.5XD.135.IK.HA | 25 | 205 | 140 | W0108245340 |
| 24,75 | HL.VA.0108.2475h7.5XD.135.IK.HA | 25 | 205 | 140 | W0108247590 |
| 25,0 | HL.VA.0108.2500h7.5XD.135.IK.HA | 25 | 205 | 140 | W0108250340 |

# W1110, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 1,0 = Ø 1,5 | > Ø 1,5 = Ø 2,0 | > Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 90 | 0,05 | 0,067 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 |
| 1.1.2 | | | 75 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.2.1 | Baustahl | | 90 | 0,05 | 0,067 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 |
| 1.2.2 | | | 75 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.2.3 | | | 70 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.3.1 | Federstahl | | | | | | | | | |
| 1.3.2 | | | | | | | | | | |
| 1.3.3 | | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 80 | 0,05 | 0,067 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.1.2 | | | 75 | 0,05 | 0,067 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.1.3 | | | 70 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.2.1 | Nitrierstahl | | 70 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.2.2 | | | 70 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.1 | Vergütungsstahl | | 75 | 0,05 | 0,067 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.3.2 | | | 70 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.3 | | | 70 | 0,05 | 0,067 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.3.4 | | | 70 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.5 | | | 55 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.6 | | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 55 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 70 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.2 | | | 55 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.3 | | | 32 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.4 | | | | | | | | | | |
| 3.2.5 | | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 55 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.3.2 | | | | | | | | | | |
| 3.3.3 | | | | | | | | | | |
| 3.3.4 | | | | | | | | | | |
| 3.3.5 | | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 70 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.2 | | | 60 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.3 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.4 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.5 | | | 70 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | |
| 4.2.2 | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 75 | 0,05 | 0,067 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 |
| 5.1.2 | | | 70 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 5.1.3 | | | 55 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 5.2.1 | rostfreier Stahlguss | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 5.2.2 | | | 60 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 6.1.1 | GG mit lamellarem Graphit | | 85 | 0,075 | 0,1 | 0,15 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.2 | | | 75 | 0,075 | 0,1 | 0,15 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.3 | | | 70 | 0,075 | 0,1 | 0,15 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.4 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 6.2.1 | GGG mit Kugelgraphit | | 80 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.2.2 | | | 75 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.2.3 | | | 55 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 80 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.3.2 | | | 75 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.4.1 | GTS schwarzer Temperguss | | 80 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.4.2 | | | 75 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 |
| 7.1.1 | Aluminium | | | | | | | | | |
| 7.1.2 | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | | |
| 7.3.2 | | | | | | | | | | |
| 7.3.3 | | | | | | | | | | |
| 7.3.4 | | | | | | | | | | |
| 7.3.5 | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | |
| 7.4.2 | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | |
| 7.5.2 | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | |
| 7.6.2 | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | |
| 7.8.2 | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | |

# W1110, beschichtet

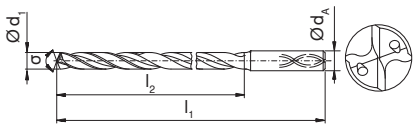
Hochleistungs-Spiralbohrer

VA | HL

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 10xD | σ 135°

SCPM430






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 1,0 | HL.VA.1110.0100h7.10XD.135.IK.HA | 4 | 45 | 15 | W1110010340 |
| 1,1 | HL.VA.1110.0110h7.10XD.135.IK.HA | 4 | 45 | 15 | W1110011340 |
| 1,2 | HL.VA.1110.0120h7.10XD.135.IK.HA | 4 | 45 | 15 | W1110012340 |
| 1,3 | HL.VA.1110.0130h7.10XD.135.IK.HA | 4 | 45 | 15 | W1110013340 |
| 1,4 | HL.VA.1110.0140h7.10XD.135.IK.HA | 4 | 45 | 15 | W1110014340 |
| 1,5 | HL.VA.1110.0150h7.10XD.135.IK.HA | 4 | 50 | 20 | W1110015340 |
| 1,6 | HL.VA.1110.0160h7.10XD.135.IK.HA | 4 | 50 | 20 | W1110016340 |
| 1,7 | HL.VA.1110.0170h7.10XD.135.IK.HA | 4 | 50 | 20 | W1110017340 |
| 1,8 | HL.VA.1110.0180h7.10XD.135.IK.HA | 4 | 50 | 20 | W1110018340 |
| 1,9 | HL.VA.1110.0190h7.10XD.135.IK.HA | 4 | 55 | 24 | W1110019340 |
| 2,0 | HL.VA.1110.0200h7.10XD.135.IK.HA | 4 | 55 | 24 | W1110020340 |
| 2,1 | HL.VA.1110.0210h7.10XD.135.IK.HA | 4 | 55 | 24 | W1110021340 |
| 2,2 | HL.VA.1110.0220h7.10XD.135.IK.HA | 4 | 55 | 24 | W1110022340 |
| 2,3 | HL.VA.1110.0230h7.10XD.135.IK.HA | 4 | 60 | 29 | W1110023340 |
| 2,4 | HL.VA.1110.0240h7.10XD.135.IK.HA | 4 | 60 | 29 | W1110024340 |
| 2,5 | HL.VA.1110.0250h7.10XD.135.IK.HA | 4 | 60 | 29 | W1110025340 |
| 2,6 | HL.VA.1110.0260h7.10XD.135.IK.HA | 4 | 60 | 29 | W1110026340 |
| 2,7 | HL.VA.1110.0270h7.10XD.135.IK.HA | 4 | 65 | 34 | W1110027340 |
| 2,8 | HL.VA.1110.0280h7.10XD.135.IK.HA | 4 | 65 | 34 | W1110028340 |
| 2,9 | HL.VA.1110.0290h7.10XD.135.IK.HA | 4 | 65 | 34 | W1110029340 |
| 3,0 | HL.VA.1110.0300h7.10XD.135.IK.HA | 6 | 80 | 40 | W1110030340 |
| 3,3 | HL.VA.1110.0330h7.10XD.135.IK.HA | 6 | 80 | 40 | W1110033340 |
| 3,5 | HL.VA.1110.0350h7.10XD.135.IK.HA | 6 | 80 | 40 | W1110035340 |
| 3,8 | HL.VA.1110.0380h7.10XD.135.IK.HA | 6 | 86 | 48 | W1110038340 |
| 4,0 | HL.VA.1110.0400h7.10XD.135.IK.HA | 6 | 86 | 48 | W1110040340 |
| 4,2 | HL.VA.1110.0420h7.10XD.135.IK.HA | 6 | 86 | 48 | W1110042340 |
| 4,5 | HL.VA.1110.0450h7.10XD.135.IK.HA | 6 | 86 | 48 | W1110045340 |
| 4,8 | HL.VA.1110.0480h7.10XD.135.IK.HA | 6 | 100 | 62 | W1110048340 |
| 5,0 | HL.VA.1110.0500h7.10XD.135.IK.HA | 6 | 100 | 62 | W1110050340 |
| 5,1 | HL.VA.1110.0510h7.10XD.135.IK.HA | 6 | 100 | 62 | W1110051340 |
| 5,2 | HL.VA.1110.0520h7.10XD.135.IK.HA | 6 | 100 | 62 | W1110052340 |
| 5,5 | HL.VA.1110.0550h7.10XD.135.IK.HA | 6 | 100 | 62 | W1110055340 |
| 5,7 | HL.VA.1110.0570h7.10XD.135.IK.HA | 6 | 110 | 70 | W1110057340 |
| 5,8 | HL.VA.1110.0580h7.10XD.135.IK.HA | 6 | 110 | 70 | W1110058340 |
| 5,9 | HL.VA.1110.0590h7.10XD.135.IK.HA | 6 | 110 | 70 | W1110059340 |
| 6,0 | HL.VA.1110.0600h7.10XD.135.IK.HA | 6 | 110 | 70 | W1110060340 |
| 6,2 | HL.VA.1110.0620h7.10XD.135.IK.HA | 8 | 114 | 75 | W1110062340 |
| 6,3 | HL.VA.1110.0630h7.10XD.135.IK.HA | 8 | 114 | 75 | W1110063340 |
| 6,5 | HL.VA.1110.0650h7.10XD.135.IK.HA | 8 | 114 | 75 | W1110065340 |
| 6,6 | HL.VA.1110.0660h7.10XD.135.IK.HA | 8 | 114 | 75 | W1110066340 |
| 6,7 | HL.VA.1110.0670h7.10XD.135.IK.HA | 8 | 114 | 75 | W1110067340 |
| 6,8 | HL.VA.1110.0680h7.10XD.135.IK.HA | 8 | 114 | 75 | W1110068340 |
| 6,9 | HL.VA.1110.0690h7.10XD.135.IK.HA | 8 | 114 | 75 | W1110069340 |
| 7,0 | HL.VA.1110.0700h7.10XD.135.IK.HA | 8 | 114 | 75 | W1110070340 |
| 7,1 | HL.VA.1110.0710h7.10XD.135.IK.HA | 8 | 130 | 91 | W1110071340 |
| 7,5 | HL.VA.1110.0750h7.10XD.135.IK.HA | 8 | 130 | 91 | W1110075340 |
| 7,6 | HL.VA.1110.0760h7.10XD.135.IK.HA | 8 | 130 | 91 | W1110076340 |
| 7,7 | HL.VA.1110.0770h7.10XD.135.IK.HA | 8 | 130 | 91 | W1110077340 |

# W1110, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 1,0 = Ø 1,5 | > Ø 1,5 = Ø 2,0 | > Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 90 | 0,05 | 0,067 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 |
| 1.1.2 | | | 75 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.2.1 | Baustahl | | 90 | 0,05 | 0,067 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 |
| 1.2.2 | | | 75 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.2.3 | | | 70 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.3.1 | Federstahl | | | | | | | | | |
| 1.3.2 | | | | | | | | | | |
| 1.3.3 | | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | 80 | 0,05 | 0,067 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.1.2 | | | 75 | 0,05 | 0,067 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.1.3 | | | 70 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.2.1 | Nitrierstahl | | 70 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.2.2 | | | 70 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.1 | Vergütungsstahl | | 75 | 0,05 | 0,067 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.3.2 | | | 70 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.3 | | | 70 | 0,05 | 0,067 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.3.4 | | | 70 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.5 | | | 55 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.6 | | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 55 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 70 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.2 | | | 55 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.3 | | | 32 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.4 | | | | | | | | | | |
| 3.2.5 | | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 55 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.3.2 | | | | | | | | | | |
| 3.3.3 | | | | | | | | | | |
| 3.3.4 | | | | | | | | | | |
| 3.3.5 | | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | | |
| 4.1.1 | rostfreier Stahl | | 70 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.2 | | | 60 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.3 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.4 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.5 | | | 70 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | | |
| 4.2.2 | | | | | | | | | | |
| 4.2.3 | | | | | | | | | | |
| 4.2.4 | | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 75 | 0,05 | 0,067 | 0,1 | 0,14 | 0,2 | 0,275 | 0,35 |
| 5.1.2 | | | 70 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 5.1.3 | | | 55 | 0,038 | 0,05 | 0,075 | 0,1 | 0,15 | 0,2 | 0,26 |
| 5.2.1 | rostfreier Stahlguss | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 5.2.2 | | | 60 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 6.1.1 | GG mit lamellarem Graphit | | 85 | 0,075 | 0,1 | 0,15 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.2 | | | 75 | 0,075 | 0,1 | 0,15 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.3 | | | 70 | 0,075 | 0,1 | 0,15 | 0,23 | 0,335 | 0,425 | 0,52 |
| 6.1.4 | | | 65 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 6.2.1 | GGG mit Kugelgraphit | | 80 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.2.2 | | | 75 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.2.3 | | | 55 | 0,025 | 0,033 | 0,05 | 0,08 | 0,12 | 0,15 | 0,2 |
| 6.3.1 | GTW weisser Temperguss | | 80 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.3.2 | | | 75 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.4.1 | GTS schwarzer Temperguss | | 80 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 |
| 6.4.2 | | | 75 | 0,063 | 0,083 | 0,125 | 0,2 | 0,25 | 0,35 | 0,4 |
| 7.1.1 | Aluminium | | | | | | | | | |
| 7.1.2 | | | | | | | | | | |
| 7.1.3 | | | | | | | | | | |
| 7.1.4 | | | | | | | | | | |
| 7.1.5 | | | | | | | | | | |
| 7.1.6 | | | | | | | | | | |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | | | | | | | | | |
| 7.3.2 | | | | | | | | | | |
| 7.3.3 | | | | | | | | | | |
| 7.3.4 | | | | | | | | | | |
| 7.3.5 | | | | | | | | | | |
| 7.3.6 | | | | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | | | | |
| 7.4.2 | | | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | | | |
| 7.5.2 | | | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | |
| 7.6.2 | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | |
| 7.8.2 | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | |

# W1110, beschichtet

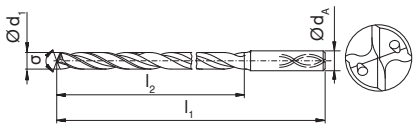
Hochleistungs-Spiralbohrer

VA | HL

$\lambda_S = 30°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 10xD | σ 135°

SCPM430






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 7,8 | HL.VA.1110.0780h7.10XD.135.IK.HA | 8 | 130 | 91 | W1110078340 |
| 8,0 | HL.VA.1110.0800h7.10XD.135.IK.HA | 8 | 130 | 91 | W1110080340 |
| 8,1 | HL.VA.1110.0810h7.10XD.135.IK.HA | 10 | 150 | 107 | W1110081340 |
| 8,2 | HL.VA.1110.0820h7.10XD.135.IK.HA | 10 | 150 | 107 | W1110082340 |
| 8,4 | HL.VA.1110.0840h7.10XD.135.IK.HA | 10 | 150 | 107 | W1110084340 |
| 8,5 | HL.VA.1110.0850h7.10XD.135.IK.HA | 10 | 150 | 107 | W1110085340 |
| 8,6 | HL.VA.1110.0860h7.10XD.135.IK.HA | 10 | 150 | 107 | W1110086340 |
| 8,7 | HL.VA.1110.0870h7.10XD.135.IK.HA | 10 | 150 | 107 | W1110087340 |
| 9,0 | HL.VA.1110.0900h7.10XD.135.IK.HA | 10 | 150 | 107 | W1110090340 |
| 9,3 | HL.VA.1110.0930h7.10XD.135.IK.HA | 10 | 150 | 107 | W1110093340 |
| 9,5 | HL.VA.1110.0950h7.10XD.135.IK.HA | 10 | 150 | 107 | W1110095340 |
| 9,8 | HL.VA.1110.0980h7.10XD.135.IK.HA | 10 | 150 | 107 | W1110098340 |
| 10,0 | HL.VA.1110.1000h7.10XD.135.IK.HA | 10 | 150 | 107 | W1110100340 |
| 10,2 | HL.VA.1110.1020h7.10XD.135.IK.HA | 12 | 180 | 130 | W1110102340 |
| 10,5 | HL.VA.1110.1050h7.10XD.135.IK.HA | 12 | 180 | 130 | W1110105340 |
| 10,8 | HL.VA.1110.1080h7.10XD.135.IK.HA | 12 | 180 | 130 | W1110108340 |
| 11,0 | HL.VA.1110.1100h7.10XD.135.IK.HA | 12 | 180 | 130 | W1110110340 |
| 11,2 | HL.VA.1110.1120h7.10XD.135.IK.HA | 12 | 180 | 130 | W1110112340 |
| 11,5 | HL.VA.1110.1150h7.10XD.135.IK.HA | 12 | 180 | 130 | W1110115340 |
| 11,8 | HL.VA.1110.1180h7.10XD.135.IK.HA | 12 | 180 | 130 | W1110118340 |
| 12,0 | HL.VA.1110.1200h7.10XD.135.IK.HA | 12 | 180 | 130 | W1110120340 |
| 12,5 | HL.VA.1110.1250h7.10XD.135.IK.HA | 14 | 208 | 160 | W1110125340 |
| 13,0 | HL.VA.1110.1300h7.10XD.135.IK.HA | 14 | 208 | 160 | W1110130340 |
| 13,5 | HL.VA.1110.1350h7.10XD.135.IK.HA | 14 | 208 | 160 | W1110135340 |
| 13,8 | HL.VA.1110.1380h7.10XD.135.IK.HA | 14 | 208 | 160 | W1110138340 |
| 14,0 | HL.VA.1110.1400h7.10XD.135.IK.HA | 14 | 208 | 160 | W1110140340 |
| 14,5 | HL.VA.1110.1450h7.10XD.135.IK.HA | 16 | 236 | 186 | W1110145340 |
| 14,8 | HL.VA.1110.1480h7.10XD.135.IK.HA | 16 | 236 | 186 | W1110148340 |
| 15,0 | HL.VA.1110.1500h7.10XD.135.IK.HA | 16 | 236 | 186 | W1110150340 |
| 15,5 | HL.VA.1110.1550h7.10XD.135.IK.HA | 16 | 236 | 186 | W1110155340 |
| 15,8 | HL.VA.1110.1580h7.10XD.135.IK.HA | 16 | 236 | 186 | W1110158340 |
| 16,0 | HL.VA.1110.1600h7.10XD.135.IK.HA | 16 | 236 | 186 | W1110160340 |

# W0115, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 80 | 0,14 | 0,2 | 0,275 | 0,35 |
| 1.1.2 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.2.1 | Baustahl | | 80 | 0,14 | 0,2 | 0,275 | 0,35 |
| 1.2.2 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.2.3 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.3.1 | Federstahl | | | | | | |
| 1.3.2 | | | | | | | |
| 1.3.3 | | | | | | | |
| 2.1.1 | Einsatzstahl | | 75 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.1.2 | | | 70 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.1.3 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.2.1 | Nitrierstahl | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.2.2 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.1 | Vergütungsstahl | | 65 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.3.2 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.3 | | | 65 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.3.4 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.5 | | | 50 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.6 | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 50 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.2 | | | 50 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.3 | | | | | | | |
| 3.2.4 | | | | | | | |
| 3.2.5 | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 50 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.3.2 | | | | | | | |
| 3.3.3 | | | | | | | |
| 3.3.4 | | | | | | | |
| 3.3.5 | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | 75 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.2 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.3 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.4 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.5 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.2.1 | hochwarmfeste Legierungen | | 40 | 0,04 | 0,08 | 0,12 | 0,16 |
| 4.2.2 | | | 35 | 0,04 | 0,08 | 0,12 | 0,16 |
| 4.2.3 | | | 35 | 0,04 | 0,08 | 0,12 | 0,16 |
| 4.2.4 | | | 35 | 0,04 | 0,08 | 0,12 | 0,16 |
| 5.1.1 | konventioneller Stahlguss | | | | | | |
| 5.1.2 | | | | | | | |
| 5.1.3 | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | |
| 5.2.2 | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | | | | | |
| 6.1.2 | | | | | | | |
| 6.1.3 | | | | | | | |
| 6.1.4 | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | | | | | |
| 6.2.2 | | | | | | | |
| 6.2.3 | | | | | | | |
| 6.3.1 | GTW weisser Temperguss | | | | | | |
| 6.3.2 | | | | | | | |
| 6.4.1 | GTS schwarzer Temperguss | | | | | | |
| 6.4.2 | | | | | | | |
| 7.1.1 | Aluminium | | 180 | 0,14 | 0,2 | 0,275 | 0,35 |
| 7.1.2 | | | 180 | 0,14 | 0,2 | 0,275 | 0,35 |
| 7.1.3 | | | 180 | 0,14 | 0,2 | 0,275 | 0,35 |
| 7.1.4 | | | 160 | 0,14 | 0,2 | 0,275 | 0,35 |
| 7.1.5 | | | 140 | 0,14 | 0,2 | 0,275 | 0,35 |
| 7.1.6 | | | 110 | 0,14 | 0,2 | 0,275 | 0,35 |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | 45 | 0,04 | 0,08 | 0,12 | 0,16 |
| 7.8.2 | | | 40 | 0,04 | 0,08 | 0,12 | 0,16 |
| 7.8.3 | | | 35 | 0,04 | 0,08 | 0,12 | 0,16 |

# W0115, beschichtet

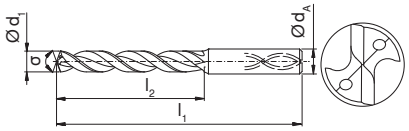
Hochleistungs-Spiralbohrer

TI | HL

$\lambda_S = 38°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 5xD | σ 140°

SCPS430






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | HL.TI.0115.0300h7.5XD.140.IK.HA | 6 | 66 | 28 | W0115030340 |
| 3,1 | HL.TI.0115.0310h7.5XD.140.IK.HA | 6 | 66 | 28 | W0115031340 |
| 3,2 | HL.TI.0115.0320h7.5XD.140.IK.HA | 6 | 66 | 28 | W0115032340 |
| 3,3 | HL.TI.0115.0330h7.5XD.140.IK.HA | 6 | 66 | 28 | W0115033340 |
| 3,4 | HL.TI.0115.0340h7.5XD.140.IK.HA | 6 | 66 | 28 | W0115034340 |
| 3,5 | HL.TI.0115.0350h7.5XD.140.IK.HA | 6 | 66 | 28 | W0115035340 |
| 3,6 | HL.TI.0115.0360h7.5XD.140.IK.HA | 6 | 66 | 28 | W0115036340 |
| 3,7 | HL.TI.0115.0370h7.5XD.140.IK.HA | 6 | 66 | 28 | W0115037340 |
| 3,8 | HL.TI.0115.0380h7.5XD.140.IK.HA | 6 | 66 | 28 | W0115038340 |
| 3,9 | HL.TI.0115.0390h7.5XD.140.IK.HA | 6 | 66 | 28 | W0115039340 |
| 4,0 | HL.TI.0115.0400h7.5XD.140.IK.HA | 6 | 66 | 28 | W0115040340 |
| 4,1 | HL.TI.0115.0410h7.5XD.140.IK.HA | 6 | 82 | 44 | W0115041340 |
| 4,2 | HL.TI.0115.0420h7.5XD.140.IK.HA | 6 | 82 | 44 | W0115042340 |
| 4,3 | HL.TI.0115.0430h7.5XD.140.IK.HA | 6 | 82 | 44 | W0115043340 |
| 4,4 | HL.TI.0115.0440h7.5XD.140.IK.HA | 6 | 82 | 44 | W0115044340 |
| 4,5 | HL.TI.0115.0450h7.5XD.140.IK.HA | 6 | 82 | 44 | W0115045340 |
| 4,6 | HL.TI.0115.0460h7.5XD.140.IK.HA | 6 | 82 | 44 | W0115046340 |
| 4,7 | HL.TI.0115.0470h7.5XD.140.IK.HA | 6 | 82 | 44 | W0115047340 |
| 4,8 | HL.TI.0115.0480h7.5XD.140.IK.HA | 6 | 82 | 44 | W0115048340 |
| 4,9 | HL.TI.0115.0490h7.5XD.140.IK.HA | 6 | 82 | 44 | W0115049340 |
| 5,0 | HL.TI.0115.0500h7.5XD.140.IK.HA | 6 | 82 | 44 | W0115050340 |
| 5,1 | HL.TI.0115.0510h7.5XD.140.IK.HA | 6 | 82 | 44 | W0115051340 |
| 5,2 | HL.TI.0115.0520h7.5XD.140.IK.HA | 6 | 82 | 44 | W0115052340 |
| 5,3 | HL.TI.0115.0530h7.5XD.140.IK.HA | 6 | 82 | 44 | W0115053340 |
| 5,4 | HL.TI.0115.0540h7.5XD.140.IK.HA | 6 | 82 | 44 | W0115054340 |
| 5,5 | HL.TI.0115.0550h7.5XD.140.IK.HA | 6 | 82 | 44 | W0115055340 |
| 5,6 | HL.TI.0115.0560h7.5XD.140.IK.HA | 6 | 82 | 44 | W0115056340 |
| 5,7 | HL.TI.0115.0570h7.5XD.140.IK.HA | 6 | 82 | 44 | W0115057340 |
| 5,8 | HL.TI.0115.0580h7.5XD.140.IK.HA | 6 | 82 | 44 | W0115058340 |
| 5,9 | HL.TI.0115.0590h7.5XD.140.IK.HA | 6 | 82 | 44 | W0115059340 |
| 6,0 | HL.TI.0115.0600h7.5XD.140.IK.HA | 6 | 82 | 44 | W0115060340 |
| 6,1 | HL.TI.0115.0610h7.5XD.140.IK.HA | 8 | 91 | 53 | W0115061340 |
| 6,2 | HL.TI.0115.0620h7.5XD.140.IK.HA | 8 | 91 | 53 | W0115062340 |
| 6,3 | HL.TI.0115.0630h7.5XD.140.IK.HA | 8 | 91 | 53 | W0115063340 |
| 6,4 | HL.TI.0115.0640h7.5XD.140.IK.HA | 8 | 91 | 53 | W0115064340 |
| 6,5 | HL.TI.0115.0650h7.5XD.140.IK.HA | 8 | 91 | 53 | W0115065340 |
| 6,6 | HL.TI.0115.0660h7.5XD.140.IK.HA | 8 | 91 | 53 | W0115066340 |
| 6,7 | HL.TI.0115.0670h7.5XD.140.IK.HA | 8 | 91 | 53 | W0115067340 |
| 6,8 | HL.TI.0115.0680h7.5XD.140.IK.HA | 8 | 91 | 53 | W0115068340 |
| 6,9 | HL.TI.0115.0690h7.5XD.140.IK.HA | 8 | 91 | 53 | W0115069340 |
| 7,0 | HL.TI.0115.0700h7.5XD.140.IK.HA | 8 | 91 | 53 | W0115070340 |
| 7,1 | HL.TI.0115.0710h7.5XD.140.IK.HA | 8 | 91 | 53 | W0115071340 |
| 7,2 | HL.TI.0115.0720h7.5XD.140.IK.HA | 8 | 91 | 53 | W0115072340 |
| 7,3 | HL.TI.0115.0730h7.5XD.140.IK.HA | 8 | 91 | 53 | W0115073340 |
| 7,4 | HL.TI.0115.0740h7.5XD.140.IK.HA | 8 | 91 | 53 | W0115074340 |
| 7,5 | HL.TI.0115.0750h7.5XD.140.IK.HA | 8 | 91 | 53 | W0115075340 |
| 7,6 | HL.TI.0115.0760h7.5XD.140.IK.HA | 8 | 91 | 53 | W0115076340 |
| 7,7 | HL.TI.0115.0770h7.5XD.140.IK.HA | 8 | 91 | 53 | W0115077340 |

# W0115, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 80 | 0,14 | 0,2 | 0,275 | 0,35 |
| 1.1.2 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.2.1 | Baustahl | | 80 | 0,14 | 0,2 | 0,275 | 0,35 |
| 1.2.2 | | | 70 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.2.3 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 1.3.1 | Federstahl | | | | | | |
| 1.3.2 | | | | | | | |
| 1.3.3 | | | | | | | |
| 2.1.1 | Einsatzstahl | | 75 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.1.2 | | | 70 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.1.3 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.2.1 | Nitrierstahl | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.2.2 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.1 | Vergütungsstahl | | 65 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.3.2 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.3 | | | 65 | 0,14 | 0,2 | 0,275 | 0,35 |
| 2.3.4 | | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.5 | | | 50 | 0,1 | 0,15 | 0,2 | 0,26 |
| 2.3.6 | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 50 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 65 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.2 | | | 50 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.2.3 | | | | | | | |
| 3.2.4 | | | | | | | |
| 3.2.5 | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 50 | 0,1 | 0,15 | 0,2 | 0,26 |
| 3.3.2 | | | | | | | |
| 3.3.3 | | | | | | | |
| 3.3.4 | | | | | | | |
| 3.3.5 | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | 75 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.2 | | | 65 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.3 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.4 | | | 70 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.1.5 | | | 75 | 0,08 | 0,12 | 0,15 | 0,2 |
| 4.2.1 | hochwarmfeste Legierungen | | 40 | 0,04 | 0,08 | 0,12 | 0,16 |
| 4.2.2 | | | 35 | 0,04 | 0,08 | 0,12 | 0,16 |
| 4.2.3 | | | 35 | 0,04 | 0,08 | 0,12 | 0,16 |
| 4.2.4 | | | 35 | 0,04 | 0,08 | 0,12 | 0,16 |
| 5.1.1 | konventioneller Stahlguss | | | | | | |
| 5.1.2 | | | | | | | |
| 5.1.3 | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | |
| 5.2.2 | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | | | | | |
| 6.1.2 | | | | | | | |
| 6.1.3 | | | | | | | |
| 6.1.4 | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | | | | | |
| 6.2.2 | | | | | | | |
| 6.2.3 | | | | | | | |
| 6.3.1 | GTW weisser Temperguss | | | | | | |
| 6.3.2 | | | | | | | |
| 6.4.1 | GTS schwarzer Temperguss | | | | | | |
| 6.4.2 | | | | | | | |
| 7.1.1 | Aluminium | | 180 | 0,14 | 0,2 | 0,275 | 0,35 |
| 7.1.2 | | | 180 | 0,14 | 0,2 | 0,275 | 0,35 |
| 7.1.3 | | | 180 | 0,14 | 0,2 | 0,275 | 0,35 |
| 7.1.4 | | | 160 | 0,14 | 0,2 | 0,275 | 0,35 |
| 7.1.5 | | | 140 | 0,14 | 0,2 | 0,275 | 0,35 |
| 7.1.6 | | | 110 | 0,14 | 0,2 | 0,275 | 0,35 |
| 7.2.1 | Magnesium | | | | | | |
| 7.2.2 | | | | | | | |
| 7.3.1 | Kupfer | | | | | | |
| 7.3.2 | | | | | | | |
| 7.3.3 | | | | | | | |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | | |
| 7.4.2 | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | |
| 7.5.2 | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | 45 | 0,04 | 0,08 | 0,12 | 0,16 |
| 7.8.2 | | | 40 | 0,04 | 0,08 | 0,12 | 0,16 |
| 7.8.3 | | | 35 | 0,04 | 0,08 | 0,12 | 0,16 |

# W0115, beschichtet

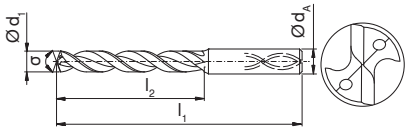
Hochleistungs-Spiralbohrer

TI | HL

$\lambda_S = 38°$ | $d_1 = h7$ $d_A = h6$ | E | ≤ 5xD | σ 140°

SCPS430






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 7,8 | HL.TI.0115.0780h7.5XD.140.IK.HA | 8 | 91 | 53 | W0115078340 |
| 7,9 | HL.TI.0115.0790h7.5XD.140.IK.HA | 8 | 91 | 53 | W0115079340 |
| 8,0 | HL.TI.0115.0800h7.5XD.140.IK.HA | 8 | 91 | 53 | W0115080340 |
| 8,1 | HL.TI.0115.0810h7.5XD.140.IK.HA | 10 | 103 | 61 | W0115081340 |
| 8,2 | HL.TI.0115.0820h7.5XD.140.IK.HA | 10 | 103 | 61 | W0115082340 |
| 8,3 | HL.TI.0115.0830h7.5XD.140.IK.HA | 10 | 103 | 61 | W0115083340 |
| 8,4 | HL.TI.0115.0840h7.5XD.140.IK.HA | 10 | 103 | 61 | W0115084340 |
| 8,5 | HL.TI.0115.0850h7.5XD.140.IK.HA | 10 | 103 | 61 | W0115085340 |
| 8,6 | HL.TI.0115.0860h7.5XD.140.IK.HA | 10 | 103 | 61 | W0115086340 |
| 8,7 | HL.TI.0115.0870h7.5XD.140.IK.HA | 10 | 103 | 61 | W0115087340 |
| 8,8 | HL.TI.0115.0880h7.5XD.140.IK.HA | 10 | 103 | 61 | W0115088340 |
| 8,9 | HL.TI.0115.0890h7.5XD.140.IK.HA | 10 | 103 | 61 | W0115089340 |
| 9,0 | HL.TI.0115.0900h7.5XD.140.IK.HA | 10 | 103 | 61 | W0115090340 |
| 9,1 | HL.TI.0115.0910h7.5XD.140.IK.HA | 10 | 103 | 61 | W0115091340 |
| 9,2 | HL.TI.0115.0920h7.5XD.140.IK.HA | 10 | 103 | 61 | W0115092340 |
| 9,3 | HL.TI.0115.0930h7.5XD.140.IK.HA | 10 | 103 | 61 | W0115093340 |
| 9,4 | HL.TI.0115.0940h7.5XD.140.IK.HA | 10 | 103 | 61 | W0115094340 |
| 9,5 | HL.TI.0115.0950h7.5XD.140.IK.HA | 10 | 103 | 61 | W0115095340 |
| 9,6 | HL.TI.0115.0960h7.5XD.140.IK.HA | 10 | 103 | 61 | W0115096340 |
| 9,7 | HL.TI.0115.0970h7.5XD.140.IK.HA | 10 | 103 | 61 | W0115097340 |
| 9,8 | HL.TI.0115.0980h7.5XD.140.IK.HA | 10 | 103 | 61 | W0115098340 |
| 9,9 | HL.TI.0115.0990h7.5XD.140.IK.HA | 10 | 103 | 61 | W0115099340 |
| 10,0 | HL.TI.0115.1000h7.5XD.140.IK.HA | 10 | 103 | 61 | W0115100340 |
| 10,2 | HL.TI.0115.1020h7.5XD.140.IK.HA | 12 | 118 | 71 | W0115102340 |
| 10,5 | HL.TI.0115.1050h7.5XD.140.IK.HA | 12 | 118 | 71 | W0115105340 |
| 10,8 | HL.TI.0115.1080h7.5XD.140.IK.HA | 12 | 118 | 71 | W0115108340 |
| 11,0 | HL.TI.0115.1100h7.5XD.140.IK.HA | 12 | 118 | 71 | W0115110340 |
| 11,2 | HL.TI.0115.1120h7.5XD.140.IK.HA | 12 | 118 | 71 | W0115112340 |
| 11,5 | HL.TI.0115.1150h7.5XD.140.IK.HA | 12 | 118 | 71 | W0115115340 |
| 11,8 | HL.TI.0115.1180h7.5XD.140.IK.HA | 12 | 118 | 71 | W0115118340 |
| 12,0 | HL.TI.0115.1200h7.5XD.140.IK.HA | 12 | 118 | 71 | W0115120340 |
| 12,2 | HL.TI.0115.1220h7.5XD.140.IK.HA | 14 | 124 | 77 | W0115122340 |
| 12,5 | HL.TI.0115.1250h7.5XD.140.IK.HA | 14 | 124 | 77 | W0115125340 |
| 12,8 | HL.TI.0115.1280h7.5XD.140.IK.HA | 14 | 124 | 77 | W0115128340 |
| 13,0 | HL.TI.0115.1300h7.5XD.140.IK.HA | 14 | 124 | 77 | W0115130340 |
| 13,2 | HL.TI.0115.1320h7.5XD.140.IK.HA | 14 | 124 | 77 | W0115132340 |
| 13,5 | HL.TI.0115.1350h7.5XD.140.IK.HA | 14 | 124 | 77 | W0115135340 |
| 13,8 | HL.TI.0115.1380h7.5XD.140.IK.HA | 14 | 124 | 77 | W0115138340 |
| 14,0 | HL.TI.0115.1400h7.5XD.140.IK.HA | 14 | 124 | 77 | W0115140340 |
| 14,2 | HL.TI.0115.1420h7.5XD.140.IK.HA | 16 | 133 | 83 | W0115142340 |
| 14,5 | HL.TI.0115.1450h7.5XD.140.IK.HA | 16 | 133 | 83 | W0115145340 |
| 14,8 | HL.TI.0115.1480h7.5XD.140.IK.HA | 16 | 133 | 83 | W0115148340 |
| 15,0 | HL.TI.0115.1500h7.5XD.140.IK.HA | 16 | 133 | 83 | W0115150340 |
| 15,2 | HL.TI.0115.1520h7.5XD.140.IK.HA | 16 | 133 | 83 | W0115152340 |
| 15,5 | HL.TI.0115.1550h7.5XD.140.IK.HA | 16 | 133 | 83 | W0115155340 |
| 15,8 | HL.TI.0115.1580h7.5XD.140.IK.HA | 16 | 133 | 83 | W0115158340 |
| 16,0 | HL.TI.0115.1600h7.5XD.140.IK.HA | 16 | 133 | 83 | W0115160340 |

# W105H, beschichtet

Schnittdatenempfehlung

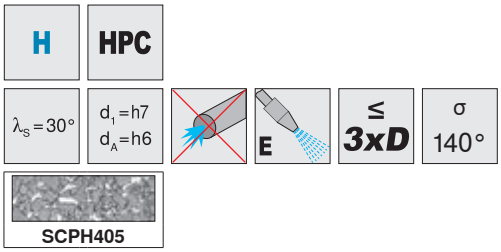


| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 2,5 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|---|---|
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| 1.2.3 | | | | | | | | |
| 1.3.1 | Federstahl | | | | | | | |
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| 3.3.4 | | | | | | | | |
| 3.3.5 | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | 28 | 0,06 | 0,08 | 0,09 | 0,11 | 0,13 |
| 3.5.2 | | 55–58 HRC | 20 | 0,06 | 0,08 | 0,09 | 0,11 | 0,13 |
| 3.5.3 | | 58–60 HRC | 16 | 0,06 | 0,08 | 0,09 | 0,11 | 0,13 |
| 3.5.4 | | 60–62 HRC | 14 | 0,04 | 0,055 | 0,065 | 0,075 | 0,09 |
| 3.5.5 | | 62–64 HRC | 10 | 0,04 | 0,055 | 0,065 | 0,075 | 0,09 |
| 4.1.1 | rostfreier Stahl | | | | | | | |
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| 6.3.2 | | | | | | | | |
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| 7.4.2 | | | | | | | | |
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| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |

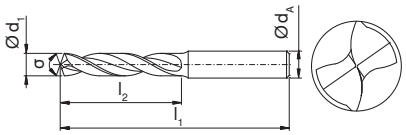
# W105H, beschichtet

HPC-Spiralbohrer








| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 2,5 | HPC.H.105H.0250h7.3XD.140.HA | 4 | 55 | 20 | W0105025270 |
| 2,6 | HPC.H.105H.0260h7.3XD.140.HA | 4 | 55 | 20 | W0105026270 |
| 2,9 | HPC.H.105H.0290h7.3XD.140.HA | 4 | 55 | 20 | W0105029270 |
| 3,0 | HPC.H.105H.0300h7.3XD.140.HA | 6 | 62 | 20 | W0105030270 |
| 3,4 | HPC.H.105H.0340h7.3XD.140.HA | 6 | 62 | 20 | W0105034270 |
| 3,5 | HPC.H.105H.0350h7.3XD.140.HA | 6 | 62 | 20 | W0105035270 |
| 3,9 | HPC.H.105H.0390h7.3XD.140.HA | 6 | 66 | 24 | W0105039270 |
| 4,0 | HPC.H.105H.0400h7.3XD.140.HA | 6 | 66 | 24 | W0105040270 |
| 4,3 | HPC.H.105H.0430h7.3XD.140.HA | 6 | 66 | 24 | W0105043270 |
| 4,5 | HPC.H.105H.0450h7.3XD.140.HA | 6 | 66 | 24 | W0105045270 |
| 4,8 | HPC.H.105H.0480h7.3XD.140.HA | 6 | 66 | 28 | W0105048270 |
| 5,0 | HPC.H.105H.0500h7.3XD.140.HA | 6 | 66 | 28 | W0105050270 |
| 5,1 | HPC.H.105H.0510h7.3XD.140.HA | 6 | 66 | 28 | W0105051270 |
| 5,5 | HPC.H.105H.0550h7.3XD.140.HA | 6 | 66 | 28 | W0105055270 |
| 5,8 | HPC.H.105H.0580h7.3XD.140.HA | 6 | 66 | 28 | W0105058270 |
| 6,0 | HPC.H.105H.0600h7.3XD.140.HA | 6 | 66 | 28 | W0105060270 |
| 6,5 | HPC.H.105H.0650h7.3XD.140.HA | 8 | 79 | 34 | W0105065270 |
| 6,8 | HPC.H.105H.0680h7.3XD.140.HA | 8 | 79 | 34 | W0105068270 |
| 6,9 | HPC.H.105H.0690h7.3XD.140.HA | 8 | 79 | 34 | W0105069270 |
| 7,0 | HPC.H.105H.0700h7.3XD.140.HA | 8 | 79 | 34 | W0105070270 |
| 7,5 | HPC.H.105H.0750h7.3XD.140.HA | 8 | 79 | 41 | W0105075270 |
| 7,8 | HPC.H.105H.0780h7.3XD.140.HA | 8 | 79 | 41 | W0105078270 |
| 8,0 | HPC.H.105H.0800h7.3XD.140.HA | 8 | 79 | 41 | W0105080270 |
| 8,5 | HPC.H.105H.0850h7.3XD.140.HA | 10 | 89 | 47 | W0105085270 |
| 8,6 | HPC.H.105H.0860h7.3XD.140.HA | 10 | 89 | 47 | W0105086270 |
| 8,8 | HPC.H.105H.0880h7.3XD.140.HA | 10 | 89 | 47 | W0105088270 |
| 9,0 | HPC.H.105H.0900h7.3XD.140.HA | 10 | 89 | 47 | W0105090270 |
| 9,5 | HPC.H.105H.0950h7.3XD.140.HA | 10 | 89 | 47 | W0105095270 |
| 9,8 | HPC.H.105H.0980h7.3XD.140.HA | 10 | 89 | 47 | W0105098270 |
| 10,0 | HPC.H.105H.1000h7.3XD.140.HA | 10 | 89 | 47 | W0105100270 |
| 10,2 | HPC.H.105H.1020h7.3XD.140.HA | 12 | 102 | 55 | W0105102270 |
| 10,5 | HPC.H.105H.1050h7.3XD.140.HA | 12 | 102 | 55 | W0105105270 |
| 10,8 | HPC.H.105H.1080h7.3XD.140.HA | 12 | 102 | 55 | W0105108270 |
| 11,0 | HPC.H.105H.1100h7.3XD.140.HA | 12 | 102 | 55 | W0105110270 |
| 11,5 | HPC.H.105H.1150h7.3XD.140.HA | 12 | 102 | 55 | W0105115270 |
| 11,8 | HPC.H.105H.1180h7.3XD.140.HA | 12 | 102 | 55 | W0105118270 |
| 12,0 | HPC.H.105H.1200h7.3XD.140.HA | 12 | 102 | 55 | W0105120270 |
| 12,2 | HPC.H.105H.1220h7.3XD.140.HA | 14 | 107 | 60 | W0105122270 |
| 12,5 | HPC.H.105H.1250h7.3XD.140.HA | 14 | 107 | 60 | W0105125270 |
| 13,0 | HPC.H.105H.1300h7.3XD.140.HA | 14 | 107 | 60 | W0105130270 |
| 13,5 | HPC.H.105H.1350h7.3XD.140.HA | 14 | 107 | 60 | W0105135270 |
| 14,0 | HPC.H.105H.1400h7.3XD.140.HA | 14 | 107 | 60 | W0105140270 |
| 14,2 | HPC.H.105H.1420h7.3XD.140.HA | 16 | 115 | 65 | W0105142270 |
| 14,5 | HPC.H.105H.1450h7.3XD.140.HA | 16 | 115 | 65 | W0105145270 |
| 15,0 | HPC.H.105H.1500h7.3XD.140.HA | 16 | 115 | 65 | W0105150270 |
| 15,5 | HPC.H.105H.1550h7.3XD.140.HA | 16 | 115 | 65 | W0105155270 |
| 15,8 | HPC.H.105H.1580h7.3XD.140.HA | 16 | 115 | 65 | W0105158270 |
| 16,0 | HPC.H.105H.1600h7.3XD.140.HA | 16 | 115 | 65 | W0105160270 |

# W106H, beschichtet

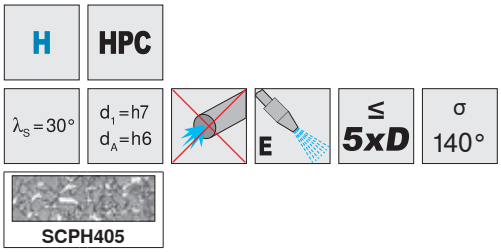
Schnittdatenempfehlung



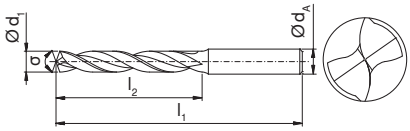
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 2,6 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|---|---|
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| 2.3.1 | Vergütungsstahl | | | | | | | |
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| 3.3.2 | | | | | | | | |
| 3.3.3 | | | | | | | | |
| 3.3.4 | | | | | | | | |
| 3.3.5 | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | 28 | 0,06 | 0,08 | 0,09 | 0,11 | 0,13 |
| 3.5.2 | | 55–58 HRC | 20 | 0,06 | 0,08 | 0,09 | 0,11 | 0,13 |
| 3.5.3 | | 58–60 HRC | 16 | 0,06 | 0,08 | 0,09 | 0,11 | 0,13 |
| 3.5.4 | | 60–62 HRC | 14 | 0,04 | 0,055 | 0,065 | 0,075 | 0,09 |
| 3.5.5 | | 62–64 HRC | 10 | 0,04 | 0,055 | 0,065 | 0,075 | 0,09 |
| 4.1.1 | rostfreier Stahl | | | | | | | |
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| 4.1.3 | | | | | | | | |
| 4.1.4 | | | | | | | | |
| 4.1.5 | | | | | | | | |
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| 5.1.3 | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | |
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| 6.4.1 | GTS schwarzer Temperguss | | | | | | | |
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| 7.1.5 | | | | | | | | |
| 7.1.6 | | | | | | | | |
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| 7.3.1 | Kupfer | | | | | | | |
| 7.3.2 | | | | | | | | |
| 7.3.3 | | | | | | | | |
| 7.3.4 | | | | | | | | |
| 7.3.5 | | | | | | | | |
| 7.3.6 | | | | | | | | |
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| 7.4.2 | | | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | | | |
| 7.5.2 | | | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | |
| 7.6.2 | | | | | | | | |
| 7.8.1 | Titan | | | | | | | |
| 7.8.2 | | | | | | | | |
| 7.8.3 | | | | | | | | |

# W106H, beschichtet

HPC-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 2,6 | HPC.H.106H.0260h7.5XD.140.HA | 4 | 57 | 21 | W0106026370 |
| 2,8 | HPC.H.106H.0280h7.5XD.140.HA | 4 | 57 | 21 | W0106028370 |
| 3,0 | HPC.H.106H.0300h7.5XD.140.HA | 6 | 66 | 28 | W0106030370 |
| 3,3 | HPC.H.106H.0330h7.5XD.140.HA | 6 | 66 | 28 | W0106033370 |
| 3,4 | HPC.H.106H.0340h7.5XD.140.HA | 6 | 66 | 28 | W0106034370 |
| 3,5 | HPC.H.106H.0350h7.5XD.140.HA | 6 | 66 | 28 | W0106035370 |
| 3,8 | HPC.H.106H.0380h7.5XD.140.HA | 6 | 74 | 36 | W0106038370 |
| 4,0 | HPC.H.106H.0400h7.5XD.140.HA | 6 | 74 | 36 | W0106040370 |
| 4,2 | HPC.H.106H.0420h7.5XD.140.HA | 6 | 74 | 36 | W0106042370 |
| 4,3 | HPC.H.106H.0430h7.5XD.140.HA | 6 | 74 | 36 | W0106043370 |
| 4,5 | HPC.H.106H.0450h7.5XD.140.HA | 6 | 74 | 36 | W0106045370 |
| 4,8 | HPC.H.106H.0480h7.5XD.140.HA | 6 | 82 | 44 | W0106048370 |
| 5,0 | HPC.H.106H.0500h7.5XD.140.HA | 6 | 82 | 44 | W0106050370 |
| 5,2 | HPC.H.106H.0520h7.5XD.140.HA | 6 | 82 | 44 | W0106052370 |
| 5,5 | HPC.H.106H.0550h7.5XD.140.HA | 6 | 82 | 44 | W0106055370 |
| 5,8 | HPC.H.106H.0580h7.5XD.140.HA | 6 | 82 | 44 | W0106058370 |
| 6,0 | HPC.H.106H.0600h7.5XD.140.HA | 6 | 82 | 44 | W0106060370 |
| 6,5 | HPC.H.106H.0650h7.5XD.140.HA | 8 | 91 | 53 | W0106065370 |
| 6,8 | HPC.H.106H.0680h7.5XD.140.HA | 8 | 91 | 53 | W0106068370 |
| 7,0 | HPC.H.106H.0700h7.5XD.140.HA | 8 | 91 | 53 | W0106070370 |
| 7,2 | HPC.H.106H.0720h7.5XD.140.HA | 8 | 91 | 53 | W0106072370 |
| 7,8 | HPC.H.106H.0780h7.5XD.140.HA | 8 | 91 | 53 | W0106078370 |
| 8,0 | HPC.H.106H.0800h7.5XD.140.HA | 8 | 91 | 53 | W0106080370 |
| 8,5 | HPC.H.106H.0850h7.5XD.140.HA | 10 | 103 | 61 | W0106085370 |
| 8,7 | HPC.H.106H.0870h7.5XD.140.HA | 10 | 103 | 61 | W0106087370 |
| 8,8 | HPC.H.106H.0880h7.5XD.140.HA | 10 | 103 | 61 | W0106088370 |
| 9,0 | HPC.H.106H.0900h7.5XD.140.HA | 10 | 103 | 61 | W0106090370 |
| 9,8 | HPC.H.106H.0980h7.5XD.140.HA | 10 | 103 | 61 | W0106098370 |
| 10,0 | HPC.H.106H.1000h7.5XD.140.HA | 10 | 103 | 61 | W0106100370 |
| 10,2 | HPC.H.106H.1020h7.5XD.140.HA | 12 | 118 | 71 | W0106102370 |
| 10,3 | HPC.H.106H.1030h7.5XD.140.HA | 12 | 118 | 71 | W0106103370 |
| 10,5 | HPC.H.106H.1050h7.5XD.140.HA | 12 | 118 | 71 | W0106105370 |
| 10,8 | HPC.H.106H.1080h7.5XD.140.HA | 12 | 118 | 71 | W0106108370 |
| 11,0 | HPC.H.106H.1100h7.5XD.140.HA | 12 | 118 | 71 | W0106110370 |
| 11,8 | HPC.H.106H.1180h7.5XD.140.HA | 12 | 118 | 71 | W0106118370 |
| 12,0 | HPC.H.106H.1200h7.5XD.140.HA | 12 | 118 | 71 | W0106120370 |
| 12,5 | HPC.H.106H.1250h7.5XD.140.HA | 14 | 124 | 77 | W0106125370 |
| 12,8 | HPC.H.106H.1280h7.5XD.140.HA | 14 | 124 | 77 | W0106128370 |
| 13,0 | HPC.H.106H.1300h7.5XD.140.HA | 14 | 124 | 77 | W0106130370 |
| 13,8 | HPC.H.106H.1380h7.5XD.140.HA | 14 | 124 | 77 | W0106138370 |
| 14,0 | HPC.H.106H.1400h7.5XD.140.HA | 14 | 124 | 77 | W0106140370 |
| 14,8 | HPC.H.106H.1480h7.5XD.140.HA | 16 | 133 | 83 | W0106148370 |
| 15,0 | HPC.H.106H.1500h7.5XD.140.HA | 16 | 133 | 83 | W0106150370 |
| 15,8 | HPC.H.106H.1580h7.5XD.140.HA | 16 | 133 | 83 | W0106158370 |
| 16,0 | HPC.H.106H.1600h7.5XD.140.HA | 16 | 133 | 83 | W0106160370 |

# W1205, beschichtet

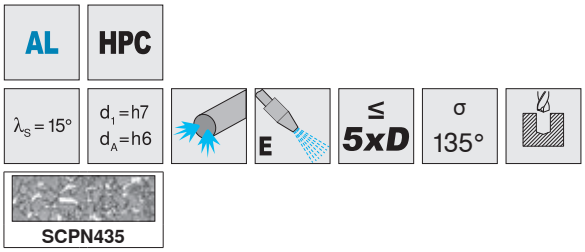
Schnittdatenempfehlung



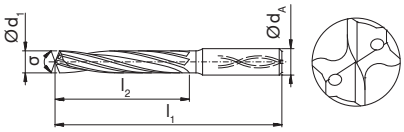
| Index | Materialbezeichnung | $V_c$ [m/min] | f [mm/U] = Ø 1,0 = Ø 1,5 | > Ø 1,5 = Ø 2,0 | > Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 360 | 0,15 | 0,2 | 0,25 | 0,3 | 0,4 | 0,5 | 0,6 | 0,65 |
| 7.1.2 | | 360 | 0,15 | 0,2 | 0,25 | 0,3 | 0,4 | 0,5 | 0,6 | 0,65 |
| 7.1.3 | | 400 | 0,15 | 0,2 | 0,25 | 0,3 | 0,4 | 0,5 | 0,6 | 0,65 |
| 7.1.4 | | 400 | 0,2 | 0,225 | 0,3 | 0,35 | 0,45 | 0,55 | 0,65 | 0,7 |
| 7.1.5 | | 360 | 0,2 | 0,225 | 0,3 | 0,35 | 0,45 | 0,55 | 0,65 | 0,7 |
| 7.1.6 | | 350 | 0,15 | 0,2 | 0,25 | 0,3 | 0,4 | 0,5 | 0,6 | 0,65 |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.3.2 | | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.3.3 | | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.3.4 | | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.3.5 | | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.3.6 | | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.4.1 | CuZn (Messing) | 200 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.4.2 | | 200 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.5.1 | CuSn (Bronze) | 200 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.5.2 | | 200 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | |
| 7.6.2 | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | |
| 7.8.2 | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | |
| 8.1.1 | Thermoplast | | | | | | | | | |
| 8.1.2 | | | | | | | | | | |
| 8.1.3 | | | | | | | | | | |
| 8.1.4 | | | | | | | | | | |
| 8.1.5 | | | | | | | | | | |
| 8.1.6 | | | | | | | | | | |
| 8.1.7 | | | | | | | | | | |
| 8.1.8 | | | | | | | | | | |
| 8.1.9 | | | | | | | | | | |
| 8.2.1 | Duroplast | | | | | | | | | |
| 8.2.2 | | | | | | | | | | |
| 8.2.3 | | | | | | | | | | |
| 8.2.4 | | | | | | | | | | |
| 8.2.5 | | | | | | | | | | |
| 8.2.6 | | | | | | | | | | |
| 8.2.7 | | | | | | | | | | |
| 8.2.8 | | | | | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | | | |
| 8.3.2 | | | | | | | | | | |
| 8.3.3 | | | | | | | | | | |
| 8.3.4 | | | | | | | | | | |
| 8.3.5 | | | | | | | | | | |
| 8.3.6 | | | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | | | |
| 8.4.2 | | | | | | | | | | |
| 8.4.3 | | | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | | | |
| 9.1.2 | | | | | | | | | | |

# W1205, beschichtet

HPC-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 1,0 | HPC.AL.1205.0100h7.5XD.135.IK.HA | 4 | 55 | 8 | W1205010360 |
| 1,1 | HPC.AL.1205.0110h7.5XD.135.IK.HA | 4 | 55 | 12 | W1205011360 |
| 1,2 | HPC.AL.1205.0120h7.5XD.135.IK.HA | 4 | 55 | 12 | W1205012360 |
| 1,3 | HPC.AL.1205.0130h7.5XD.135.IK.HA | 4 | 55 | 12 | W1205013360 |
| 1,4 | HPC.AL.1205.0140h7.5XD.135.IK.HA | 4 | 55 | 12 | W1205014360 |
| 1,5 | HPC.AL.1205.0150h7.5XD.135.IK.HA | 4 | 55 | 12 | W1205015360 |
| 1,6 | HPC.AL.1205.0160h7.5XD.135.IK.HA | 4 | 55 | 16 | W1205016360 |
| 1,7 | HPC.AL.1205.0170h7.5XD.135.IK.HA | 4 | 55 | 16 | W1205017360 |
| 1,8 | HPC.AL.1205.0180h7.5XD.135.IK.HA | 4 | 55 | 16 | W1205018360 |
| 1,9 | HPC.AL.1205.0190h7.5XD.135.IK.HA | 4 | 55 | 16 | W1205019360 |
| 2,0 | HPC.AL.1205.0200h7.5XD.135.IK.HA | 4 | 57 | 21 | W1205020360 |
| 2,02 | HPC.AL.1205.0202h7.5XD.135.IK.HA | 4 | 57 | 21 | W1205020290 |
| 2,1 | HPC.AL.1205.0210h7.5XD.135.IK.HA | 4 | 57 | 21 | W1205021360 |
| 2,2 | HPC.AL.1205.0220h7.5XD.135.IK.HA | 4 | 57 | 21 | W1205022360 |
| 2,22 | HPC.AL.1205.0222h7.5XD.135.IK.HA | 4 | 57 | 21 | W1205022290 |
| 2,3 | HPC.AL.1205.0230h7.5XD.135.IK.HA | 4 | 57 | 21 | W1205023360 |
| 2,4 | HPC.AL.1205.0240h7.5XD.135.IK.HA | 4 | 57 | 21 | W1205024360 |
| 2,42 | HPC.AL.1205.0242h7.5XD.135.IK.HA | 4 | 57 | 21 | W1205024290 |
| 2,5 | HPC.AL.1205.0250h7.5XD.135.IK.HA | 4 | 57 | 21 | W1205025360 |
| 2,52 | HPC.AL.1205.0252h7.5XD.135.IK.HA | 4 | 57 | 21 | W1205025290 |
| 2,6 | HPC.AL.1205.0260h7.5XD.135.IK.HA | 4 | 57 | 21 | W1205026360 |
| 2,7 | HPC.AL.1205.0270h7.5XD.135.IK.HA | 4 | 57 | 21 | W1205027360 |
| 2,72 | HPC.AL.1205.0272h7.5XD.135.IK.HA | 4 | 57 | 21 | W1205027290 |
| 2,8 | HPC.AL.1205.0280h7.5XD.135.IK.HA | 4 | 57 | 21 | W1205028360 |
| 2,82 | HPC.AL.1205.0282h7.5XD.135.IK.HA | 4 | 57 | 21 | W1205028290 |
| 2,9 | HPC.AL.1205.0290h7.5XD.135.IK.HA | 4 | 57 | 21 | W1205029360 |
| 3,0 | HPC.AL.1205.0300h7.5XD.135.IK.HA | 6 | 66 | 28 | W1205030360 |
| 3,02 | HPC.AL.1205.0302h7.5XD.135.IK.HA | 6 | 66 | 28 | W1205030290 |
| 3,1 | HPC.AL.1205.0310h7.5XD.135.IK.HA | 6 | 66 | 28 | W1205031360 |
| 3,2 | HPC.AL.1205.0320h7.5XD.135.IK.HA | 6 | 66 | 28 | W1205032360 |
| 3,22 | HPC.AL.1205.0322h7.5XD.135.IK.HA | 6 | 66 | 28 | W1205032290 |
| 3,3 | HPC.AL.1205.0330h7.5XD.135.IK.HA | 6 | 66 | 28 | W1205033360 |
| 3,32 | HPC.AL.1205.0332h7.5XD.135.IK.HA | 6 | 66 | 28 | W1205033290 |
| 3,4 | HPC.AL.1205.0340h7.5XD.135.IK.HA | 6 | 66 | 28 | W1205034360 |
| 3,5 | HPC.AL.1205.0350h7.5XD.135.IK.HA | 6 | 66 | 28 | W1205035360 |
| 3,52 | HPC.AL.1205.0352h7.5XD.135.IK.HA | 6 | 66 | 28 | W1205035290 |
| 3,6 | HPC.AL.1205.0360h7.5XD.135.IK.HA | 6 | 66 | 28 | W1205036360 |
| 3,7 | HPC.AL.1205.0370h7.5XD.135.IK.HA | 6 | 66 | 28 | W1205037360 |
| 3,8 | HPC.AL.1205.0380h7.5XD.135.IK.HA | 6 | 74 | 36 | W1205038360 |
| 3,82 | HPC.AL.1205.0382h7.5XD.135.IK.HA | 6 | 74 | 36 | W1205038290 |
| 3,9 | HPC.AL.1205.0390h7.5XD.135.IK.HA | 6 | 74 | 36 | W1205039360 |
| 4,0 | HPC.AL.1205.0400h7.5XD.135.IK.HA | 6 | 74 | 36 | W1205040360 |
| 4,02 | HPC.AL.1205.0402h7.5XD.135.IK.HA | 6 | 74 | 36 | W1205040290 |
| 4,1 | HPC.AL.1205.0410h7.5XD.135.IK.HA | 6 | 74 | 36 | W1205041360 |
| 4,2 | HPC.AL.1205.0420h7.5XD.135.IK.HA | 6 | 74 | 36 | W1205042360 |
| 4,22 | HPC.AL.1205.0422h7.5XD.135.IK.HA | 6 | 74 | 36 | W1205042290 |
| 4,3 | HPC.AL.1205.0430h7.5XD.135.IK.HA | 6 | 74 | 36 | W1205043360 |
| 4,4 | HPC.AL.1205.0440h7.5XD.135.IK.HA | 6 | 74 | 36 | W1205044360 |

# W1205, beschichtet

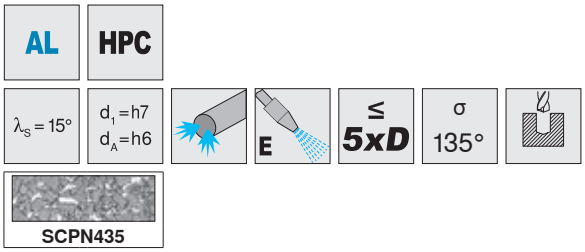
Schnittdatenempfehlung



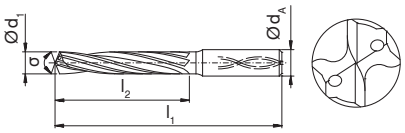
| Index | Materialbezeichnung | $V_c$ [m/min] | f [mm/U] = Ø 1,0 = Ø 1,5 | > Ø 1,5 = Ø 2,0 | > Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 360 | 0,15 | 0,2 | 0,25 | 0,3 | 0,4 | 0,5 | 0,6 | 0,65 |
| 7.1.2 | | 360 | 0,15 | 0,2 | 0,25 | 0,3 | 0,4 | 0,5 | 0,6 | 0,65 |
| 7.1.3 | | 400 | 0,15 | 0,2 | 0,25 | 0,3 | 0,4 | 0,5 | 0,6 | 0,65 |
| 7.1.4 | | 400 | 0,2 | 0,225 | 0,3 | 0,35 | 0,45 | 0,55 | 0,65 | 0,7 |
| 7.1.5 | | 360 | 0,2 | 0,225 | 0,3 | 0,35 | 0,45 | 0,55 | 0,65 | 0,7 |
| 7.1.6 | | 350 | 0,15 | 0,2 | 0,25 | 0,3 | 0,4 | 0,5 | 0,6 | 0,65 |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.3.2 | | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.3.3 | | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.3.4 | | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.3.5 | | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.3.6 | | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.4.1 | CuZn (Messing) | 200 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.4.2 | | 200 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.5.1 | CuSn (Bronze) | 200 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.5.2 | | 200 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | |
| 7.6.2 | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | |
| 7.8.2 | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | |
| 8.1.1 | Thermoplast | | | | | | | | | |
| 8.1.2 | | | | | | | | | | |
| 8.1.3 | | | | | | | | | | |
| 8.1.4 | | | | | | | | | | |
| 8.1.5 | | | | | | | | | | |
| 8.1.6 | | | | | | | | | | |
| 8.1.7 | | | | | | | | | | |
| 8.1.8 | | | | | | | | | | |
| 8.1.9 | | | | | | | | | | |
| 8.2.1 | Duroplast | | | | | | | | | |
| 8.2.2 | | | | | | | | | | |
| 8.2.3 | | | | | | | | | | |
| 8.2.4 | | | | | | | | | | |
| 8.2.5 | | | | | | | | | | |
| 8.2.6 | | | | | | | | | | |
| 8.2.7 | | | | | | | | | | |
| 8.2.8 | | | | | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | | | |
| 8.3.2 | | | | | | | | | | |
| 8.3.3 | | | | | | | | | | |
| 8.3.4 | | | | | | | | | | |
| 8.3.5 | | | | | | | | | | |
| 8.3.6 | | | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | | | |
| 8.4.2 | | | | | | | | | | |
| 8.4.3 | | | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | | | |
| 9.1.2 | | | | | | | | | | |

# W1205, beschichtet

HPC-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 4,5 | HPC.AL.1205.0450h7.5XD.135.IK.HA | 6 | 74 | 36 | W1205045360 |
| 4,52 | HPC.AL.1205.0452h7.5XD.135.IK.HA | 6 | 74 | 36 | W1205045290 |
| 4,6 | HPC.AL.1205.0460h7.5XD.135.IK.HA | 6 | 74 | 36 | W1205046360 |
| 4,7 | HPC.AL.1205.0470h7.5XD.135.IK.HA | 6 | 74 | 36 | W1205047360 |
| 4,8 | HPC.AL.1205.0480h7.5XD.135.IK.HA | 6 | 82 | 44 | W1205048360 |
| 4,82 | HPC.AL.1205.0482h7.5XD.135.IK.HA | 6 | 82 | 44 | W1205048290 |
| 4,9 | HPC.AL.1205.0490h7.5XD.135.IK.HA | 6 | 82 | 44 | W1205049360 |
| 5,0 | HPC.AL.1205.0500h7.5XD.135.IK.HA | 6 | 82 | 44 | W1205050360 |
| 5,02 | HPC.AL.1205.0502h7.5XD.135.IK.HA | 6 | 82 | 44 | W1205050290 |
| 5,1 | HPC.AL.1205.0510h7.5XD.135.IK.HA | 6 | 82 | 44 | W1205051360 |
| 5,2 | HPC.AL.1205.0520h7.5XD.135.IK.HA | 6 | 82 | 44 | W1205052360 |
| 5,3 | HPC.AL.1205.0530h7.5XD.135.IK.HA | 6 | 82 | 44 | W1205053360 |
| 5,4 | HPC.AL.1205.0540h7.5XD.135.IK.HA | 6 | 82 | 44 | W1205054360 |
| 5,5 | HPC.AL.1205.0550h7.5XD.135.IK.HA | 6 | 82 | 44 | W1205055360 |
| 5,52 | HPC.AL.1205.0552h7.5XD.135.IK.HA | 6 | 82 | 44 | W1205055290 |
| 5,6 | HPC.AL.1205.0560h7.5XD.135.IK.HA | 6 | 82 | 44 | W1205056360 |
| 5,7 | HPC.AL.1205.0570h7.5XD.135.IK.HA | 6 | 82 | 44 | W1205057360 |
| 5,8 | HPC.AL.1205.0580h7.5XD.135.IK.HA | 6 | 82 | 44 | W1205058360 |
| 5,82 | HPC.AL.1205.0582h7.5XD.135.IK.HA | 6 | 82 | 44 | W1205058290 |
| 5,9 | HPC.AL.1205.0590h7.5XD.135.IK.HA | 6 | 82 | 44 | W1205059360 |
| 6,0 | HPC.AL.1205.0600h7.5XD.135.IK.HA | 6 | 82 | 44 | W1205060360 |
| 6,02 | HPC.AL.1205.0602h7.5XD.135.IK.HA | 6 | 82 | 44 | W1205060290 |
| 6,1 | HPC.AL.1205.0610h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205061360 |
| 6,2 | HPC.AL.1205.0620h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205062360 |
| 6,3 | HPC.AL.1205.0630h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205063360 |
| 6,4 | HPC.AL.1205.0640h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205064360 |
| 6,5 | HPC.AL.1205.0650h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205065360 |
| 6,52 | HPC.AL.1205.0652h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205065290 |
| 6,6 | HPC.AL.1205.0660h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205066360 |
| 6,7 | HPC.AL.1205.0670h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205067360 |
| 6,8 | HPC.AL.1205.0680h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205068360 |
| 6,82 | HPC.AL.1205.0682h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205068290 |
| 6,9 | HPC.AL.1205.0690h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205069360 |
| 7,0 | HPC.AL.1205.0700h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205070360 |
| 7,02 | HPC.AL.1205.0702h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205070290 |
| 7,1 | HPC.AL.1205.0710h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205071360 |
| 7,2 | HPC.AL.1205.0720h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205072360 |
| 7,3 | HPC.AL.1205.0730h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205073360 |
| 7,4 | HPC.AL.1205.0740h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205074360 |
| 7,5 | HPC.AL.1205.0750h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205075360 |
| 7,52 | HPC.AL.1205.0752h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205075290 |
| 7,6 | HPC.AL.1205.0760h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205076360 |
| 7,7 | HPC.AL.1205.0770h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205077360 |
| 7,8 | HPC.AL.1205.0780h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205078360 |
| 7,82 | HPC.AL.1205.0782h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205078290 |
| 7,9 | HPC.AL.1205.0790h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205079360 |
| 8,0 | HPC.AL.1205.0800h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205080360 |
| 8,02 | HPC.AL.1205.0802h7.5XD.135.IK.HA | 8 | 91 | 53 | W1205080290 |

# W1205, beschichtet

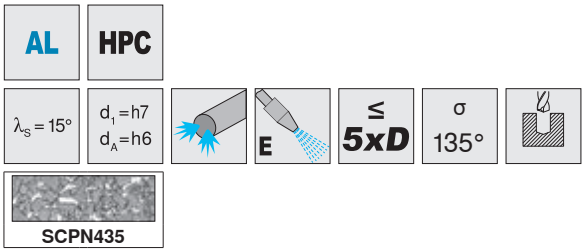
Schnittdatenempfehlung



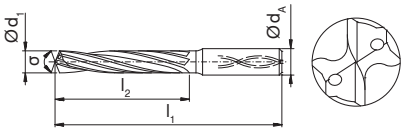
| Index | Materialbezeichnung | $V_c$ [m/min] | f [mm/U] = Ø 1,0 = Ø 1,5 | > Ø 1,5 = Ø 2,0 | > Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 360 | 0,15 | 0,2 | 0,25 | 0,3 | 0,4 | 0,5 | 0,6 | 0,65 |
| 7.1.2 | | 360 | 0,15 | 0,2 | 0,25 | 0,3 | 0,4 | 0,5 | 0,6 | 0,65 |
| 7.1.3 | | 400 | 0,15 | 0,2 | 0,25 | 0,3 | 0,4 | 0,5 | 0,6 | 0,65 |
| 7.1.4 | | 400 | 0,2 | 0,225 | 0,3 | 0,35 | 0,45 | 0,55 | 0,65 | 0,7 |
| 7.1.5 | | 360 | 0,2 | 0,225 | 0,3 | 0,35 | 0,45 | 0,55 | 0,65 | 0,7 |
| 7.1.6 | | 350 | 0,15 | 0,2 | 0,25 | 0,3 | 0,4 | 0,5 | 0,6 | 0,65 |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.3.2 | | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.3.3 | | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.3.4 | | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.3.5 | | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.3.6 | | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.4.1 | CuZn (Messing) | 200 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.4.2 | | 200 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.5.1 | CuSn (Bronze) | 200 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.5.2 | | 200 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | |
| 7.6.2 | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | |
| 7.8.2 | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | |
| 8.1.1 | Thermoplast | | | | | | | | | |
| 8.1.2 | | | | | | | | | | |
| 8.1.3 | | | | | | | | | | |
| 8.1.4 | | | | | | | | | | |
| 8.1.5 | | | | | | | | | | |
| 8.1.6 | | | | | | | | | | |
| 8.1.7 | | | | | | | | | | |
| 8.1.8 | | | | | | | | | | |
| 8.1.9 | | | | | | | | | | |
| 8.2.1 | Duroplast | | | | | | | | | |
| 8.2.2 | | | | | | | | | | |
| 8.2.3 | | | | | | | | | | |
| 8.2.4 | | | | | | | | | | |
| 8.2.5 | | | | | | | | | | |
| 8.2.6 | | | | | | | | | | |
| 8.2.7 | | | | | | | | | | |
| 8.2.8 | | | | | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | | | |
| 8.3.2 | | | | | | | | | | |
| 8.3.3 | | | | | | | | | | |
| 8.3.4 | | | | | | | | | | |
| 8.3.5 | | | | | | | | | | |
| 8.3.6 | | | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | | | |
| 8.4.2 | | | | | | | | | | |
| 8.4.3 | | | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | | | |
| 9.1.2 | | | | | | | | | | |

# W1205, beschichtet

HPC-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 8,1 | HPC.AL.1205.0810h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205081360 |
| 8,2 | HPC.AL.1205.0820h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205082360 |
| 8,3 | HPC.AL.1205.0830h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205083360 |
| 8,4 | HPC.AL.1205.0840h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205084360 |
| 8,5 | HPC.AL.1205.0850h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205085360 |
| 8,52 | HPC.AL.1205.0852h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205085290 |
| 8,6 | HPC.AL.1205.0860h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205086360 |
| 8,7 | HPC.AL.1205.0870h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205087360 |
| 8,8 | HPC.AL.1205.0880h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205088360 |
| 8,82 | HPC.AL.1205.0882h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205088290 |
| 8,9 | HPC.AL.1205.0890h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205089360 |
| 9,0 | HPC.AL.1205.0900h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205090360 |
| 9,02 | HPC.AL.1205.0902h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205090290 |
| 9,1 | HPC.AL.1205.0910h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205091360 |
| 9,2 | HPC.AL.1205.0920h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205092360 |
| 9,3 | HPC.AL.1205.0930h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205093360 |
| 9,4 | HPC.AL.1205.0940h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205094360 |
| 9,5 | HPC.AL.1205.0950h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205095360 |
| 9,6 | HPC.AL.1205.0960h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205096360 |
| 9,7 | HPC.AL.1205.0970h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205097360 |
| 9,8 | HPC.AL.1205.0980h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205098360 |
| 9,82 | HPC.AL.1205.0982h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205098290 |
| 9,9 | HPC.AL.1205.0990h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205099360 |
| 10,0 | HPC.AL.1205.1000h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205100360 |
| 10,02 | HPC.AL.1205.1002h7.5XD.135.IK.HA | 10 | 103 | 61 | W1205100290 |
| 10,1 | HPC.AL.1205.1010h7.5XD.135.IK.HA | 12 | 118 | 71 | W1205101360 |
| 10,2 | HPC.AL.1205.1020h7.5XD.135.IK.HA | 12 | 118 | 71 | W1205102360 |
| 10,22 | HPC.AL.1205.1022h7.5XD.135.IK.HA | 12 | 118 | 71 | W1205102290 |
| 10,3 | HPC.AL.1205.1030h7.5XD.135.IK.HA | 12 | 118 | 71 | W1205103360 |
| 10,4 | HPC.AL.1205.1040h7.5XD.135.IK.HA | 12 | 118 | 71 | W1205104360 |
| 10,5 | HPC.AL.1205.1050h7.5XD.135.IK.HA | 12 | 118 | 71 | W1205105360 |
| 10,6 | HPC.AL.1205.1060h7.5XD.135.IK.HA | 12 | 118 | 71 | W1205106360 |
| 10,7 | HPC.AL.1205.1070h7.5XD.135.IK.HA | 12 | 118 | 71 | W1205107360 |
| 10,8 | HPC.AL.1205.1080h7.5XD.135.IK.HA | 12 | 118 | 71 | W1205108360 |
| 10,82 | HPC.AL.1205.1082h7.5XD.135.IK.HA | 12 | 118 | 71 | W1205108290 |
| 11,0 | HPC.AL.1205.1100h7.5XD.135.IK.HA | 12 | 118 | 71 | W1205110360 |
| 11,1 | HPC.AL.1205.1110h7.5XD.135.IK.HA | 12 | 118 | 71 | W1205111360 |
| 11,2 | HPC.AL.1205.1120h7.5XD.135.IK.HA | 12 | 118 | 71 | W1205112360 |
| 11,3 | HPC.AL.1205.1130h7.5XD.135.IK.HA | 12 | 118 | 71 | W1205113360 |
| 11,5 | HPC.AL.1205.1150h7.5XD.135.IK.HA | 12 | 118 | 71 | W1205115360 |
| 11,8 | HPC.AL.1205.1180h7.5XD.135.IK.HA | 12 | 118 | 71 | W1205118360 |
| 11,82 | HPC.AL.1205.1182h7.5XD.135.IK.HA | 12 | 118 | 71 | W1205118290 |
| 12,0 | HPC.AL.1205.1200h7.5XD.135.IK.HA | 12 | 118 | 71 | W1205120360 |
| 12,02 | HPC.AL.1205.1202h7.5XD.135.IK.HA | 12 | 118 | 71 | W1205120290 |
| 12,2 | HPC.AL.1205.1220h7.5XD.135.IK.HA | 14 | 124 | 77 | W1205122360 |
| 12,5 | HPC.AL.1205.1250h7.5XD.135.IK.HA | 14 | 124 | 77 | W1205125360 |
| 12,8 | HPC.AL.1205.1280h7.5XD.135.IK.HA | 14 | 124 | 77 | W1205128360 |
| 13,0 | HPC.AL.1205.1300h7.5XD.135.IK.HA | 14 | 124 | 77 | W1205130360 |

# W1205, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | f [mm/U] = Ø 1,0 = Ø 1,5 | > Ø 1,5 = Ø 2,0 | > Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 360 | 0,15 | 0,2 | 0,25 | 0,3 | 0,4 | 0,5 | 0,6 | 0,65 |
| 7.1.2 | | 360 | 0,15 | 0,2 | 0,25 | 0,3 | 0,4 | 0,5 | 0,6 | 0,65 |
| 7.1.3 | | 400 | 0,15 | 0,2 | 0,25 | 0,3 | 0,4 | 0,5 | 0,6 | 0,65 |
| 7.1.4 | | 400 | 0,2 | 0,225 | 0,3 | 0,35 | 0,45 | 0,55 | 0,65 | 0,7 |
| 7.1.5 | | 360 | 0,2 | 0,225 | 0,3 | 0,35 | 0,45 | 0,55 | 0,65 | 0,7 |
| 7.1.6 | | 350 | 0,15 | 0,2 | 0,25 | 0,3 | 0,4 | 0,5 | 0,6 | 0,65 |
| 7.2.1 | Magnesium | | | | | | | | | |
| 7.2.2 | | | | | | | | | | |
| 7.3.1 | Kupfer | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.3.2 | | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.3.3 | | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.3.4 | | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.3.5 | | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.3.6 | | 160 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.4.1 | CuZn (Messing) | 200 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.4.2 | | 200 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.5.1 | CuSn (Bronze) | 200 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.5.2 | | 200 | 0,08 | 0,11 | 0,15 | 0,23 | 0,3 | 0,38 | 0,45 | 0,52 |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | | |
| 7.6.2 | | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | | |
| 7.8.2 | | | | | | | | | | |
| 7.8.3 | | | | | | | | | | |
| 8.1.1 | Thermoplast | | | | | | | | | |
| 8.1.2 | | | | | | | | | | |
| 8.1.3 | | | | | | | | | | |
| 8.1.4 | | | | | | | | | | |
| 8.1.5 | | | | | | | | | | |
| 8.1.6 | | | | | | | | | | |
| 8.1.7 | | | | | | | | | | |
| 8.1.8 | | | | | | | | | | |
| 8.1.9 | | | | | | | | | | |
| 8.2.1 | Duroplast | | | | | | | | | |
| 8.2.2 | | | | | | | | | | |
| 8.2.3 | | | | | | | | | | |
| 8.2.4 | | | | | | | | | | |
| 8.2.5 | | | | | | | | | | |
| 8.2.6 | | | | | | | | | | |
| 8.2.7 | | | | | | | | | | |
| 8.2.8 | | | | | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | | | | | |
| 8.3.2 | | | | | | | | | | |
| 8.3.3 | | | | | | | | | | |
| 8.3.4 | | | | | | | | | | |
| 8.3.5 | | | | | | | | | | |
| 8.3.6 | | | | | | | | | | |
| 8.4.1 | Sandwich | | | | | | | | | |
| 8.4.2 | | | | | | | | | | |
| 8.4.3 | | | | | | | | | | |
| 9.1.1 | Standard Graphit | | | | | | | | | |
| 9.1.2 | | | | | | | | | | |

# W1205, beschichtet

HPC-Spiralbohrer

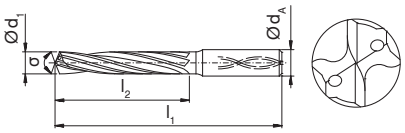


AL | HPC

$\lambda_S = 15°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 5xD | σ 135°

SCPN435






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 13,5 | HPC.AL.1205.1350h7.5XD.135.IK.HA | 14 | 124 | 77 | W1205135360 |
| 13,8 | HPC.AL.1205.1380h7.5XD.135.IK.HA | 14 | 124 | 77 | W1205138360 |
| 14,0 | HPC.AL.1205.1400h7.5XD.135.IK.HA | 14 | 124 | 77 | W1205140360 |
| 14,2 | HPC.AL.1205.1420h7.5XD.135.IK.HA | 16 | 133 | 83 | W1205142360 |
| 14,5 | HPC.AL.1205.1450h7.5XD.135.IK.HA | 16 | 133 | 83 | W1205145360 |
| 14,8 | HPC.AL.1205.1480h7.5XD.135.IK.HA | 16 | 133 | 83 | W1205148360 |
| 15,0 | HPC.AL.1205.1500h7.5XD.135.IK.HA | 16 | 133 | 83 | W1205150360 |
| 15,2 | HPC.AL.1205.1520h7.5XD.135.IK.HA | 16 | 133 | 83 | W1205152360 |
| 15,5 | HPC.AL.1205.1550h7.5XD.135.IK.HA | 16 | 133 | 83 | W1205155360 |
| 15,8 | HPC.AL.1205.1580h7.5XD.135.IK.HA | 16 | 133 | 83 | W1205158360 |
| 16,0 | HPC.AL.1205.1600h7.5XD.135.IK.HA | 16 | 133 | 83 | W1205160360 |
| 16,5 | HPC.AL.1205.1650h7.5XD.135.IK.HA | 18 | 143 | 93 | W1205165360 |
| 17,0 | HPC.AL.1205.1700h7.5XD.135.IK.HA | 18 | 143 | 93 | W1205170360 |
| 17,5 | HPC.AL.1205.1750h7.5XD.135.IK.HA | 18 | 143 | 93 | W1205175360 |
| 18,0 | HPC.AL.1205.1800h7.5XD.135.IK.HA | 18 | 143 | 93 | W1205180360 |
| 18,5 | HPC.AL.1205.1850h7.5XD.135.IK.HA | 20 | 153 | 101 | W1205185360 |
| 19,0 | HPC.AL.1205.1900h7.5XD.135.IK.HA | 20 | 153 | 101 | W1205190360 |
| 19,5 | HPC.AL.1205.1950h7.5XD.135.IK.HA | 20 | 153 | 101 | W1205195360 |
| 20,0 | HPC.AL.1205.2000h7.5XD.135.IK.HA | 20 | 153 | 101 | W1205200360 |

# W1208, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 320 | 0,3 | 0,4 | 0,5 | 0,6 |
| 7.1.2 | | 320 | 0,3 | 0,4 | 0,5 | 0,6 |
| 7.1.3 | | 360 | 0,3 | 0,4 | 0,5 | 0,6 |
| 7.1.4 | | 360 | 0,35 | 0,45 | 0,55 | 0,65 |
| 7.1.5 | | 320 | 0,35 | 0,45 | 0,55 | 0,65 |
| 7.1.6 | | 310 | 0,3 | 0,4 | 0,5 | 0,6 |
| 7.2.1 | Magnesium | | | | | |
| 7.2.2 | | | | | | |
| 7.3.1 | Kupfer | 140 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.3.2 | | 140 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.3.3 | | 140 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.3.4 | | 130 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.3.5 | | 130 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.3.6 | | 130 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.4.1 | CuZn (Messing) | 160 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.4.2 | | 160 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.5.1 | CuSn (Bronze) | 160 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.5.2 | | 160 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.6.1 | CuAlFe (Ampco) | | | | | |
| 7.6.2 | | | | | | |
| 7.8.1 | Titan | | | | | |
| 7.8.2 | | | | | | |
| 7.8.3 | | | | | | |
| 8.1.1 | Thermoplast | | | | | |
| 8.1.2 | | | | | | |
| 8.1.3 | | | | | | |
| 8.1.4 | | | | | | |
| 8.1.5 | | | | | | |
| 8.1.6 | | | | | | |
| 8.1.7 | | | | | | |
| 8.1.8 | | | | | | |
| 8.1.9 | | | | | | |
| 8.2.1 | Duroplast | | | | | |
| 8.2.2 | | | | | | |
| 8.2.3 | | | | | | |
| 8.2.4 | | | | | | |
| 8.2.5 | | | | | | |
| 8.2.6 | | | | | | |
| 8.2.7 | | | | | | |
| 8.2.8 | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | |
| 8.3.2 | | | | | | |
| 8.3.3 | | | | | | |
| 8.3.4 | | | | | | |
| 8.3.5 | | | | | | |
| 8.3.6 | | | | | | |
| 8.4.1 | Sandwich | | | | | |
| 8.4.2 | | | | | | |
| 8.4.3 | | | | | | |
| 9.1.1 | Standard Graphit | | | | | |
| 9.1.2 | | | | | | |

# W1208, beschichtet

HPC-Spiralbohrer

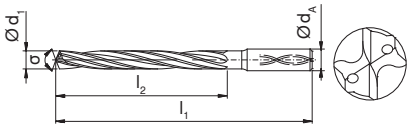


AL | HPC

$\lambda_S = 15°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 8xD | σ 135°

SCPN435






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | HPC.AL.1208.0300h7.8XD.135.IK.HA | 6 | 72 | 34 | W1208030360 |
| 3,1 | HPC.AL.1208.0310h7.8XD.135.IK.HA | 6 | 72 | 34 | W1208031360 |
| 3,2 | HPC.AL.1208.0320h7.8XD.135.IK.HA | 6 | 72 | 34 | W1208032360 |
| 3,3 | HPC.AL.1208.0330h7.8XD.135.IK.HA | 6 | 72 | 34 | W1208033360 |
| 3,4 | HPC.AL.1208.0340h7.8XD.135.IK.HA | 6 | 72 | 34 | W1208034360 |
| 3,5 | HPC.AL.1208.0350h7.8XD.135.IK.HA | 6 | 72 | 34 | W1208035360 |
| 3,6 | HPC.AL.1208.0360h7.8XD.135.IK.HA | 6 | 72 | 34 | W1208036360 |
| 3,7 | HPC.AL.1208.0370h7.8XD.135.IK.HA | 6 | 72 | 34 | W1208037360 |
| 3,8 | HPC.AL.1208.0380h7.8XD.135.IK.HA | 6 | 81 | 43 | W1208038360 |
| 3,9 | HPC.AL.1208.0390h7.8XD.135.IK.HA | 6 | 81 | 43 | W1208039360 |
| 4,0 | HPC.AL.1208.0400h7.8XD.135.IK.HA | 6 | 81 | 43 | W1208040360 |
| 4,1 | HPC.AL.1208.0410h7.8XD.135.IK.HA | 6 | 81 | 43 | W1208041360 |
| 4,2 | HPC.AL.1208.0420h7.8XD.135.IK.HA | 6 | 81 | 43 | W1208042360 |
| 4,3 | HPC.AL.1208.0430h7.8XD.135.IK.HA | 6 | 81 | 43 | W1208043360 |
| 4,4 | HPC.AL.1208.0440h7.8XD.135.IK.HA | 6 | 81 | 43 | W1208044360 |
| 4,5 | HPC.AL.1208.0450h7.8XD.135.IK.HA | 6 | 81 | 43 | W1208045360 |
| 4,6 | HPC.AL.1208.0460h7.8XD.135.IK.HA | 6 | 81 | 43 | W1208046360 |
| 4,7 | HPC.AL.1208.0470h7.8XD.135.IK.HA | 6 | 81 | 43 | W1208047360 |
| 4,8 | HPC.AL.1208.0480h7.8XD.135.IK.HA | 6 | 95 | 57 | W1208048360 |
| 4,9 | HPC.AL.1208.0490h7.8XD.135.IK.HA | 6 | 95 | 57 | W1208049360 |
| 5,0 | HPC.AL.1208.0500h7.8XD.135.IK.HA | 6 | 95 | 57 | W1208050360 |
| 5,1 | HPC.AL.1208.0510h7.8XD.135.IK.HA | 6 | 95 | 57 | W1208051360 |
| 5,2 | HPC.AL.1208.0520h7.8XD.135.IK.HA | 6 | 95 | 57 | W1208052360 |
| 5,3 | HPC.AL.1208.0530h7.8XD.135.IK.HA | 6 | 95 | 57 | W1208053360 |
| 5,4 | HPC.AL.1208.0540h7.8XD.135.IK.HA | 6 | 95 | 57 | W1208054360 |
| 5,5 | HPC.AL.1208.0550h7.8XD.135.IK.HA | 6 | 95 | 57 | W1208055360 |
| 5,6 | HPC.AL.1208.0560h7.8XD.135.IK.HA | 6 | 95 | 57 | W1208056360 |
| 5,7 | HPC.AL.1208.0570h7.8XD.135.IK.HA | 6 | 95 | 57 | W1208057360 |
| 5,8 | HPC.AL.1208.0580h7.8XD.135.IK.HA | 6 | 95 | 57 | W1208058360 |
| 5,9 | HPC.AL.1208.0590h7.8XD.135.IK.HA | 6 | 95 | 57 | W1208059360 |
| 6,0 | HPC.AL.1208.0600h7.8XD.135.IK.HA | 6 | 95 | 57 | W1208060360 |
| 6,1 | HPC.AL.1208.0610h7.8XD.135.IK.HA | 8 | 114 | 76 | W1208061360 |
| 6,2 | HPC.AL.1208.0620h7.8XD.135.IK.HA | 8 | 114 | 76 | W1208062360 |
| 6,3 | HPC.AL.1208.0630h7.8XD.135.IK.HA | 8 | 114 | 76 | W1208063360 |
| 6,4 | HPC.AL.1208.0640h7.8XD.135.IK.HA | 8 | 114 | 76 | W1208064360 |
| 6,5 | HPC.AL.1208.0650h7.8XD.135.IK.HA | 8 | 114 | 76 | W1208065360 |
| 6,6 | HPC.AL.1208.0660h7.8XD.135.IK.HA | 8 | 114 | 76 | W1208066360 |
| 6,7 | HPC.AL.1208.0670h7.8XD.135.IK.HA | 8 | 114 | 76 | W1208067360 |
| 6,8 | HPC.AL.1208.0680h7.8XD.135.IK.HA | 8 | 114 | 76 | W1208068360 |
| 6,9 | HPC.AL.1208.0690h7.8XD.135.IK.HA | 8 | 114 | 76 | W1208069360 |
| 7,0 | HPC.AL.1208.0700h7.8XD.135.IK.HA | 8 | 114 | 76 | W1208070360 |
| 7,1 | HPC.AL.1208.0710h7.8XD.135.IK.HA | 8 | 114 | 76 | W1208071360 |
| 7,2 | HPC.AL.1208.0720h7.8XD.135.IK.HA | 8 | 114 | 76 | W1208072360 |
| 7,3 | HPC.AL.1208.0730h7.8XD.135.IK.HA | 8 | 114 | 76 | W1208073360 |
| 7,4 | HPC.AL.1208.0740h7.8XD.135.IK.HA | 8 | 114 | 76 | W1208074360 |
| 7,5 | HPC.AL.1208.0750h7.8XD.135.IK.HA | 8 | 114 | 76 | W1208075360 |
| 7,6 | HPC.AL.1208.0760h7.8XD.135.IK.HA | 8 | 114 | 76 | W1208076360 |
| 7,7 | HPC.AL.1208.0770h7.8XD.135.IK.HA | 8 | 114 | 76 | W1208077360 |

# W1208, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 320 | 0,3 | 0,4 | 0,5 | 0,6 |
| 7.1.2 | | 320 | 0,3 | 0,4 | 0,5 | 0,6 |
| 7.1.3 | | 360 | 0,3 | 0,4 | 0,5 | 0,6 |
| 7.1.4 | | 360 | 0,35 | 0,45 | 0,55 | 0,65 |
| 7.1.5 | | 320 | 0,35 | 0,45 | 0,55 | 0,65 |
| 7.1.6 | | 310 | 0,3 | 0,4 | 0,5 | 0,6 |
| 7.2.1 | Magnesium | | | | | |
| 7.2.2 | | | | | | |
| 7.3.1 | Kupfer | 140 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.3.2 | | 140 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.3.3 | | 140 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.3.4 | | 130 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.3.5 | | 130 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.3.6 | | 130 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.4.1 | CuZn (Messing) | 160 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.4.2 | | 160 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.5.1 | CuSn (Bronze) | 160 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.5.2 | | 160 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.6.1 | CuAlFe (Ampco) | | | | | |
| 7.6.2 | | | | | | |
| 7.8.1 | Titan | | | | | |
| 7.8.2 | | | | | | |
| 7.8.3 | | | | | | |
| 8.1.1 | Thermoplast | | | | | |
| 8.1.2 | | | | | | |
| 8.1.3 | | | | | | |
| 8.1.4 | | | | | | |
| 8.1.5 | | | | | | |
| 8.1.6 | | | | | | |
| 8.1.7 | | | | | | |
| 8.1.8 | | | | | | |
| 8.1.9 | | | | | | |
| 8.2.1 | Duroplast | | | | | |
| 8.2.2 | | | | | | |
| 8.2.3 | | | | | | |
| 8.2.4 | | | | | | |
| 8.2.5 | | | | | | |
| 8.2.6 | | | | | | |
| 8.2.7 | | | | | | |
| 8.2.8 | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | |
| 8.3.2 | | | | | | |
| 8.3.3 | | | | | | |
| 8.3.4 | | | | | | |
| 8.3.5 | | | | | | |
| 8.3.6 | | | | | | |
| 8.4.1 | Sandwich | | | | | |
| 8.4.2 | | | | | | |
| 8.4.3 | | | | | | |
| 9.1.1 | Standard Graphit | | | | | |
| 9.1.2 | | | | | | |

# W1208, beschichtet

HPC-Spiralbohrer

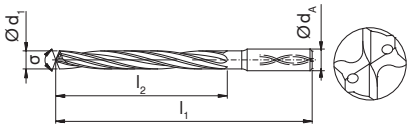


AL | HPC

$\lambda_S = 15°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 8xD | σ 135°

SCPN435






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 7,8 | HPC.AL.1208.0780h7.8XD.135.IK.HA | 8 | 114 | 76 | W1208078360 |
| 7,9 | HPC.AL.1208.0790h7.8XD.135.IK.HA | 8 | 114 | 76 | W1208079360 |
| 8,0 | HPC.AL.1208.0800h7.8XD.135.IK.HA | 8 | 114 | 76 | W1208080360 |
| 8,1 | HPC.AL.1208.0810h7.8XD.135.IK.HA | 10 | 142 | 95 | W1208081360 |
| 8,2 | HPC.AL.1208.0820h7.8XD.135.IK.HA | 10 | 142 | 95 | W1208082360 |
| 8,3 | HPC.AL.1208.0830h7.8XD.135.IK.HA | 10 | 142 | 95 | W1208083360 |
| 8,4 | HPC.AL.1208.0840h7.8XD.135.IK.HA | 10 | 142 | 95 | W1208084360 |
| 8,5 | HPC.AL.1208.0850h7.8XD.135.IK.HA | 10 | 142 | 95 | W1208085360 |
| 8,6 | HPC.AL.1208.0860h7.8XD.135.IK.HA | 10 | 142 | 95 | W1208086360 |
| 8,7 | HPC.AL.1208.0870h7.8XD.135.IK.HA | 10 | 142 | 95 | W1208087360 |
| 8,8 | HPC.AL.1208.0880h7.8XD.135.IK.HA | 10 | 142 | 95 | W1208088360 |
| 8,9 | HPC.AL.1208.0890h7.8XD.135.IK.HA | 10 | 142 | 95 | W1208089360 |
| 9,0 | HPC.AL.1208.0900h7.8XD.135.IK.HA | 10 | 142 | 95 | W1208090360 |
| 9,1 | HPC.AL.1208.0910h7.8XD.135.IK.HA | 10 | 142 | 95 | W1208091360 |
| 9,2 | HPC.AL.1208.0920h7.8XD.135.IK.HA | 10 | 142 | 95 | W1208092360 |
| 9,3 | HPC.AL.1208.0930h7.8XD.135.IK.HA | 10 | 142 | 95 | W1208093360 |
| 9,4 | HPC.AL.1208.0940h7.8XD.135.IK.HA | 10 | 142 | 95 | W1208094360 |
| 9,5 | HPC.AL.1208.0950h7.8XD.135.IK.HA | 10 | 142 | 95 | W1208095360 |
| 9,6 | HPC.AL.1208.0960h7.8XD.135.IK.HA | 10 | 142 | 95 | W1208096360 |
| 9,7 | HPC.AL.1208.0970h7.8XD.135.IK.HA | 10 | 142 | 95 | W1208097360 |
| 9,8 | HPC.AL.1208.0980h7.8XD.135.IK.HA | 10 | 142 | 95 | W1208098360 |
| 9,9 | HPC.AL.1208.0990h7.8XD.135.IK.HA | 10 | 142 | 95 | W1208099360 |
| 10,0 | HPC.AL.1208.1000h7.8XD.135.IK.HA | 10 | 142 | 95 | W1208100360 |
| 10,2 | HPC.AL.1208.1020h7.8XD.135.IK.HA | 12 | 162 | 114 | W1208102360 |
| 10,5 | HPC.AL.1208.1050h7.8XD.135.IK.HA | 12 | 162 | 114 | W1208105360 |
| 10,8 | HPC.AL.1208.1080h7.8XD.135.IK.HA | 12 | 162 | 114 | W1208108360 |
| 11,0 | HPC.AL.1208.1100h7.8XD.135.IK.HA | 12 | 162 | 114 | W1208110360 |
| 11,2 | HPC.AL.1208.1120h7.8XD.135.IK.HA | 12 | 162 | 114 | W1208112360 |
| 11,5 | HPC.AL.1208.1150h7.8XD.135.IK.HA | 12 | 162 | 114 | W1208115360 |
| 11,8 | HPC.AL.1208.1180h7.8XD.135.IK.HA | 12 | 162 | 114 | W1208118360 |
| 12,0 | HPC.AL.1208.1200h7.8XD.135.IK.HA | 12 | 162 | 114 | W1208120360 |
| 12,5 | HPC.AL.1208.1250h7.8XD.135.IK.HA | 14 | 178 | 131 | W1208125360 |
| 12,8 | HPC.AL.1208.1280h7.8XD.135.IK.HA | 14 | 178 | 131 | W1208128360 |
| 13,0 | HPC.AL.1208.1300h7.8XD.135.IK.HA | 14 | 178 | 131 | W1208130360 |
| 13,5 | HPC.AL.1208.1350h7.8XD.135.IK.HA | 14 | 178 | 131 | W1208135360 |
| 13,8 | HPC.AL.1208.1380h7.8XD.135.IK.HA | 14 | 178 | 131 | W1208138360 |
| 14,0 | HPC.AL.1208.1400h7.8XD.135.IK.HA | 14 | 178 | 131 | W1208140360 |
| 14,5 | HPC.AL.1208.1450h7.8XD.135.IK.HA | 16 | 203 | 152 | W1208145360 |
| 14,8 | HPC.AL.1208.1480h7.8XD.135.IK.HA | 16 | 203 | 152 | W1208148360 |
| 15,0 | HPC.AL.1208.1500h7.8XD.135.IK.HA | 16 | 203 | 152 | W1208150360 |
| 15,5 | HPC.AL.1208.1550h7.8XD.135.IK.HA | 16 | 203 | 152 | W1208155360 |
| 15,8 | HPC.AL.1208.1580h7.8XD.135.IK.HA | 16 | 203 | 152 | W1208158360 |
| 16,0 | HPC.AL.1208.1600h7.8XD.135.IK.HA | 16 | 203 | 152 | W1208160360 |

# W1212, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 250 | 0,3 | 0,4 | 0,5 | 0,6 |
| 7.1.2 | | 250 | 0,3 | 0,4 | 0,5 | 0,6 |
| 7.1.3 | | 280 | 0,3 | 0,4 | 0,5 | 0,6 |
| 7.1.4 | | 280 | 0,35 | 0,45 | 0,55 | 0,65 |
| 7.1.5 | | 250 | 0,35 | 0,45 | 0,55 | 0,65 |
| 7.1.6 | | 245 | 0,3 | 0,4 | 0,5 | 0,6 |
| 7.2.1 | Magnesium | | | | | |
| 7.2.2 | | | | | | |
| 7.3.1 | Kupfer | 120 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.3.2 | | 120 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.3.3 | | 120 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.3.4 | | 120 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.3.5 | | 120 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.3.6 | | 120 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.4.1 | CuZn (Messing) | 150 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.4.2 | | 150 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.5.1 | CuSn (Bronze) | 150 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.5.2 | | 150 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.6.1 | CuAlFe (Ampco) | | | | | |
| 7.6.2 | | | | | | |
| 7.8.1 | Titan | | | | | |
| 7.8.2 | | | | | | |
| 7.8.3 | | | | | | |
| 8.1.1 | Thermoplast | | | | | |
| 8.1.2 | | | | | | |
| 8.1.3 | | | | | | |
| 8.1.4 | | | | | | |
| 8.1.5 | | | | | | |
| 8.1.6 | | | | | | |
| 8.1.7 | | | | | | |
| 8.1.8 | | | | | | |
| 8.1.9 | | | | | | |
| 8.2.1 | Duroplast | | | | | |
| 8.2.2 | | | | | | |
| 8.2.3 | | | | | | |
| 8.2.4 | | | | | | |
| 8.2.5 | | | | | | |
| 8.2.6 | | | | | | |
| 8.2.7 | | | | | | |
| 8.2.8 | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | |
| 8.3.2 | | | | | | |
| 8.3.3 | | | | | | |
| 8.3.4 | | | | | | |
| 8.3.5 | | | | | | |
| 8.3.6 | | | | | | |
| 8.4.1 | Sandwich | | | | | |
| 8.4.2 | | | | | | |
| 8.4.3 | | | | | | |
| 9.1.1 | Standard Graphit | | | | | |
| 9.1.2 | | | | | | |

# W1212, beschichtet

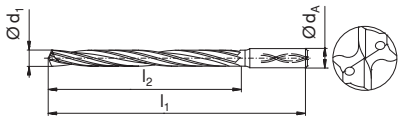
HPC-Spiralbohrer

AL | HPC

$\lambda_S = 15°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 12xD | σ 135°

SCPN435






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | HPC.AL.1212.0300h7.12XD.135.IK.HA | 6 | 92 | 54 | W1212030360 |
| 3,1 | HPC.AL.1212.0310h7.12XD.135.IK.HA | 6 | 92 | 54 | W1212031360 |
| 3,2 | HPC.AL.1212.0320h7.12XD.135.IK.HA | 6 | 92 | 54 | W1212032360 |
| 3,3 | HPC.AL.1212.0330h7.12XD.135.IK.HA | 6 | 92 | 54 | W1212033360 |
| 3,4 | HPC.AL.1212.0340h7.12XD.135.IK.HA | 6 | 92 | 54 | W1212034360 |
| 3,5 | HPC.AL.1212.0350h7.12XD.135.IK.HA | 6 | 92 | 54 | W1212035360 |
| 3,6 | HPC.AL.1212.0360h7.12XD.135.IK.HA | 6 | 92 | 54 | W1212036360 |
| 3,7 | HPC.AL.1212.0370h7.12XD.135.IK.HA | 6 | 92 | 54 | W1212037360 |
| 3,8 | HPC.AL.1212.0380h7.12XD.135.IK.HA | 6 | 102 | 64 | W1212038360 |
| 3,9 | HPC.AL.1212.0390h7.12XD.135.IK.HA | 6 | 102 | 64 | W1212039360 |
| 4,0 | HPC.AL.1212.0400h7.12XD.135.IK.HA | 6 | 102 | 64 | W1212040360 |
| 4,1 | HPC.AL.1212.0410h7.12XD.135.IK.HA | 6 | 102 | 64 | W1212041360 |
| 4,2 | HPC.AL.1212.0420h7.12XD.135.IK.HA | 6 | 102 | 64 | W1212042360 |
| 4,3 | HPC.AL.1212.0430h7.12XD.135.IK.HA | 6 | 102 | 64 | W1212043360 |
| 4,4 | HPC.AL.1212.0440h7.12XD.135.IK.HA | 6 | 102 | 64 | W1212044360 |
| 4,5 | HPC.AL.1212.0450h7.12XD.135.IK.HA | 6 | 102 | 64 | W1212045360 |
| 4,6 | HPC.AL.1212.0460h7.12XD.135.IK.HA | 6 | 102 | 64 | W1212046360 |
| 4,7 | HPC.AL.1212.0470h7.12XD.135.IK.HA | 6 | 102 | 64 | W1212047360 |
| 4,8 | HPC.AL.1212.0480h7.12XD.135.IK.HA | 6 | 116 | 78 | W1212048360 |
| 4,9 | HPC.AL.1212.0490h7.12XD.135.IK.HA | 6 | 116 | 78 | W1212049360 |
| 5,0 | HPC.AL.1212.0500h7.12XD.135.IK.HA | 6 | 116 | 78 | W1212050360 |
| 5,1 | HPC.AL.1212.0510h7.12XD.135.IK.HA | 6 | 116 | 78 | W1212051360 |
| 5,2 | HPC.AL.1212.0520h7.12XD.135.IK.HA | 6 | 116 | 78 | W1212052360 |
| 5,3 | HPC.AL.1212.0530h7.12XD.135.IK.HA | 6 | 116 | 78 | W1212053360 |
| 5,4 | HPC.AL.1212.0540h7.12XD.135.IK.HA | 6 | 116 | 78 | W1212054360 |
| 5,5 | HPC.AL.1212.0550h7.12XD.135.IK.HA | 6 | 116 | 78 | W1212055360 |
| 5,6 | HPC.AL.1212.0560h7.12XD.135.IK.HA | 6 | 116 | 78 | W1212056360 |
| 5,7 | HPC.AL.1212.0570h7.12XD.135.IK.HA | 6 | 116 | 78 | W1212057360 |
| 5,8 | HPC.AL.1212.0580h7.12XD.135.IK.HA | 6 | 116 | 78 | W1212058360 |
| 5,9 | HPC.AL.1212.0590h7.12XD.135.IK.HA | 6 | 116 | 78 | W1212059360 |
| 6,0 | HPC.AL.1212.0600h7.12XD.135.IK.HA | 6 | 116 | 78 | W1212060360 |
| 6,1 | HPC.AL.1212.0610h7.12XD.135.IK.HA | 8 | 146 | 108 | W1212061360 |
| 6,2 | HPC.AL.1212.0620h7.12XD.135.IK.HA | 8 | 146 | 108 | W1212062360 |
| 6,3 | HPC.AL.1212.0630h7.12XD.135.IK.HA | 8 | 146 | 108 | W1212063360 |
| 6,4 | HPC.AL.1212.0640h7.12XD.135.IK.HA | 8 | 146 | 108 | W1212064360 |
| 6,5 | HPC.AL.1212.0650h7.12XD.135.IK.HA | 8 | 146 | 108 | W1212065360 |
| 6,6 | HPC.AL.1212.0660h7.12XD.135.IK.HA | 8 | 146 | 108 | W1212066360 |
| 6,7 | HPC.AL.1212.0670h7.12XD.135.IK.HA | 8 | 146 | 108 | W1212067360 |
| 6,8 | HPC.AL.1212.0680h7.12XD.135.IK.HA | 8 | 146 | 108 | W1212068360 |
| 6,9 | HPC.AL.1212.0690h7.12XD.135.IK.HA | 8 | 146 | 108 | W1212069360 |
| 7,0 | HPC.AL.1212.0700h7.12XD.135.IK.HA | 8 | 146 | 108 | W1212070360 |
| 7,1 | HPC.AL.1212.0710h7.12XD.135.IK.HA | 8 | 146 | 108 | W1212071360 |
| 7,2 | HPC.AL.1212.0720h7.12XD.135.IK.HA | 8 | 146 | 108 | W1212072360 |
| 7,3 | HPC.AL.1212.0730h7.12XD.135.IK.HA | 8 | 146 | 108 | W1212073360 |
| 7,4 | HPC.AL.1212.0740h7.12XD.135.IK.HA | 8 | 146 | 108 | W1212074360 |
| 7,5 | HPC.AL.1212.0750h7.12XD.135.IK.HA | 8 | 146 | 108 | W1212075360 |
| 7,6 | HPC.AL.1212.0760h7.12XD.135.IK.HA | 8 | 146 | 108 | W1212076360 |
| 7,7 | HPC.AL.1212.0770h7.12XD.135.IK.HA | 8 | 146 | 108 | W1212077360 |

# W1212, beschichtet

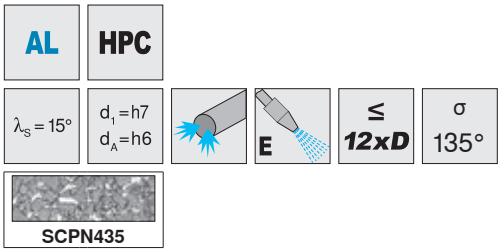
Schnittdatenempfehlung



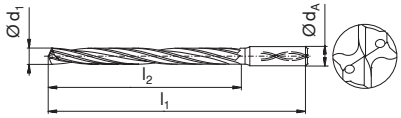
| Index | Materialbezeichnung | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 250 | 0,3 | 0,4 | 0,5 | 0,6 |
| 7.1.2 | | 250 | 0,3 | 0,4 | 0,5 | 0,6 |
| 7.1.3 | | 280 | 0,3 | 0,4 | 0,5 | 0,6 |
| 7.1.4 | | 280 | 0,35 | 0,45 | 0,55 | 0,65 |
| 7.1.5 | | 250 | 0,35 | 0,45 | 0,55 | 0,65 |
| 7.1.6 | | 245 | 0,3 | 0,4 | 0,5 | 0,6 |
| 7.2.1 | Magnesium | | | | | |
| 7.2.2 | | | | | | |
| 7.3.1 | Kupfer | 120 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.3.2 | | 120 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.3.3 | | 120 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.3.4 | | 120 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.3.5 | | 120 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.3.6 | | 120 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.4.1 | CuZn (Messing) | 150 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.4.2 | | 150 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.5.1 | CuSn (Bronze) | 150 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.5.2 | | 150 | 0,23 | 0,3 | 0,38 | 0,45 |
| 7.6.1 | CuAlFe (Ampco) | | | | | |
| 7.6.2 | | | | | | |
| 7.8.1 | Titan | | | | | |
| 7.8.2 | | | | | | |
| 7.8.3 | | | | | | |
| 8.1.1 | Thermoplast | | | | | |
| 8.1.2 | | | | | | |
| 8.1.3 | | | | | | |
| 8.1.4 | | | | | | |
| 8.1.5 | | | | | | |
| 8.1.6 | | | | | | |
| 8.1.7 | | | | | | |
| 8.1.8 | | | | | | |
| 8.1.9 | | | | | | |
| 8.2.1 | Duroplast | | | | | |
| 8.2.2 | | | | | | |
| 8.2.3 | | | | | | |
| 8.2.4 | | | | | | |
| 8.2.5 | | | | | | |
| 8.2.6 | | | | | | |
| 8.2.7 | | | | | | |
| 8.2.8 | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | |
| 8.3.2 | | | | | | |
| 8.3.3 | | | | | | |
| 8.3.4 | | | | | | |
| 8.3.5 | | | | | | |
| 8.3.6 | | | | | | |
| 8.4.1 | Sandwich | | | | | |
| 8.4.2 | | | | | | |
| 8.4.3 | | | | | | |
| 9.1.1 | Standard Graphit | | | | | |
| 9.1.2 | | | | | | |

# W1212, beschichtet

HPC-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 7,8 | HPC.AL.1212.0780h7.12XD.135.IK.HA | 8 | 146 | 108 | W1212078360 |
| 7,9 | HPC.AL.1212.0790h7.12XD.135.IK.HA | 8 | 146 | 108 | W1212079360 |
| 8,0 | HPC.AL.1212.0800h7.12XD.135.IK.HA | 8 | 146 | 108 | W1212080360 |
| 8,1 | HPC.AL.1212.0810h7.12XD.135.IK.HA | 10 | 162 | 120 | W1212081360 |
| 8,2 | HPC.AL.1212.0820h7.12XD.135.IK.HA | 10 | 162 | 120 | W1212082360 |
| 8,3 | HPC.AL.1212.0830h7.12XD.135.IK.HA | 10 | 162 | 120 | W1212083360 |
| 8,4 | HPC.AL.1212.0840h7.12XD.135.IK.HA | 10 | 162 | 120 | W1212084360 |
| 8,5 | HPC.AL.1212.0850h7.12XD.135.IK.HA | 10 | 162 | 120 | W1212085360 |
| 8,6 | HPC.AL.1212.0860h7.12XD.135.IK.HA | 10 | 162 | 120 | W1212086360 |
| 8,7 | HPC.AL.1212.0870h7.12XD.135.IK.HA | 10 | 162 | 120 | W1212087360 |
| 8,8 | HPC.AL.1212.0880h7.12XD.135.IK.HA | 10 | 162 | 120 | W1212088360 |
| 8,9 | HPC.AL.1212.0890h7.12XD.135.IK.HA | 10 | 162 | 120 | W1212089360 |
| 9,0 | HPC.AL.1212.0900h7.12XD.135.IK.HA | 10 | 162 | 120 | W1212090360 |
| 9,1 | HPC.AL.1212.0910h7.12XD.135.IK.HA | 10 | 162 | 120 | W1212091360 |
| 9,2 | HPC.AL.1212.0920h7.12XD.135.IK.HA | 10 | 162 | 120 | W1212092360 |
| 9,3 | HPC.AL.1212.0930h7.12XD.135.IK.HA | 10 | 162 | 120 | W1212093360 |
| 9,4 | HPC.AL.1212.0940h7.12XD.135.IK.HA | 10 | 162 | 120 | W1212094360 |
| 9,5 | HPC.AL.1212.0950h7.12XD.135.IK.HA | 10 | 162 | 120 | W1212095360 |
| 9,6 | HPC.AL.1212.0960h7.12XD.135.IK.HA | 10 | 162 | 120 | W1212096360 |
| 9,7 | HPC.AL.1212.0970h7.12XD.135.IK.HA | 10 | 162 | 120 | W1212097360 |
| 9,8 | HPC.AL.1212.0980h7.12XD.135.IK.HA | 10 | 162 | 120 | W1212098360 |
| 9,9 | HPC.AL.1212.0990h7.12XD.135.IK.HA | 10 | 162 | 120 | W1212099360 |
| 10,0 | HPC.AL.1212.1000h7.12XD.135.IK.HA | 10 | 162 | 120 | W1212100360 |
| 10,2 | HPC.AL.1212.1020h7.12XD.135.IK.HA | 12 | 204 | 156 | W1212102360 |
| 10,5 | HPC.AL.1212.1050h7.12XD.135.IK.HA | 12 | 204 | 156 | W1212105360 |
| 10,8 | HPC.AL.1212.1080h7.12XD.135.IK.HA | 12 | 204 | 156 | W1212108360 |
| 11,0 | HPC.AL.1212.1100h7.12XD.135.IK.HA | 12 | 204 | 156 | W1212110360 |
| 11,2 | HPC.AL.1212.1120h7.12XD.135.IK.HA | 12 | 204 | 156 | W1212112360 |
| 11,5 | HPC.AL.1212.1150h7.12XD.135.IK.HA | 12 | 204 | 156 | W1212115360 |
| 11,8 | HPC.AL.1212.1180h7.12XD.135.IK.HA | 12 | 204 | 156 | W1212118360 |
| 12,0 | HPC.AL.1212.1200h7.12XD.135.IK.HA | 12 | 204 | 156 | W1212120360 |
| 12,5 | HPC.AL.1212.1250h7.12XD.135.IK.HA | 14 | 230 | 182 | W1212125360 |
| 12,8 | HPC.AL.1212.1280h7.12XD.135.IK.HA | 14 | 230 | 182 | W1212128360 |
| 13,0 | HPC.AL.1212.1300h7.12XD.135.IK.HA | 14 | 230 | 182 | W1212130360 |
| 13,5 | HPC.AL.1212.1350h7.12XD.135.IK.HA | 14 | 230 | 182 | W1212135360 |
| 13,8 | HPC.AL.1212.1380h7.12XD.135.IK.HA | 14 | 230 | 182 | W1212138360 |
| 14,0 | HPC.AL.1212.1400h7.12XD.135.IK.HA | 14 | 230 | 182 | W1212140360 |
| 14,5 | HPC.AL.1212.1450h7.12XD.135.IK.HA | 16 | 260 | 208 | W1212145360 |
| 14,8 | HPC.AL.1212.1480h7.12XD.135.IK.HA | 16 | 260 | 208 | W1212148360 |
| 15,0 | HPC.AL.1212.1500h7.12XD.135.IK.HA | 16 | 260 | 208 | W1212150360 |
| 15,5 | HPC.AL.1212.1550h7.12XD.135.IK.HA | 16 | 260 | 208 | W1212155360 |
| 15,8 | HPC.AL.1212.1580h7.12XD.135.IK.HA | 16 | 260 | 208 | W1212158360 |
| 16,0 | HPC.AL.1212.1600h7.12XD.135.IK.HA | 16 | 260 | 208 | W1212160360 |

# W1216, beschichtet

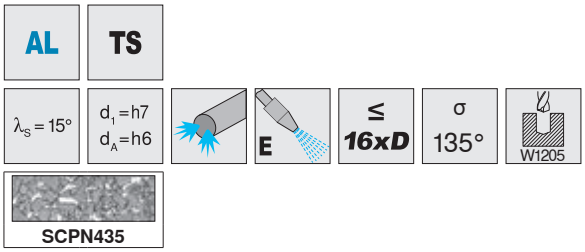
Schnittdatenempfehlung



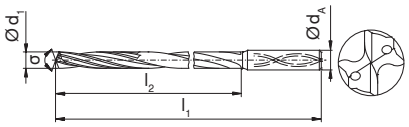
| Index | Materialbezeichnung | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | f [mm/U] > Ø 5,0 = Ø 8,0 | f [mm/U] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 160 | 0,2 | 0,25 | 0,35 |
| 7.1.2 | | 160 | 0,2 | 0,25 | 0,35 |
| 7.1.3 | | 180 | 0,2 | 0,25 | 0,35 |
| 7.1.4 | | 190 | 0,23 | 0,3 | 0,38 |
| 7.1.5 | | 160 | 0,23 | 0,3 | 0,38 |
| 7.1.6 | | 140 | 0,2 | 0,25 | 0,35 |
| 7.2.1 | Magnesium | | | | |
| 7.2.2 | | | | | |
| 7.3.1 | Kupfer | 90 | 0,04 | 0,06 | 0,09 |
| 7.3.2 | | 90 | 0,2 | 0,25 | 0,35 |
| 7.3.3 | | 90 | 0,2 | 0,25 | 0,35 |
| 7.3.4 | | 90 | 0,2 | 0,25 | 0,35 |
| 7.3.5 | | 90 | 0,2 | 0,25 | 0,35 |
| 7.3.6 | | 90 | 0,2 | 0,25 | 0,35 |
| 7.4.1 | CuZn (Messing) | 115 | 0,2 | 0,25 | 0,35 |
| 7.4.2 | | 115 | 0,2 | 0,25 | 0,35 |
| 7.5.1 | CuSn (Bronze) | 115 | 0,2 | 0,25 | 0,35 |
| 7.5.2 | | 115 | 0,2 | 0,25 | 0,35 |
| 7.6.1 | CuAlFe (Ampco) | | | | |
| 7.6.2 | | | | | |
| 7.8.1 | Titan | | | | |
| 7.8.2 | | | | | |
| 7.8.3 | | | | | |
| 8.1.1 | Thermoplast | | | | |
| 8.1.2 | | | | | |
| 8.1.3 | | | | | |
| 8.1.4 | | | | | |
| 8.1.5 | | | | | |
| 8.1.6 | | | | | |
| 8.1.7 | | | | | |
| 8.1.8 | | | | | |
| 8.1.9 | | | | | |
| 8.2.1 | Duroplast | | | | |
| 8.2.2 | | | | | |
| 8.2.3 | | | | | |
| 8.2.4 | | | | | |
| 8.2.5 | | | | | |
| 8.2.6 | | | | | |
| 8.2.7 | | | | | |
| 8.2.8 | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | |
| 8.3.2 | | | | | |
| 8.3.3 | | | | | |
| 8.3.4 | | | | | |
| 8.3.5 | | | | | |
| 8.3.6 | | | | | |
| 8.4.1 | Sandwich | | | | |
| 8.4.2 | | | | | |
| 8.4.3 | | | | | |
| 9.1.1 | Standard Graphit | | | | |
| 9.1.2 | | | | | |

# W1216, beschichtet

Tieflochspiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | TS.AL.1216.0300h7.16XD.135.IK.HA | 6 | 100 | 60 | W1216030360 |
| 3,2 | TS.AL.1216.0320h7.16XD.135.IK.HA | 6 | 100 | 60 | W1216032360 |
| 3,3 | TS.AL.1216.0330h7.16XD.135.IK.HA | 6 | 100 | 60 | W1216033360 |
| 3,5 | TS.AL.1216.0350h7.16XD.135.IK.HA | 6 | 100 | 60 | W1216035360 |
| 3,8 | TS.AL.1216.0380h7.16XD.135.IK.HA | 6 | 115 | 75 | W1216038360 |
| 4,0 | TS.AL.1216.0400h7.16XD.135.IK.HA | 6 | 115 | 75 | W1216040360 |
| 4,2 | TS.AL.1216.0420h7.16XD.135.IK.HA | 6 | 115 | 75 | W1216042360 |
| 4,5 | TS.AL.1216.0450h7.16XD.135.IK.HA | 6 | 130 | 90 | W1216045360 |
| 4,8 | TS.AL.1216.0480h7.16XD.135.IK.HA | 6 | 130 | 90 | W1216048360 |
| 5,0 | TS.AL.1216.0500h7.16XD.135.IK.HA | 6 | 130 | 90 | W1216050360 |
| 5,5 | TS.AL.1216.0550h7.16XD.135.IK.HA | 6 | 150 | 108 | W1216055360 |
| 5,8 | TS.AL.1216.0580h7.16XD.135.IK.HA | 6 | 150 | 108 | W1216058360 |
| 6,0 | TS.AL.1216.0600h7.16XD.135.IK.HA | 6 | 150 | 108 | W1216060360 |
| 6,5 | TS.AL.1216.0650h7.16XD.135.IK.HA | 8 | 165 | 125 | W1216065360 |
| 6,8 | TS.AL.1216.0680h7.16XD.135.IK.HA | 8 | 165 | 125 | W1216068360 |
| 7,0 | TS.AL.1216.0700h7.16XD.135.IK.HA | 8 | 165 | 125 | W1216070360 |
| 7,5 | TS.AL.1216.0750h7.16XD.135.IK.HA | 8 | 180 | 140 | W1216075360 |
| 7,8 | TS.AL.1216.0780h7.16XD.135.IK.HA | 8 | 180 | 140 | W1216078360 |
| 8,0 | TS.AL.1216.0800h7.16XD.135.IK.HA | 8 | 180 | 140 | W1216080360 |
| 8,5 | TS.AL.1216.0850h7.16XD.135.IK.HA | 10 | 205 | 160 | W1216085360 |
| 8,8 | TS.AL.1216.0880h7.16XD.135.IK.HA | 10 | 205 | 160 | W1216088360 |
| 9,0 | TS.AL.1216.0900h7.16XD.135.IK.HA | 10 | 205 | 160 | W1216090360 |
| 9,8 | TS.AL.1216.0980h7.16XD.135.IK.HA | 10 | 225 | 180 | W1216098360 |
| 10,0 | TS.AL.1216.1000h7.16XD.135.IK.HA | 10 | 225 | 180 | W1216100360 |
| 10,2 | TS.AL.1216.1020h7.16XD.135.IK.HA | 12 | 240 | 190 | W1216102360 |
| 10,8 | TS.AL.1216.1080h7.16XD.135.IK.HA | 12 | 240 | 190 | W1216108360 |
| 11,8 | TS.AL.1216.1180h7.16XD.135.IK.HA | 12 | 265 | 215 | W1216118360 |
| 12,0 | TS.AL.1216.1200h7.16XD.135.IK.HA | 12 | 265 | 215 | W1216120360 |

Unbedingt Anwendungshinweise Seite F489-F491 beachten!
Für das Setzen der Pilotbohrung VHM-Bohrer Typ W1205 verwenden (siehe Seite F405-F412).

# W1220, beschichtet

Schnittdatenempfehlung

| Index | Materialbezeichnung | $V_c$ [m/min] | f [mm/U] = Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 150 | 0,125 | 0,2 | 0,25 | 0,35 |
| 7.1.2 | | 150 | 0,125 | 0,2 | 0,25 | 0,35 |
| 7.1.3 | | 170 | 0,125 | 0,2 | 0,25 | 0,35 |
| 7.1.4 | | 180 | 0,15 | 0,23 | 0,3 | 0,38 |
| 7.1.5 | | 150 | 0,15 | 0,23 | 0,3 | 0,38 |
| 7.1.6 | | 130 | 0,125 | 0,2 | 0,25 | 0,35 |
| 7.2.1 | Magnesium | | | | | |
| 7.2.2 | | | | | | |
| 7.3.1 | Kupfer | 80 | 0,125 | 0,2 | 0,25 | 0,35 |
| 7.3.2 | | 80 | 0,125 | 0,2 | 0,25 | 0,35 |
| 7.3.3 | | 80 | 0,125 | 0,2 | 0,25 | 0,35 |
| 7.3.4 | | 80 | 0,125 | 0,2 | 0,25 | 0,35 |
| 7.3.5 | | 80 | 0,125 | 0,2 | 0,25 | 0,35 |
| 7.3.6 | | 80 | 0,125 | 0,2 | 0,25 | 0,35 |
| 7.4.1 | CuZn (Messing) | 100 | 0,125 | 0,2 | 0,25 | 0,35 |
| 7.4.2 | | 100 | 0,125 | 0,2 | 0,25 | 0,35 |
| 7.5.1 | CuSn (Bronze) | 100 | 0,125 | 0,2 | 0,25 | 0,35 |
| 7.5.2 | | 100 | 0,125 | 0,2 | 0,25 | 0,35 |
| 7.6.1 | CuAlFe (Ampco) | | | | | |
| 7.6.2 | | | | | | |
| 7.8.1 | Titan | | | | | |
| 7.8.2 | | | | | | |
| 7.8.3 | | | | | | |
| 8.1.1 | Thermoplast | | | | | |
| 8.1.2 | | | | | | |
| 8.1.3 | | | | | | |
| 8.1.4 | | | | | | |
| 8.1.5 | | | | | | |
| 8.1.6 | | | | | | |
| 8.1.7 | | | | | | |
| 8.1.8 | | | | | | |
| 8.1.9 | | | | | | |
| 8.2.1 | Duroplast | | | | | |
| 8.2.2 | | | | | | |
| 8.2.3 | | | | | | |
| 8.2.4 | | | | | | |
| 8.2.5 | | | | | | |
| 8.2.6 | | | | | | |
| 8.2.7 | | | | | | |
| 8.2.8 | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | |
| 8.3.2 | | | | | | |
| 8.3.3 | | | | | | |
| 8.3.4 | | | | | | |
| 8.3.5 | | | | | | |
| 8.3.6 | | | | | | |
| 8.4.1 | Sandwich | | | | | |
| 8.4.2 | | | | | | |
| 8.4.3 | | | | | | |
| 9.1.1 | Standard Graphit | | | | | |
| 9.1.2 | | | | | | |

# W1220, beschichtet

Tieflochspiralbohrer

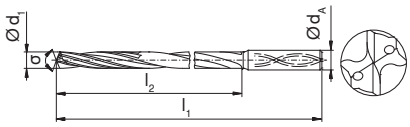


AL | TS

$\lambda_S = 15°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 20xD | σ 135° | W1205

SCPN435






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 2,0 | TS.AL.1220.0200h7.20XD.135.IK.HA | 4 | 92 | 50 | W1220020360 |
| 2,2 | TS.AL.1220.0220h7.20XD.135.IK.HA | 4 | 92 | 50 | W1220022360 |
| 2,3 | TS.AL.1220.0230h7.20XD.135.IK.HA | 4 | 92 | 50 | W1220023360 |
| 2,4 | TS.AL.1220.0240h7.20XD.135.IK.HA | 4 | 112 | 70 | W1220024360 |
| 2,5 | TS.AL.1220.0250h7.20XD.135.IK.HA | 4 | 112 | 70 | W1220025360 |
| 2,7 | TS.AL.1220.0270h7.20XD.135.IK.HA | 4 | 112 | 70 | W1220027360 |
| 2,8 | TS.AL.1220.0280h7.20XD.135.IK.HA | 4 | 112 | 70 | W1220028360 |
| 3,0 | TS.AL.1220.0300h7.20XD.135.IK.HA | 6 | 120 | 80 | W1220030360 |
| 3,2 | TS.AL.1220.0320h7.20XD.135.IK.HA | 6 | 120 | 80 | W1220032360 |
| 3,3 | TS.AL.1220.0330h7.20XD.135.IK.HA | 6 | 120 | 80 | W1220033360 |
| 3,5 | TS.AL.1220.0350h7.20XD.135.IK.HA | 6 | 120 | 80 | W1220035360 |
| 3,8 | TS.AL.1220.0380h7.20XD.135.IK.HA | 6 | 130 | 90 | W1220038360 |
| 4,0 | TS.AL.1220.0400h7.20XD.135.IK.HA | 6 | 130 | 90 | W1220040360 |
| 4,2 | TS.AL.1220.0420h7.20XD.135.IK.HA | 6 | 160 | 110 | W1220042360 |
| 4,5 | TS.AL.1220.0450h7.20XD.135.IK.HA | 6 | 160 | 110 | W1220045360 |
| 4,8 | TS.AL.1220.0480h7.20XD.135.IK.HA | 6 | 160 | 120 | W1220048360 |
| 5,0 | TS.AL.1220.0500h7.20XD.135.IK.HA | 6 | 160 | 120 | W1220050360 |
| 5,5 | TS.AL.1220.0550h7.20XD.135.IK.HA | 6 | 185 | 140 | W1220055360 |
| 5,8 | TS.AL.1220.0580h7.20XD.135.IK.HA | 6 | 185 | 140 | W1220058360 |
| 6,0 | TS.AL.1220.0600h7.20XD.135.IK.HA | 6 | 185 | 140 | W1220060360 |
| 6,5 | TS.AL.1220.0650h7.20XD.135.IK.HA | 8 | 210 | 160 | W1220065360 |
| 6,8 | TS.AL.1220.0680h7.20XD.135.IK.HA | 8 | 210 | 160 | W1220068360 |
| 7,0 | TS.AL.1220.0700h7.20XD.135.IK.HA | 8 | 210 | 160 | W1220070360 |
| 7,5 | TS.AL.1220.0750h7.20XD.135.IK.HA | 8 | 230 | 180 | W1220075360 |
| 7,8 | TS.AL.1220.0780h7.20XD.135.IK.HA | 8 | 230 | 180 | W1220078360 |
| 8,0 | TS.AL.1220.0800h7.20XD.135.IK.HA | 8 | 230 | 180 | W1220080360 |
| 8,5 | TS.AL.1220.0850h7.20XD.135.IK.HA | 10 | 260 | 195 | W1220085360 |
| 8,8 | TS.AL.1220.0880h7.20XD.135.IK.HA | 10 | 290 | 230 | W1220088360 |
| 9,0 | TS.AL.1220.0900h7.20XD.135.IK.HA | 10 | 290 | 230 | W1220090360 |
| 9,8 | TS.AL.1220.0980h7.20XD.135.IK.HA | 10 | 290 | 230 | W1220098360 |
| 10,0 | TS.AL.1220.1000h7.20XD.135.IK.HA | 10 | 290 | 230 | W1220100360 |
| 10,2 | TS.AL.1220.1020h7.20XD.135.IK.HA | 12 | 315 | 268 | W1220102360 |
| 10,8 | TS.AL.1220.1080h7.20XD.135.IK.HA | 12 | 315 | 268 | W1220108360 |
| 11,8 | TS.AL.1220.1180h7.20XD.135.IK.HA | 12 | 315 | 268 | W1220118360 |
| 12,0 | TS.AL.1220.1200h7.20XD.135.IK.HA | 12 | 315 | 268 | W1220120360 |

Unbedingt Anwendungshinweise Seite F489-F491 beachten!
Für das Setzen der Pilotbohrung VHM-Bohrer Typ W1205 verwenden (siehe Seite F405-F412).

# W1225, beschichtet

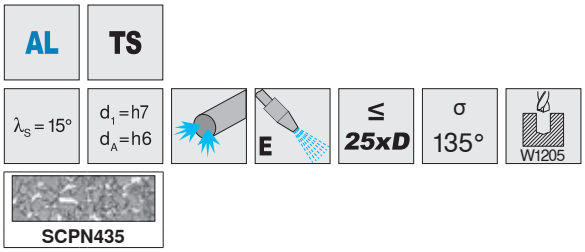
Schnittdatenempfehlung



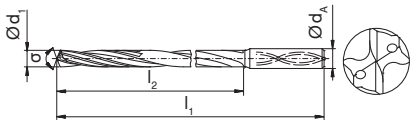
| Index | Materialbezeichnung | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | f [mm/U] > Ø 5,0 = Ø 8,0 | f [mm/U] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 130 | 0,2 | 0,25 | 0,35 |
| 7.1.2 | | 130 | 0,2 | 0,25 | 0,35 |
| 7.1.3 | | 150 | 0,2 | 0,25 | 0,35 |
| 7.1.4 | | 160 | 0,23 | 0,3 | 0,38 |
| 7.1.5 | | 130 | 0,23 | 0,3 | 0,38 |
| 7.1.6 | | 120 | 0,2 | 0,25 | 0,35 |
| 7.2.1 | Magnesium | | | | |
| 7.2.2 | | | | | |
| 7.3.1 | Kupfer | 75 | 0,2 | 0,25 | 0,35 |
| 7.3.2 | | 75 | 0,2 | 0,25 | 0,35 |
| 7.3.3 | | 75 | 0,2 | 0,25 | 0,35 |
| 7.3.4 | | 75 | 0,2 | 0,25 | 0,35 |
| 7.3.5 | | 75 | 0,2 | 0,25 | 0,35 |
| 7.3.6 | | 75 | 0,2 | 0,25 | 0,35 |
| 7.4.1 | CuZn (Messing) | 90 | 0,2 | 0,25 | 0,35 |
| 7.4.2 | | 90 | 0,2 | 0,25 | 0,35 |
| 7.5.1 | CuSn (Bronze) | 90 | 0,2 | 0,25 | 0,35 |
| 7.5.2 | | 90 | 0,2 | 0,25 | 0,35 |
| 7.6.1 | CuAlFe (Ampco) | | | | |
| 7.6.2 | | | | | |
| 7.8.1 | Titan | | | | |
| 7.8.2 | | | | | |
| 7.8.3 | | | | | |
| 8.1.1 | Thermoplast | | | | |
| 8.1.2 | | | | | |
| 8.1.3 | | | | | |
| 8.1.4 | | | | | |
| 8.1.5 | | | | | |
| 8.1.6 | | | | | |
| 8.1.7 | | | | | |
| 8.1.8 | | | | | |
| 8.1.9 | | | | | |
| 8.2.1 | Duroplast | | | | |
| 8.2.2 | | | | | |
| 8.2.3 | | | | | |
| 8.2.4 | | | | | |
| 8.2.5 | | | | | |
| 8.2.6 | | | | | |
| 8.2.7 | | | | | |
| 8.2.8 | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | |
| 8.3.2 | | | | | |
| 8.3.3 | | | | | |
| 8.3.4 | | | | | |
| 8.3.5 | | | | | |
| 8.3.6 | | | | | |
| 8.4.1 | Sandwich | | | | |
| 8.4.2 | | | | | |
| 8.4.3 | | | | | |
| 9.1.1 | Standard Graphit | | | | |
| 9.1.2 | | | | | |

# W1225, beschichtet

Tieflochspiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | TS.AL.1225.0300h7.25XD.135.IK.HA | 6 | 135 | 98 | W1225030360 |
| 3,2 | TS.AL.1225.0320h7.25XD.135.IK.HA | 6 | 135 | 98 | W1225032360 |
| 3,3 | TS.AL.1225.0330h7.25XD.135.IK.HA | 6 | 150 | 110 | W1225033360 |
| 3,5 | TS.AL.1225.0350h7.25XD.135.IK.HA | 6 | 150 | 110 | W1225035360 |
| 3,8 | TS.AL.1225.0380h7.25XD.135.IK.HA | 6 | 160 | 120 | W1225038360 |
| 4,0 | TS.AL.1225.0400h7.25XD.135.IK.HA | 6 | 160 | 120 | W1225040360 |
| 4,2 | TS.AL.1225.0420h7.25XD.135.IK.HA | 6 | 160 | 120 | W1225042360 |
| 4,5 | TS.AL.1225.0450h7.25XD.135.IK.HA | 6 | 180 | 135 | W1225045360 |
| 4,8 | TS.AL.1225.0480h7.25XD.135.IK.HA | 6 | 180 | 135 | W1225048360 |
| 5,0 | TS.AL.1225.0500h7.25XD.135.IK.HA | 6 | 180 | 135 | W1225050360 |
| 5,5 | TS.AL.1225.0550h7.25XD.135.IK.HA | 6 | 205 | 168 | W1225055360 |
| 5,8 | TS.AL.1225.0580h7.25XD.135.IK.HA | 6 | 205 | 168 | W1225058360 |
| 6,0 | TS.AL.1225.0600h7.25XD.135.IK.HA | 6 | 205 | 168 | W1225060360 |
| 6,5 | TS.AL.1225.0650h7.25XD.135.IK.HA | 8 | 240 | 200 | W1225065360 |
| 6,8 | TS.AL.1225.0680h7.25XD.135.IK.HA | 8 | 240 | 200 | W1225068360 |
| 7,0 | TS.AL.1225.0700h7.25XD.135.IK.HA | 8 | 240 | 200 | W1225070360 |
| 7,5 | TS.AL.1225.0750h7.25XD.135.IK.HA | 8 | 260 | 220 | W1225075360 |
| 7,8 | TS.AL.1225.0780h7.25XD.135.IK.HA | 8 | 260 | 220 | W1225078360 |
| 8,0 | TS.AL.1225.0800h7.25XD.135.IK.HA | 8 | 260 | 220 | W1225080360 |
| 8,5 | TS.AL.1225.0850h7.25XD.135.IK.HA | 10 | 285 | 240 | W1225085360 |
| 8,8 | TS.AL.1225.0880h7.25XD.135.IK.HA | 10 | 310 | 268 | W1225088360 |
| 9,0 | TS.AL.1225.0900h7.25XD.135.IK.HA | 10 | 310 | 268 | W1225090360 |
| 9,8 | TS.AL.1225.0980h7.25XD.135.IK.HA | 10 | 310 | 268 | W1225098360 |
| 10,0 | TS.AL.1225.1000h7.25XD.135.IK.HA | 10 | 310 | 268 | W1225100360 |
| 10,2 | TS.AL.1225.1020h7.25XD.135.IK.HA | 12 | 375 | 325 | W1225102360 |
| 10,8 | TS.AL.1225.1080h7.25XD.135.IK.HA | 12 | 375 | 325 | W1225108360 |
| 11,8 | TS.AL.1225.1180h7.25XD.135.IK.HA | 12 | 375 | 325 | W1225118360 |
| 12,0 | TS.AL.1225.1200h7.25XD.135.IK.HA | 12 | 375 | 325 | W1225120360 |

Unbedingt Anwendungshinweise Seite F489-F491 beachten!
Für das Setzen der Pilotbohrung VHM-Bohrer Typ W1205 verwenden (siehe Seite F405-F412).

# W1230, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | f [mm/U] = Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | 120 | 0,08 | 0,15 | 0,21 | 0,27 |
| 7.1.2 | | 120 | 0,08 | 0,15 | 0,21 | 0,27 |
| 7.1.3 | | 140 | 0,08 | 0,15 | 0,21 | 0,27 |
| 7.1.4 | | 150 | 0,15 | 0,23 | 0,3 | 0,38 |
| 7.1.5 | | 120 | 0,15 | 0,23 | 0,3 | 0,38 |
| 7.1.6 | | 110 | 0,08 | 0,15 | 0,21 | 0,27 |
| 7.2.1 | Magnesium | | | | | |
| 7.2.2 | | | | | | |
| 7.3.1 | Kupfer | 70 | 0,08 | 0,15 | 0,21 | 0,27 |
| 7.3.2 | | 70 | 0,08 | 0,15 | 0,21 | 0,27 |
| 7.3.3 | | 70 | 0,08 | 0,15 | 0,21 | 0,27 |
| 7.3.4 | | 70 | 0,08 | 0,15 | 0,21 | 0,27 |
| 7.3.5 | | 70 | 0,08 | 0,15 | 0,21 | 0,27 |
| 7.3.6 | | 70 | 0,08 | 0,15 | 0,21 | 0,27 |
| 7.4.1 | CuZn (Messing) | 80 | 0,08 | 0,15 | 0,21 | 0,27 |
| 7.4.2 | | 80 | 0,08 | 0,15 | 0,21 | 0,27 |
| 7.5.1 | CuSn (Bronze) | 80 | 0,08 | 0,15 | 0,21 | 0,27 |
| 7.5.2 | | 80 | 0,08 | 0,15 | 0,21 | 0,27 |
| 7.6.1 | CuAlFe (Ampco) | | | | | |
| 7.6.2 | | | | | | |
| 7.8.1 | Titan | | | | | |
| 7.8.2 | | | | | | |
| 7.8.3 | | | | | | |
| 8.1.1 | Thermoplast | | | | | |
| 8.1.2 | | | | | | |
| 8.1.3 | | | | | | |
| 8.1.4 | | | | | | |
| 8.1.5 | | | | | | |
| 8.1.6 | | | | | | |
| 8.1.7 | | | | | | |
| 8.1.8 | | | | | | |
| 8.1.9 | | | | | | |
| 8.2.1 | Duroplast | | | | | |
| 8.2.2 | | | | | | |
| 8.2.3 | | | | | | |
| 8.2.4 | | | | | | |
| 8.2.5 | | | | | | |
| 8.2.6 | | | | | | |
| 8.2.7 | | | | | | |
| 8.2.8 | | | | | | |
| 8.3.1 | faserverstärkter Kunststoff | | | | | |
| 8.3.2 | | | | | | |
| 8.3.3 | | | | | | |
| 8.3.4 | | | | | | |
| 8.3.5 | | | | | | |
| 8.3.6 | | | | | | |
| 8.4.1 | Sandwich | | | | | |
| 8.4.2 | | | | | | |
| 8.4.3 | | | | | | |
| 9.1.1 | Standard Graphit | | | | | |
| 9.1.2 | | | | | | |

# W1230, beschichtet

Tieflochspiralbohrer

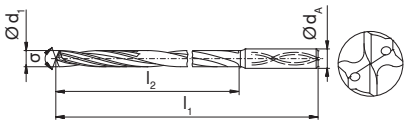


AL | TS

$\lambda_S = 15°$ | $d_1$ = h7, $d_A$ = h6 | E | ≤ 30xD | σ 135° | W1205

SCPN435






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 2,0 | TS.AL.1230.0200h7.30XD.135.IK.HA | 4 | 115 | 70 | W1230020460 |
| 2,2 | TS.AL.1230.0220h7.30XD.135.IK.HA | 4 | 115 | 70 | W1230022460 |
| 2,3 | TS.AL.1230.0230h7.30XD.135.IK.HA | 4 | 115 | 70 | W1230023460 |
| 2,4 | TS.AL.1230.0240h7.30XD.135.IK.HA | 4 | 138 | 90 | W1230024460 |
| 2,5 | TS.AL.1230.0250h7.30XD.135.IK.HA | 4 | 138 | 90 | W1230025460 |
| 2,7 | TS.AL.1230.0270h7.30XD.135.IK.HA | 4 | 138 | 90 | W1230027460 |
| 2,8 | TS.AL.1230.0280h7.30XD.135.IK.HA | 4 | 138 | 90 | W1230028460 |
| 3,0 | TS.AL.1230.0300h7.30XD.135.IK.HA | 6 | 150 | 105 | W1230030460 |
| 3,2 | TS.AL.1230.0320h7.30XD.135.IK.HA | 6 | 150 | 105 | W1230032460 |
| 3,3 | TS.AL.1230.0330h7.30XD.135.IK.HA | 6 | 185 | 135 | W1230033460 |
| 3,5 | TS.AL.1230.0350h7.30XD.135.IK.HA | 6 | 185 | 135 | W1230035460 |
| 3,8 | TS.AL.1230.0380h7.30XD.135.IK.HA | 6 | 185 | 135 | W1230038460 |
| 4,0 | TS.AL.1230.0400h7.30XD.135.IK.HA | 6 | 185 | 135 | W1230040460 |
| 4,2 | TS.AL.1230.0420h7.30XD.135.IK.HA | 6 | 185 | 135 | W1230042460 |
| 4,5 | TS.AL.1230.0450h7.30XD.135.IK.HA | 6 | 215 | 165 | W1230045460 |
| 4,8 | TS.AL.1230.0480h7.30XD.135.IK.HA | 6 | 215 | 165 | W1230048460 |
| 5,0 | TS.AL.1230.0500h7.30XD.135.IK.HA | 6 | 215 | 165 | W1230050460 |
| 5,5 | TS.AL.1230.0550h7.30XD.135.IK.HA | 6 | 230 | 180 | W1230055460 |
| 5,8 | TS.AL.1230.0580h7.30XD.135.IK.HA | 6 | 230 | 180 | W1230058460 |
| 6,0 | TS.AL.1230.0600h7.30XD.135.IK.HA | 6 | 230 | 180 | W1230060460 |
| 6,5 | TS.AL.1230.0650h7.30XD.135.IK.HA | 8 | 280 | 215 | W1230065460 |
| 6,8 | TS.AL.1230.0680h7.30XD.135.IK.HA | 8 | 280 | 230 | W1230068460 |
| 7,0 | TS.AL.1230.0700h7.30XD.135.IK.HA | 8 | 280 | 230 | W1230070460 |
| 7,5 | TS.AL.1230.0750h7.30XD.135.IK.HA | 8 | 280 | 230 | W1230075460 |
| 7,8 | TS.AL.1230.0780h7.30XD.135.IK.HA | 8 | 315 | 265 | W1230078460 |
| 8,0 | TS.AL.1230.0800h7.30XD.135.IK.HA | 8 | 315 | 265 | W1230080460 |
| 8,5 | TS.AL.1230.0850h7.30XD.135.IK.HA | 10 | 350 | 295 | W1230085460 |
| 8,8 | TS.AL.1230.0880h7.30XD.135.IK.HA | 10 | 380 | 330 | W1230088460 |
| 9,0 | TS.AL.1230.0900h7.30XD.135.IK.HA | 10 | 380 | 330 | W1230090460 |
| 9,8 | TS.AL.1230.0980h7.30XD.135.IK.HA | 10 | 380 | 330 | W1230098460 |
| 10,0 | TS.AL.1230.1000h7.30XD.135.IK.HA | 10 | 380 | 330 | W1230100460 |
| 10,2 | TS.AL.1230.1020h7.30XD.135.IK.HA | 12 | 430 | 380 | W1230102460 |
| 10,8 | TS.AL.1230.1080h7.30XD.135.IK.HA | 12 | 430 | 380 | W1230108460 |
| 11,8 | TS.AL.1230.1180h7.30XD.135.IK.HA | 12 | 430 | 380 | W1230118460 |
| 12,0 | TS.AL.1230.1200h7.30XD.135.IK.HA | 12 | 430 | 380 | W1230120460 |

Unbedingt Anwendungshinweise Seite F489-F491 beachten!
Für das Setzen der Pilotbohrung VHM-Bohrer Typ W1205 verwenden (siehe Seite F405-F412).

# W0141 und W0142, unbeschichtet

Schnittdatenempfehlung

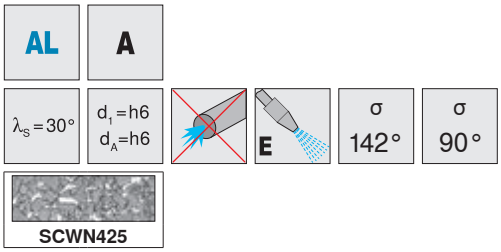


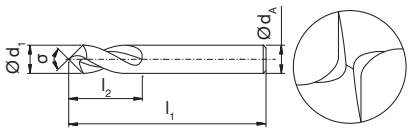
| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | | | | | | | |
| 1.1.2 | | | | | | | | | |
| 1.2.1 | Baustahl | | | | | | | | |
| 1.2.2 | | | | | | | | | |
| 1.2.3 | | | | | | | | | |
| 1.3.1 | Federstahl | | | | | | | | |
| 1.3.2 | | | | | | | | | |
| 1.3.3 | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | | | | | | | |
| 2.1.2 | | | | | | | | | |
| 2.1.3 | | | | | | | | | |
| 2.2.1 | Nitrierstahl | | | | | | | | |
| 2.2.2 | | | | | | | | | |
| 2.3.1 | Vergütungsstahl | | | | | | | | |
| 2.3.2 | | | | | | | | | |
| 2.3.3 | | | | | | | | | |
| 2.3.4 | | | | | | | | | |
| 2.3.5 | | | | | | | | | |
| 2.3.6 | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | | | |
| 3.2.2 | | | | | | | | | |
| 3.2.3 | | | | | | | | | |
| 3.2.4 | | | | | | | | | |
| 3.2.5 | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | |
| 3.3.2 | | | | | | | | | |
| 3.3.3 | | | | | | | | | |
| 3.3.4 | | | | | | | | | |
| 3.3.5 | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | |
| 4.1.2 | | | | | | | | | |
| 4.1.3 | | | | | | | | | |
| 4.1.4 | | | | | | | | | |
| 4.1.5 | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | |
| 4.2.2 | | | | | | | | | |
| 4.2.3 | | | | | | | | | |
| 4.2.4 | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | | | | | | | |
| 5.1.2 | | | | | | | | | |
| 5.1.3 | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | | |
| 5.2.2 | | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | | | | | | | |
| 6.1.2 | | | | | | | | | |
| 6.1.3 | | | | | | | | | |
| 6.1.4 | | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | | | | | | | |
| 6.2.2 | | | | | | | | | |
| 6.2.3 | | | | | | | | | |
| 6.3.1 | GTW weisser Temperguss | | | | | | | | |
| 6.3.2 | | | | | | | | | |
| 6.4.1 | GTS schwarzer Temperguss | | | | | | | | |
| 6.4.2 | | | | | | | | | |
| 7.1.1 | Aluminium | | 200 | 0,02 | 0,03 | 0,07 | 0,11 | 0,15 | 0,2 |
| 7.1.2 | | | 200 | 0,02 | 0,03 | 0,07 | 0,11 | 0,15 | 0,2 |
| 7.1.3 | | | 200 | 0,02 | 0,03 | 0,07 | 0,11 | 0,15 | 0,2 |
| 7.1.4 | | | 180 | 0,02 | 0,03 | 0,07 | 0,11 | 0,15 | 0,2 |
| 7.1.5 | | | 160 | 0,02 | 0,03 | 0,07 | 0,11 | 0,15 | 0,2 |
| 7.1.6 | | | 130 | 0,02 | 0,03 | 0,07 | 0,11 | 0,15 | 0,2 |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | 100 | 0,01 | 0,02 | 0,06 | 0,11 | 0,16 | 0,2 |
| 7.3.2 | | | 100 | 0,01 | 0,02 | 0,06 | 0,11 | 0,16 | 0,2 |
| 7.3.3 | | | 100 | 0,01 | 0,02 | 0,06 | 0,11 | 0,16 | 0,2 |
| 7.3.4 | | | 60 | 0,01 | 0,02 | 0,06 | 0,11 | 0,16 | 0,2 |
| 7.3.5 | | | 60 | 0,01 | 0,02 | 0,06 | 0,11 | 0,16 | 0,2 |
| 7.3.6 | | | 60 | 0,01 | 0,02 | 0,06 | 0,11 | 0,16 | 0,2 |
| 7.4.1 | CuZn (Messing) | | 120 | 0,01 | 0,02 | 0,06 | 0,11 | 0,16 | 0,2 |
| 7.4.2 | | | 160 | 0,01 | 0,02 | 0,06 | 0,11 | 0,16 | 0,2 |
| 7.5.1 | CuSn (Bronze) | | 60 | 0,01 | 0,02 | 0,06 | 0,11 | 0,16 | 0,2 |
| 7.5.2 | | | 70 | 0,01 | 0,02 | 0,06 | 0,11 | 0,16 | 0,2 |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |

# W0141 und W0142, unbeschichtet

Anbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | σ [°] | HA Material |
|---|---|---|---|---|---|---|
| 2,0 | A.AL.0141.0200.90.HA | 2 | 32 | 6 | 90 | W0141020100 |
| 2,0 | A.AL.0142.0200.142.HA | 2 | 32 | 6 | 142 | W0142020100 |
| 3,0 | A.AL.0141.0300.90.HA | 3 | 32 | 8 | 90 | W0141030100 |
| 3,0 | A.AL.0142.0300.142.HA | 3 | 32 | 8 | 142 | W0142030100 |
| 4,0 | A.AL.0141.0400.90.HA | 4 | 40 | 10 | 90 | W0141040100 |
| 4,0 | A.AL.0142.0400.142.HA | 4 | 40 | 10 | 142 | W0142040100 |
| 5,0 | A.AL.0141.0500.90.HA | 5 | 50 | 13 | 90 | W0141050100 |
| 5,0 | A.AL.0142.0500.142.HA | 5 | 50 | 13 | 142 | W0142050100 |
| 6,0 | A.AL.0141.0600.90.HA | 6 | 50 | 13 | 90 | W0141060100 |
| 6,0 | A.AL.0142.0600.142.HA | 6 | 50 | 13 | 142 | W0142060100 |
| 8,0 | A.AL.0141.0800.90.HA | 8 | 60 | 23 | 90 | W0141080100 |
| 8,0 | A.AL.0142.0800.142.HA | 8 | 60 | 23 | 142 | W0142080100 |
| 10,0 | A.AL.0141.1000.90.HA | 10 | 70 | 24 | 90 | W0141100100 |
| 10,0 | A.AL.0142.1000.142.HA | 10 | 70 | 24 | 142 | W0142100100 |
| 12,0 | A.AL.0141.1200.90.HA | 12 | 70 | 24 | 90 | W0141120100 |
| 12,0 | A.AL.0142.1200.142.HA | 12 | 70 | 24 | 142 | W0142120100 |
| 14,0 | A.AL.0141.1400.90.HA | 14 | 75 | 26 | 90 | W0141140100 |
| 16,0 | A.AL.0141.1600.90.HA | 16 | 75 | 29 | 90 | W0141160100 |
| 16,0 | A.AL.0142.1600.142.HA | 16 | 75 | 29 | 142 | W0142160100 |
| 20,0 | A.AL.0141.2000.90.HA | 20 | 100 | 35 | 90 | W0141200100 |
| 20,0 | A.AL.0142.2000.142.HA | 20 | 100 | 35 | 142 | W0142200100 |

# W0143 und W0144, unbeschichtet

Schnittdatenempfehlung

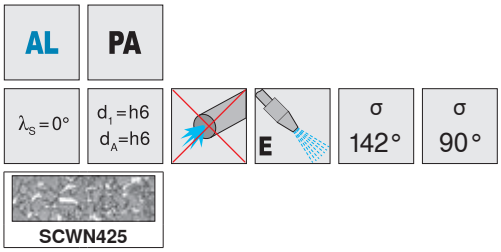


| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 2,0 = Ø 3,0 | > Ø 3,0 = Ø 5,0 | > Ø 5,0 = Ø 8,0 | > Ø 8,0 = Ø 12,0 | > Ø 12,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | | | | | | | |
| 1.1.2 | | | | | | | | | |
| 1.2.1 | Baustahl | | | | | | | | |
| 1.2.2 | | | | | | | | | |
| 1.2.3 | | | | | | | | | |
| 1.3.1 | Federstahl | | | | | | | | |
| 1.3.2 | | | | | | | | | |
| 1.3.3 | | | | | | | | | |
| 2.1.1 | Einsatzstahl | | | | | | | | |
| 2.1.2 | | | | | | | | | |
| 2.1.3 | | | | | | | | | |
| 2.2.1 | Nitrierstahl | | | | | | | | |
| 2.2.2 | | | | | | | | | |
| 2.3.1 | Vergütungsstahl | | | | | | | | |
| 2.3.2 | | | | | | | | | |
| 2.3.3 | | | | | | | | | |
| 2.3.4 | | | | | | | | | |
| 2.3.5 | | | | | | | | | |
| 2.3.6 | | | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | | | | | | | |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | | | | | | | |
| 3.2.2 | | | | | | | | | |
| 3.2.3 | | | | | | | | | |
| 3.2.4 | | | | | | | | | |
| 3.2.5 | | | | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | | | | | | | |
| 3.3.2 | | | | | | | | | |
| 3.3.3 | | | | | | | | | |
| 3.3.4 | | | | | | | | | |
| 3.3.5 | | | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | | | |
| 4.1.1 | rostfreier Stahl | | | | | | | | |
| 4.1.2 | | | | | | | | | |
| 4.1.3 | | | | | | | | | |
| 4.1.4 | | | | | | | | | |
| 4.1.5 | | | | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | | | |
| 4.2.2 | | | | | | | | | |
| 4.2.3 | | | | | | | | | |
| 4.2.4 | | | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | | | | | | | |
| 5.1.2 | | | | | | | | | |
| 5.1.3 | | | | | | | | | |
| 5.2.1 | rostfreier Stahlguss | | | | | | | | |
| 5.2.2 | | | | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | | | | | | | |
| 6.1.2 | | | | | | | | | |
| 6.1.3 | | | | | | | | | |
| 6.1.4 | | | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | | | | | | | |
| 6.2.2 | | | | | | | | | |
| 6.2.3 | | | | | | | | | |
| 6.3.1 | GTW weisser Temperguss | | | | | | | | |
| 6.3.2 | | | | | | | | | |
| 6.4.1 | GTS schwarzer Temperguss | | | | | | | | |
| 6.4.2 | | | | | | | | | |
| 7.1.1 | Aluminium | | 250 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 7.1.2 | | | 250 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 7.1.3 | | | 250 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 7.1.4 | | | 225 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 7.1.5 | | | 200 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 7.1.6 | | | 160 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 7.2.1 | Magnesium | | | | | | | | |
| 7.2.2 | | | | | | | | | |
| 7.3.1 | Kupfer | | 125 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 7.3.2 | | | 125 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 7.3.3 | | | 125 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 7.3.4 | | | 75 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 7.3.5 | | | 75 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 7.3.6 | | | 75 | 0,006 | 0,01 | 0,015 | 0,023 | 0,027 | 0,03 |
| 7.4.1 | CuZn (Messing) | | 150 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 7.4.2 | | | 200 | 0,014 | 0,022 | 0,035 | 0,053 | 0,063 | 0,07 |
| 7.5.1 | CuSn (Bronze) | | 75 | 0,01 | 0,016 | 0,025 | 0,038 | 0,045 | 0,05 |
| 7.5.2 | | | 85 | 0,014 | 0,022 | 0,035 | 0,053 | 0,063 | 0,07 |
| 7.6.1 | CuAlFe (Ampco) | | | | | | | | |
| 7.6.2 | | | | | | | | | |
| 7.8.1 | Titan | | | | | | | | |
| 7.8.2 | | | | | | | | | |
| 7.8.3 | | | | | | | | | |

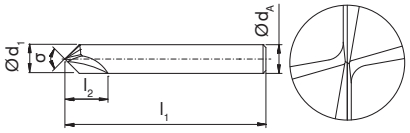
# W0143 und W0144, unbeschichtet

Präzisionsanbohrer








| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | σ [°] | HA Material | HB Material |
|---|---|---|---|---|---|---|---|
| 2,0 | PA.AL.0143.0200.90.HA | 2 | 32 | 3 | 90 | W0143020300 | |
| 2,0 | PA.AL.0144.0200.142.HA | 2 | 32 | 3 | 142 | W0144020300 | |
| 3,0 | PA.AL.0143.0300.90.HA | 3 | 32 | 4,5 | 90 | W0143030300 | |
| 3,0 | PA.AL.0144.0300.142.HA | 3 | 32 | 4,5 | 142 | W0144030300 | |
| 4,0 | PA.AL.0143.0400.90.HA | 4 | 40 | 6 | 90 | W0143040300 | |
| 4,0 | PA.AL.0144.0400.142.HA | 4 | 40 | 6 | 142 | W0144040300 | |
| 5,0 | PA.AL.0143.0500.90.HA | 5 | 50 | 7,5 | 90 | W0143050300 | |
| 5,0 | PA.AL.0144.0500.142.HA | 5 | 50 | 7,5 | 142 | W0144050300 | |
| 6,0 | PA.AL.0143.0600.90.HB | 6 | 50 | 9 | 90 | | W0143060301 |
| 6,0 | PA.AL.0144.0600.142.HB | 6 | 50 | 9 | 142 | | W0144060301 |
| 8,0 | PA.AL.0143.0800.90.HB | 8 | 60 | 12 | 90 | | W0143080301 |
| 8,0 | PA.AL.0144.0800.142.HB | 8 | 60 | 12 | 142 | | W0144080301 |
| 10,0 | PA.AL.0143.1000.90.HB | 10 | 70 | 15 | 90 | | W0143100301 |
| 10,0 | PA.AL.0144.1000.142.HB | 10 | 70 | 15 | 142 | | W0144100301 |
| 12,0 | PA.AL.0143.1200.90.HB | 12 | 70 | 18 | 90 | | W0143120301 |
| 12,0 | PA.AL.0144.1200.142.HB | 12 | 70 | 18 | 142 | | W0144120301 |
| 16,0 | PA.AL.0143.1600.90.HB | 16 | 75 | 24 | 90 | | W0143160301 |
| 16,0 | PA.AL.0144.1600.142.HB | 16 | 75 | 24 | 142 | | W0144160301 |
| 20,0 | PA.AL.0143.2000.90.HB | 20 | 100 | 30 | 90 | | W0143200301 |
| 20,0 | PA.AL.0144.2000.142.HB | 20 | 100 | 30 | 142 | | W0144200301 |

# W0119, unbeschichtet

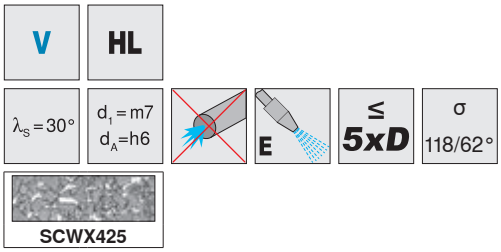
Schnittdatenempfehlung



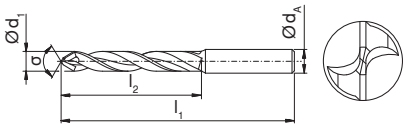
| Index | Materialbezeichnung | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | f [mm/U] > Ø 5,0 = Ø 8,0 | f [mm/U] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|
| 7.1.1 | Aluminium | | | | |
| 7.1.2 | | | | | |
| 7.1.3 | | | | | |
| 7.1.4 | | | | | |
| 7.1.5 | | | | | |
| 7.1.6 | | | | | |
| 7.2.1 | Magnesium | | | | |
| 7.2.2 | | | | | |
| 7.3.1 | Kupfer | | | | |
| 7.3.2 | | | | | |
| 7.3.3 | | | | | |
| 7.3.4 | | | | | |
| 7.3.5 | | | | | |
| 7.3.6 | | | | | |
| 7.4.1 | CuZn (Messing) | | | | |
| 7.4.2 | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | |
| 7.5.2 | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | |
| 7.6.2 | | | | | |
| 7.8.1 | Titan | | | | |
| 7.8.2 | | | | | |
| 7.8.3 | | | | | |
| 8.1.1 | Thermoplast | 100 | 0,085 | 0,11 | 0,13 |
| 8.1.2 | | 100 | 0,085 | 0,11 | 0,13 |
| 8.1.3 | | 100 | 0,085 | 0,11 | 0,13 |
| 8.1.4 | | 80 | 0,085 | 0,11 | 0,13 |
| 8.1.5 | | 70 | 0,085 | 0,11 | 0,13 |
| 8.1.6 | | 90 | 0,085 | 0,11 | 0,13 |
| 8.1.7 | | 100 | 0,085 | 0,11 | 0,13 |
| 8.1.8 | | 95 | 0,085 | 0,11 | 0,13 |
| 8.1.9 | | 60 | 0,06 | 0,09 | 0,11 |
| 8.2.1 | Duroplast | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.2 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.3 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.4 | | 150 | 0,06 | 0,09 | 0,11 |
| 8.2.5 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.6 | | 80 | 0,06 | 0,09 | 0,11 |
| 8.2.7 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.8 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.3.1 | faserverstärkter Kunststoff | | | | |
| 8.3.2 | | | | | |
| 8.3.3 | | 130 | 0,04 | 0,06 | 0,09 |
| 8.3.4 | | 90 | 0,04 | 0,06 | 0,09 |
| 8.3.5 | | | | | |
| 8.3.6 | | | | | |
| 8.4.1 | Sandwich | | | | |
| 8.4.2 | | 150 | 0,085 | 0,11 | 0,13 |
| 8.4.3 | | | | | |
| 9.1.1 | Standard Graphit | | | | |
| 9.1.2 | | | | | |

# W0119, unbeschichtet

Hochleistungs-Spiralbohrer






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | HL.V.0119.0300m7.5XD.118_62.HA | 6 | 66 | 28 | W0119030200 |
| 4,0 | HL.V.0119.0400m7.5XD.118_62.HA | 6 | 74 | 36 | W0119040200 |
| 5,0 | HL.V.0119.0500m7.5XD.118_62.HA | 6 | 82 | 44 | W0119050200 |
| 6,0 | HL.V.0119.0600m7.5XD.118_62.HA | 6 | 82 | 44 | W0119060200 |
| 8,0 | HL.V.0119.0800m7.5XD.118_62.HA | 8 | 91 | 53 | W0119080200 |
| 9,0 | HL.V.0119.0900m7.5XD.118_62.HA | 10 | 103 | 61 | W0119090200 |
| 10,0 | HL.V.0119.1000m7.5XD.118_62.HA | 10 | 103 | 61 | W0119100200 |
| 11,0 | HL.V.0119.1100m7.5XD.118_62.HA | 12 | 118 | 71 | W0119110200 |
| 12,0 | HL.V.0119.1200m7.5XD.118_62.HA | 12 | 118 | 71 | W0119120200 |

# W0119-INCH, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | f [mm/U] = Ø 3,2 = Ø 5,0 | f [mm/U] > Ø 5,0 = Ø 8,0 | f [mm/U] > Ø 8,0 = Ø 11,1 |
|---|---|---|---|---|---|
| 7.1.1 | Aluminium | | | | |
| 7.1.2 | | | | | |
| 7.1.3 | | | | | |
| 7.1.4 | | | | | |
| 7.1.5 | | | | | |
| 7.1.6 | | | | | |
| 7.2.1 | Magnesium | | | | |
| 7.2.2 | | | | | |
| 7.3.1 | Kupfer | | | | |
| 7.3.2 | | | | | |
| 7.3.3 | | | | | |
| 7.3.4 | | | | | |
| 7.3.5 | | | | | |
| 7.3.6 | | | | | |
| 7.4.1 | CuZn (Messing) | | | | |
| 7.4.2 | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | |
| 7.5.2 | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | |
| 7.6.2 | | | | | |
| 7.8.1 | Titan | | | | |
| 7.8.2 | | | | | |
| 7.8.3 | | | | | |
| 8.1.1 | Thermoplast | 100 | 0,085 | 0,11 | 0,13 |
| 8.1.2 | | 100 | 0,085 | 0,11 | 0,13 |
| 8.1.3 | | 100 | 0,085 | 0,11 | 0,13 |
| 8.1.4 | | 80 | 0,085 | 0,11 | 0,13 |
| 8.1.5 | | 70 | 0,085 | 0,11 | 0,13 |
| 8.1.6 | | 90 | 0,085 | 0,11 | 0,13 |
| 8.1.7 | | 100 | 0,085 | 0,11 | 0,13 |
| 8.1.8 | | 95 | 0,085 | 0,11 | 0,13 |
| 8.1.9 | | 60 | 0,06 | 0,09 | 0,11 |
| 8.2.1 | Duroplast | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.2 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.3 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.4 | | 150 | 0,06 | 0,09 | 0,11 |
| 8.2.5 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.6 | | 80 | 0,06 | 0,09 | 0,11 |
| 8.2.7 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.8 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.3.1 | faserverstärkter Kunststoff | | | | |
| 8.3.2 | | | | | |
| 8.3.3 | | 130 | 0,04 | 0,06 | 0,09 |
| 8.3.4 | | 90 | 0,04 | 0,06 | 0,09 |
| 8.3.5 | | | | | |
| 8.3.6 | | | | | |
| 8.4.1 | Sandwich | | | | |
| 8.4.2 | | 150 | 0,085 | 0,11 | 0,13 |
| 8.4.3 | | | | | |
| 9.1.1 | Standard Graphit | | | | |
| 9.1.2 | | | | | |

# W0119-INCH, beschichtet

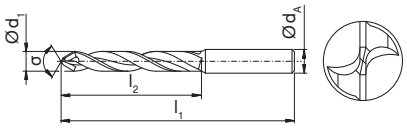
Hochleistungs-Spiralbohrer

V | HL

$\lambda_S = 30°$ | $d_1$ = m7, $d_A$=h6 | E | ≤ 5xD | σ 118/62°

SCPX430






| $d_1$ [mm] | Type, Bezeichnung | $d_1$ [Inch] | $d_1$ [Inch] | $d_A$ [mm] | $l_1$ [mm] | HA Material |
|---|---|---|---|---|---|---|
| 3,175 | HL.V.0119.IN031750m7.5XD.118_62.HA | 0,125 | 1/8 | 6 | 66 | W0119IN031750270 |
| 4,763 | HL.V.0119.IN047630m7.5XD.118_62.HA | 0,188 | 3/16 | 6 | 82 | W0119IN047630270 |
| 6,350 | HL.V.0119.IN063500m7.5XD.118_62.HA | 0,250 | 1/4 | 8 | 91 | W0119IN063500270 |
| 7,938 | HL.V.0119.IN079380m7.5XD.118_62.HA | 0,313 | 5/16 | 8 | 91 | W0119IN079380270 |
| 9,525 | HL.V.0119.IN095250m7.5XD.118_62.HA | 0,375 | 3/8 | 10 | 103 | W0119IN095250270 |
| 11,113 | HL.V.0119.IN111130m7.5XD.118_62.HA | 0,438 | 7/16 | 12 | 118 | W0119IN111110270 |

# W0119, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | f [mm/U] > Ø 5,0 = Ø 8,0 | f [mm/U] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|
| 7.1.1 | Aluminium | | | | |
| 7.1.2 | | | | | |
| 7.1.3 | | | | | |
| 7.1.4 | | | | | |
| 7.1.5 | | | | | |
| 7.1.6 | | | | | |
| 7.2.1 | Magnesium | | | | |
| 7.2.2 | | | | | |
| 7.3.1 | Kupfer | | | | |
| 7.3.2 | | | | | |
| 7.3.3 | | | | | |
| 7.3.4 | | | | | |
| 7.3.5 | | | | | |
| 7.3.6 | | | | | |
| 7.4.1 | CuZn (Messing) | | | | |
| 7.4.2 | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | |
| 7.5.2 | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | |
| 7.6.2 | | | | | |
| 7.8.1 | Titan | | | | |
| 7.8.2 | | | | | |
| 7.8.3 | | | | | |
| 8.1.1 | Thermoplast | 100 | 0,085 | 0,11 | 0,13 |
| 8.1.2 | | 100 | 0,085 | 0,11 | 0,13 |
| 8.1.3 | | 100 | 0,085 | 0,11 | 0,13 |
| 8.1.4 | | 80 | 0,085 | 0,11 | 0,13 |
| 8.1.5 | | 70 | 0,085 | 0,11 | 0,13 |
| 8.1.6 | | 90 | 0,085 | 0,11 | 0,13 |
| 8.1.7 | | 100 | 0,085 | 0,11 | 0,13 |
| 8.1.8 | | 95 | 0,085 | 0,11 | 0,13 |
| 8.1.9 | | 60 | 0,06 | 0,09 | 0,11 |
| 8.2.1 | Duroplast | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.2 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.3 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.4 | | 150 | 0,06 | 0,09 | 0,11 |
| 8.2.5 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.6 | | 80 | 0,06 | 0,09 | 0,11 |
| 8.2.7 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.8 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.3.1 | faserverstärkter Kunststoff | | | | |
| 8.3.2 | | | | | |
| 8.3.3 | | 130 | 0,04 | 0,06 | 0,09 |
| 8.3.4 | | 90 | 0,04 | 0,06 | 0,09 |
| 8.3.5 | | | | | |
| 8.3.6 | | | | | |
| 8.4.1 | Sandwich | | | | |
| 8.4.2 | | 150 | 0,085 | 0,11 | 0,13 |
| 8.4.3 | | | | | |
| 9.1.1 | Standard Graphit | | | | |
| 9.1.2 | | | | | |

# W0119, beschichtet

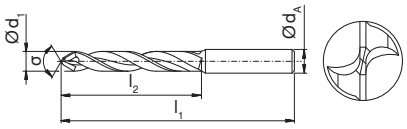
Hochleistungs-Spiralbohrer

V | HL

$\lambda_S = 30°$ | $d_1$ = m7, $d_A$ = h6 | E | ≤ 5xD | σ 118/62°

SCPX430






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | HL.V.0119.0300m7.5XD.118_62.HA | 6 | 66 | 28 | W0119030270 |
| 3,1 | HL.V.0119.0310m7.5XD.118_62.HA | 6 | 66 | 28 | W0119031270 |
| 3,2 | HL.V.0119.0320m7.5XD.118_62.HA | 6 | 66 | 28 | W0119032270 |
| 3,3 | HL.V.0119.0330m7.5XD.118_62.HA | 6 | 66 | 28 | W0119033270 |
| 3,5 | HL.V.0119.0350m7.5XD.118_62.HA | 6 | 66 | 28 | W0119035270 |
| 3,8 | HL.V.0119.0380m7.5XD.118_62.HA | 6 | 74 | 36 | W0119038270 |
| 4,0 | HL.V.0119.0400m7.5XD.118_62.HA | 6 | 74 | 36 | W0119040270 |
| 4,1 | HL.V.0119.0410m7.5XD.118_62.HA | 6 | 74 | 36 | W0119041270 |
| 4,8 | HL.V.0119.0480m7.5XD.118_62.HA | 6 | 82 | 44 | W0119048270 |
| 5,0 | HL.V.0119.0500m7.5XD.118_62.HA | 6 | 82 | 44 | W0119050270 |
| 5,1 | HL.V.0119.0510m7.5XD.118_62.HA | 6 | 82 | 44 | W0119051270 |
| 5,5 | HL.V.0119.0550m7.5XD.118_62.HA | 6 | 82 | 44 | W0119055270 |
| 5,8 | HL.V.0119.0580m7.5XD.118_62.HA | 6 | 82 | 44 | W0119058270 |
| 6,0 | HL.V.0119.0600m7.5XD.118_62.HA | 6 | 82 | 44 | W0119060270 |
| 6,1 | HL.V.0119.0610m7.5XD.118_62.HA | 8 | 91 | 53 | W0119061270 |
| 6,8 | HL.V.0119.0680m7.5XD.118_62.HA | 8 | 91 | 53 | W0119068270 |
| 7,0 | HL.V.0119.0700m7.5XD.118_62.HA | 8 | 91 | 53 | W0119070270 |
| 7,2 | HL.V.0119.0720m7.5XD.118_62.HA | 8 | 91 | 53 | W0119072270 |
| 7,5 | HL.V.0119.0750m7.5XD.118_62.HA | 8 | 91 | 53 | W0119075270 |
| 7,8 | HL.V.0119.0780m7.5XD.118_62.HA | 8 | 91 | 53 | W0119078270 |
| 8,0 | HL.V.0119.0800m7.5XD.118_62.HA | 8 | 91 | 53 | W0119080270 |
| 8,1 | HL.V.0119.0810m7.5XD.118_62.HA | 10 | 103 | 61 | W0119081270 |
| 8,5 | HL.V.0119.0850m7.5XD.118_62.HA | 10 | 103 | 61 | W0119085270 |
| 8,8 | HL.V.0119.0880m7.5XD.118_62.HA | 10 | 103 | 61 | W0119088270 |
| 9,0 | HL.V.0119.0900m7.5XD.118_62.HA | 10 | 103 | 61 | W0119090270 |
| 9,2 | HL.V.0119.0920m7.5XD.118_62.HA | 10 | 103 | 61 | W0119092270 |
| 9,5 | HL.V.0119.0950m7.5XD.118_62.HA | 10 | 103 | 61 | W0119095270 |
| 9,8 | HL.V.0119.0980m7.5XD.118_62.HA | 10 | 103 | 61 | W0119098270 |
| 10,0 | HL.V.0119.1000m7.5XD.118_62.HA | 10 | 103 | 61 | W0119100270 |
| 10,2 | HL.V.0119.1020m7.5XD.118_62.HA | 12 | 118 | 71 | W0119102270 |
| 10,5 | HL.V.0119.1050m7.5XD.118_62.HA | 12 | 118 | 71 | W0119105270 |
| 10,8 | HL.V.0119.1080m7.5XD.118_62.HA | 12 | 118 | 71 | W0119108270 |
| 11,0 | HL.V.0119.1100m7.5XD.118_62.HA | 12 | 118 | 71 | W0119110270 |
| 11,2 | HL.V.0119.1120m7.5XD.118_62.HA | 12 | 118 | 71 | W0119112270 |
| 11,5 | HL.V.0119.1150m7.5XD.118_62.HA | 12 | 118 | 71 | W0119115270 |
| 11,8 | HL.V.0119.1180m7.5XD.118_62.HA | 12 | 118 | 71 | W0119118270 |
| 12,0 | HL.V.0119.1200m7.5XD.118_62.HA | 12 | 118 | 71 | W0119120270 |

# WD119-INCH, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | f [mm/U] = Ø 3,2 = Ø 5,0 | f [mm/U] > Ø 5,0 = Ø 8,0 | f [mm/U] > Ø 8,0 = Ø 11,1 |
|---|---|---|---|---|---|
| 7.1.1 | **Aluminium** | | | | |
| 7.1.2 | | | | | |
| 7.1.3 | | | | | |
| 7.1.4 | | | | | |
| 7.1.5 | | | | | |
| 7.1.6 | | | | | |
| 7.2.1 | **Magnesium** | | | | |
| 7.2.2 | | | | | |
| 7.3.1 | **Kupfer** | | | | |
| 7.3.2 | | | | | |
| 7.3.3 | | | | | |
| 7.3.4 | | | | | |
| 7.3.5 | | | | | |
| 7.3.6 | | | | | |
| 7.4.1 | **CuZn (Messing)** | | | | |
| 7.4.2 | | | | | |
| 7.5.1 | **CuSn (Bronze)** | | | | |
| 7.5.2 | | | | | |
| 7.6.1 | **CuAlFe (Ampco)** | | | | |
| 7.6.2 | | | | | |
| 7.8.1 | **Titan** | | | | |
| 7.8.2 | | | | | |
| 7.8.3 | | | | | |
| 8.1.1 | **Thermoplast** | 100 | 0,085 | 0,11 | 0,13 |
| 8.1.2 | | 100 | 0,085 | 0,11 | 0,13 |
| 8.1.3 | | 100 | 0,085 | 0,11 | 0,13 |
| 8.1.4 | | 80 | 0,085 | 0,11 | 0,13 |
| 8.1.5 | | 70 | 0,085 | 0,11 | 0,13 |
| 8.1.6 | | 90 | 0,085 | 0,11 | 0,13 |
| 8.1.7 | | 100 | 0,085 | 0,11 | 0,13 |
| 8.1.8 | | 95 | 0,085 | 0,11 | 0,13 |
| 8.1.9 | | 60 | 0,06 | 0,09 | 0,11 |
| 8.2.1 | **Duroplast** | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.2 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.3 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.4 | | 150 | 0,06 | 0,09 | 0,11 |
| 8.2.5 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.6 | | 80 | 0,06 | 0,09 | 0,11 |
| 8.2.7 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.8 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.3.1 | **faserverstärkter Kunststoff** | | | | |
| 8.3.2 | | | | | |
| 8.3.3 | | 130 | 0,04 | 0,06 | 0,09 |
| 8.3.4 | | 90 | 0,04 | 0,06 | 0,09 |
| 8.3.5 | | 90 | 0,04 | 0,06 | 0,09 |
| 8.3.6 | | 110 | 0,04 | 0,06 | 0,09 |
| 8.4.1 | **Sandwich** | | | | |
| 8.4.2 | | 150 | 0,085 | 0,11 | 0,13 |
| 8.4.3 | | | | | |
| 9.1.1 | **Standard Graphit** | | | | |
| 9.1.2 | | | | | |

# WD119-INCH, beschichtet

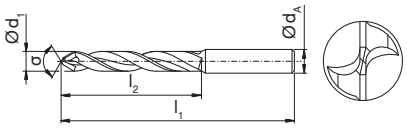
Hochleistungs-Spiralbohrer

V | HL

$\lambda_S = 30°$ | $d_1$ = m7, $d_A$ = h6 | D | ≤ 5xD | σ 118/62°

SCPX410






| $d_1$ [mm] | Type, Bezeichnung | $d_1$ [Inch] | $d_1$ [Inch] | $d_A$ [mm] | $l_1$ [mm] | HA Material |
|---|---|---|---|---|---|---|
| 3,175 | HL.V.D119.IN031750m7.5XD.118_62.HA | 0,125 | 1/8 | 6 | 66 | W0119IN031750260 |
| 4,763 | HL.V.D119.IN047630m7.5XD.118_62.HA | 0,188 | 3/16 | 6 | 82 | W0119IN047630260 |
| 6,350 | HL.V.D119.IN063500m7.5XD.118_62.HA | 0,250 | 1/4 | 8 | 91 | W0119IN063500260 |
| 7,938 | HL.V.D119.IN079380m7.5XD.118_62.HA | 0,313 | 5/16 | 8 | 91 | W0119IN079380260 |
| 9,525 | HL.V.D119.IN095250m7.5XD.118_62.HA | 0,375 | 3/8 | 10 | 103 | W0119IN095250260 |
| 11,113 | HL.V.D119.IN111130m7.5XD.118_62.HA | 0,438 | 7/16 | 12 | 118 | W0119IN111110260 |

# WD119, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | f [mm/U] > Ø 5,0 = Ø 8,0 | f [mm/U] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|
| 7.1.1 | Aluminium | | | | |
| 7.1.2 | | | | | |
| 7.1.3 | | | | | |
| 7.1.4 | | | | | |
| 7.1.5 | | | | | |
| 7.1.6 | | | | | |
| 7.2.1 | Magnesium | | | | |
| 7.2.2 | | | | | |
| 7.3.1 | Kupfer | | | | |
| 7.3.2 | | | | | |
| 7.3.3 | | | | | |
| 7.3.4 | | | | | |
| 7.3.5 | | | | | |
| 7.3.6 | | | | | |
| 7.4.1 | CuZn (Messing) | | | | |
| 7.4.2 | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | |
| 7.5.2 | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | |
| 7.6.2 | | | | | |
| 7.8.1 | Titan | | | | |
| 7.8.2 | | | | | |
| 7.8.3 | | | | | |
| 8.1.1 | Thermoplast | 100 | 0,085 | 0,11 | 0,13 |
| 8.1.2 | | 100 | 0,085 | 0,11 | 0,13 |
| 8.1.3 | | 100 | 0,085 | 0,11 | 0,13 |
| 8.1.4 | | 80 | 0,085 | 0,11 | 0,13 |
| 8.1.5 | | 70 | 0,085 | 0,11 | 0,13 |
| 8.1.6 | | 90 | 0,085 | 0,11 | 0,13 |
| 8.1.7 | | 100 | 0,085 | 0,11 | 0,13 |
| 8.1.8 | | 95 | 0,085 | 0,11 | 0,13 |
| 8.1.9 | | 60 | 0,06 | 0,09 | 0,11 |
| 8.2.1 | Duroplast | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.2 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.3 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.4 | | 150 | 0,06 | 0,09 | 0,11 |
| 8.2.5 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.6 | | 80 | 0,06 | 0,09 | 0,11 |
| 8.2.7 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.2.8 | | 100 | 0,06 | 0,09 | 0,11 |
| 8.3.1 | faserverstärkter Kunststoff | | | | |
| 8.3.2 | | | | | |
| 8.3.3 | | 130 | 0,04 | 0,06 | 0,09 |
| 8.3.4 | | 90 | 0,04 | 0,06 | 0,09 |
| 8.3.5 | | 90 | 0,04 | 0,06 | 0,09 |
| 8.3.6 | | 110 | 0,04 | 0,06 | 0,09 |
| 8.4.1 | Sandwich | | | | |
| 8.4.2 | | 150 | 0,085 | 0,11 | 0,13 |
| 8.4.3 | | | | | |
| 9.1.1 | Standard Graphit | | | | |
| 9.1.2 | | | | | |

# WD119, beschichtet

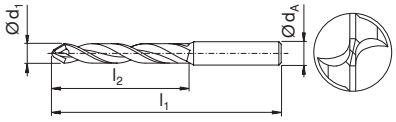
Hochleistungs-Spiralbohrer

V | HL

$\lambda_S = 30°$ | $d_1$ = m7, $d_A$ = h6 | D | ≤ 5xD | σ 118/62°

SCPX410






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | HL.V.D119.0300m7.5XD.118_62.HA | 6 | 66 | 28 | W0119030260 |
| 3,1 | HL.V.D119.0310m7.5XD.118_62.HA | 6 | 66 | 28 | W0119031260 |
| 3,2 | HL.V.D119.0320m7.5XD.118_62.HA | 6 | 66 | 28 | W0119032260 |
| 3,3 | HL.V.D119.0330m7.5XD.118_62.HA | 6 | 66 | 28 | W0119033260 |
| 3,5 | HL.V.D119.0350m7.5XD.118_62.HA | 6 | 66 | 28 | W0119035260 |
| 3,8 | HL.V.D119.0380m7.5XD.118_62.HA | 6 | 74 | 36 | W0119038260 |
| 4,0 | HL.V.D119.0400m7.5XD.118_62.HA | 6 | 74 | 36 | W0119040260 |
| 4,1 | HL.V.D119.0410m7.5XD.118_62.HA | 6 | 74 | 36 | W0119041260 |
| 4,8 | HL.V.D119.0480m7.5XD.118_62.HA | 6 | 82 | 44 | W0119048260 |
| 5,0 | HL.V.D119.0500m7.5XD.118_62.HA | 6 | 82 | 44 | W0119050260 |
| 5,1 | HL.V.D119.0510m7.5XD.118_62.HA | 6 | 82 | 44 | W0119051260 |
| 5,5 | HL.V.D119.0550m7.5XD.118_62.HA | 6 | 82 | 44 | W0119055260 |
| 5,8 | HL.V.D119.0580m7.5XD.118_62.HA | 6 | 82 | 44 | W0119058260 |
| 6,0 | HL.V.D119.0600m7.5XD.118_62.HA | 6 | 82 | 44 | W0119060260 |
| 6,1 | HL.V.D119.0610m7.5XD.118_62.HA | 8 | 91 | 53 | W0119061260 |
| 6,8 | HL.V.D119.0680m7.5XD.118_62.HA | 8 | 91 | 53 | W0119068260 |
| 7,0 | HL.V.D119.0700m7.5XD.118_62.HA | 8 | 91 | 53 | W0119070260 |
| 7,2 | HL.V.D119.0720m7.5XD.118_62.HA | 8 | 91 | 53 | W0119072260 |
| 7,5 | HL.V.D119.0750m7.5XD.118_62.HA | 8 | 91 | 53 | W0119075260 |
| 7,8 | HL.V.D119.0780m7.5XD.118_62.HA | 8 | 91 | 53 | W0119078260 |
| 8,0 | HL.V.D119.0800m7.5XD.118_62.HA | 8 | 91 | 53 | W0119080260 |
| 8,1 | HL.V.D119.0810m7.5XD.118_62.HA | 10 | 103 | 61 | W0119081260 |
| 8,5 | HL.V.D119.0850m7.5XD.118_62.HA | 10 | 103 | 61 | W0119085260 |
| 8,8 | HL.V.D119.0880m7.5XD.118_62.HA | 10 | 103 | 61 | W0119088260 |
| 9,0 | HL.V.D119.0900m7.5XD.118_62.HA | 10 | 103 | 61 | W0119090260 |
| 9,2 | HL.V.D119.0920m7.5XD.118_62.HA | 10 | 103 | 61 | W0119092260 |
| 9,5 | HL.V.D119.0950m7.5XD.118_62.HA | 10 | 103 | 61 | W0119095260 |
| 9,8 | HL.V.D119.0980m7.5XD.118_62.HA | 10 | 103 | 61 | W0119098260 |
| 10,0 | HL.V.D119.1000m7.5XD.118_62.HA | 10 | 103 | 61 | W0119100260 |
| 10,2 | HL.V.D119.1020m7.5XD.118_62.HA | 12 | 118 | 71 | W0119102260 |
| 10,5 | HL.V.D119.1050m7.5XD.118_62.HA | 12 | 118 | 71 | W0119105260 |
| 10,8 | HL.V.D119.1080m7.5XD.118_62.HA | 12 | 118 | 71 | W0119108260 |
| 11,0 | HL.V.D119.1100m7.5XD.118_62.HA | 12 | 118 | 71 | W0119110260 |
| 11,2 | HL.V.D119.1120m7.5XD.118_62.HA | 12 | 118 | 71 | W0119112260 |
| 11,5 | HL.V.D119.1150m7.5XD.118_62.HA | 12 | 118 | 71 | W0119115260 |
| 11,8 | HL.V.D119.1180m7.5XD.118_62.HA | 12 | 118 | 71 | W0119118260 |
| 12,0 | HL.V.D119.1200m7.5XD.118_62.HA | 12 | 118 | 71 | W0119120260 |

# W0121, beschichtet

Schnittdatenempfehlung

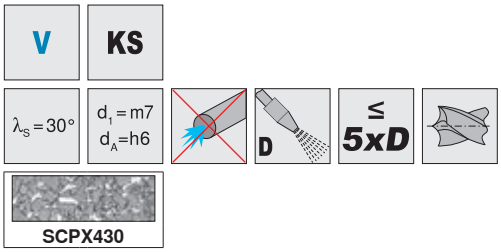


| Index | Materialbezeichnung | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 5,0 | f [mm/U] > Ø 5,0 = Ø 8,0 | f [mm/U] > Ø 8,0 = Ø 12,0 | f [mm/U] > Ø 12,0 = Ø 16,0 |
|---|---|---|---|---|---|---|
| 7.1.1 | Aluminium | | | | | |
| 7.1.2 | | | | | | |
| 7.1.3 | | | | | | |
| 7.1.4 | | | | | | |
| 7.1.5 | | | | | | |
| 7.1.6 | | | | | | |
| 7.2.1 | Magnesium | | | | | |
| 7.2.2 | | | | | | |
| 7.3.1 | Kupfer | | | | | |
| 7.3.2 | | | | | | |
| 7.3.3 | | | | | | |
| 7.3.4 | | | | | | |
| 7.3.5 | | | | | | |
| 7.3.6 | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | |
| 7.4.2 | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | |
| 7.5.2 | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | |
| 7.6.2 | | | | | | |
| 7.8.1 | Titan | | | | | |
| 7.8.2 | | | | | | |
| 7.8.3 | | | | | | |
| 8.1.1 | Thermoplast | 100 | 0,085 | 0,11 | 0,13 | 0,175 |
| 8.1.2 | | 100 | 0,085 | 0,11 | 0,13 | 0,175 |
| 8.1.3 | | 100 | 0,085 | 0,11 | 0,13 | 0,175 |
| 8.1.4 | | 80 | 0,085 | 0,11 | 0,13 | 0,175 |
| 8.1.5 | | 70 | 0,085 | 0,11 | 0,13 | 0,175 |
| 8.1.6 | | 90 | 0,085 | 0,11 | 0,13 | 0,175 |
| 8.1.7 | | 100 | 0,085 | 0,11 | 0,13 | 0,175 |
| 8.1.8 | | 95 | 0,085 | 0,11 | 0,13 | 0,175 |
| 8.1.9 | | 60 | 0,06 | 0,09 | 0,11 | 0,15 |
| 8.2.1 | Duroplast | 100 | 0,06 | 0,09 | 0,11 | 0,15 |
| 8.2.2 | | 100 | 0,06 | 0,09 | 0,11 | 0,15 |
| 8.2.3 | | 100 | 0,06 | 0,09 | 0,11 | 0,15 |
| 8.2.4 | | 150 | 0,06 | 0,09 | 0,11 | 0,15 |
| 8.2.5 | | 100 | 0,06 | 0,09 | 0,11 | 0,15 |
| 8.2.6 | | 80 | 0,06 | 0,09 | 0,11 | 0,15 |
| 8.2.7 | | 100 | 0,06 | 0,09 | 0,11 | 0,15 |
| 8.2.8 | | 100 | 0,06 | 0,09 | 0,11 | 0,15 |
| 8.3.1 | faserverstärkter Kunststoff | | | | | |
| 8.3.2 | | | | | | |
| 8.3.3 | | 130 | 0,04 | 0,06 | 0,09 | 0,12 |
| 8.3.4 | | 90 | 0,04 | 0,06 | 0,09 | 0,12 |
| 8.3.5 | | | | | | |
| 8.3.6 | | | | | | |
| 8.4.1 | Sandwich | | | | | |
| 8.4.2 | | 150 | 0,085 | 0,11 | 0,13 | 0,175 |
| 8.4.3 | | | | | | |
| 9.1.1 | Standard Graphit | | | | | |
| 9.1.2 | | | | | | |

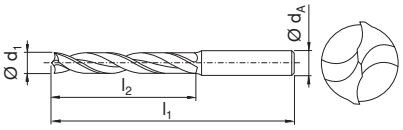
# W0121, beschichtet

Kevlarspiralbohrer








| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $l_1$ [mm] | $l_2$ [mm] | HA Material |
|---|---|---|---|---|---|
| 3,0 | KS.V.0121.0300m7.5XD.CO.HA | 6 | 66 | 28 | W0121030270 |
| 3,2 | KS.V.0121.0320m7.5XD.CO.HA | 6 | 66 | 28 | W0121032270 |
| 3,3 | KS.V.0121.0330m7.5XD.CO.HA | 6 | 66 | 28 | W0121033270 |
| 3,5 | KS.V.0121.0350m7.5XD.CO.HA | 6 | 66 | 28 | W0121035270 |
| 3,7 | KS.V.0121.0370m7.5XD.CO.HA | 6 | 66 | 28 | W0121037270 |
| 4,0 | KS.V.0121.0400m7.5XD.CO.HA | 6 | 74 | 36 | W0121040270 |
| 4,2 | KS.V.0121.0420m7.5XD.CO.HA | 6 | 74 | 36 | W0121042270 |
| 4,5 | KS.V.0121.0450m7.5XD.CO.HA | 6 | 74 | 36 | W0121045270 |
| 4,7 | KS.V.0121.0470m7.5XD.CO.HA | 6 | 74 | 36 | W0121047270 |
| 5,0 | KS.V.0121.0500m7.5XD.CO.HA | 6 | 82 | 44 | W0121050270 |
| 5,3 | KS.V.0121.0530m7.5XD.CO.HA | 6 | 82 | 44 | W0121053270 |
| 5,5 | KS.V.0121.0550m7.5XD.CO.HA | 6 | 82 | 44 | W0121055270 |
| 5,8 | KS.V.0121.0580m7.5XD.CO.HA | 6 | 82 | 44 | W0121058270 |
| 6,0 | KS.V.0121.0600m7.5XD.CO.HA | 6 | 82 | 44 | W0121060270 |
| 6,5 | KS.V.0121.0650m7.5XD.CO.HA | 8 | 91 | 53 | W0121065270 |
| 7,0 | KS.V.0121.0700m7.5XD.CO.HA | 8 | 91 | 53 | W0121070270 |
| 7,5 | KS.V.0121.0750m7.5XD.CO.HA | 8 | 91 | 53 | W0121075270 |
| 8,0 | KS.V.0121.0800m7.5XD.CO.HA | 8 | 91 | 53 | W0121080270 |
| 8,5 | KS.V.0121.0850m7.5XD.CO.HA | 10 | 103 | 61 | W0121085270 |
| 9,0 | KS.V.0121.0900m7.5XD.CO.HA | 10 | 103 | 61 | W0121090270 |
| 9,5 | KS.V.0121.0950m7.5XD.CO.HA | 10 | 103 | 61 | W0121095270 |
| 10,0 | KS.V.0121.1000m7.5XD.CO.HA | 10 | 103 | 61 | W0121100270 |
| 10,5 | KS.V.0121.1050m7.5XD.CO.HA | 12 | 118 | 71 | W0121105270 |
| 11,0 | KS.V.0121.1100m7.5XD.CO.HA | 12 | 118 | 71 | W0121110270 |
| 11,5 | KS.V.0121.1150m7.5XD.CO.HA | 12 | 118 | 71 | W0121115270 |
| 12,0 | KS.V.0121.1200m7.5XD.CO.HA | 12 | 118 | 71 | W0121120270 |
| 13,0 | KS.V.0121.1300m7.5XD.CO.HA | 14 | 124 | 77 | W0121130270 |
| 14,0 | KS.V.0121.1400m7.5XD.CO.HA | 14 | 124 | 77 | W0121140270 |
| 15,0 | KS.V.0121.1500m7.5XD.CO.HA | 16 | 133 | 83 | W0121150270 |
| 16,0 | KS.V.0121.1600m7.5XD.CO.HA | 16 | 133 | 83 | W0121160270 |



# Notizen

# Bezeichnungssystem Werkzeuge

Vollhartmetallwerkzeuge Reiben

CUTTING SOLUTIONS BY CERATIZIT

**HSC-SLR . UN . 0607 . 0397 H7**

1 | 2 | 3 | 4 | 5

1

| Werkzeuggruppe | |
|---|---|
| DR | – Durchgangs-Reibahle |
| HSC-DR | – HSC Durchgangs-Reibahle |
| SLR | – Sackloch-Reibahle |
| HSC-SLR | – HSC Sackloch-Reibahle |

2

| Werkstoff Hauptanwendung | |
|---|---|
| UN | – Universal |
| ST | – Stahl |
| VA | – rostfreier Stahl |
| TI | – Titan |
| H | – gehärteter Stahl |
| AL | – Aluminium |
| V | – Verbundwerkstoffe |

3

| Typ |
|---|

4

| Ø $d_1$ |
|---|
| 0397 ➢ Ø$d_1$ = 3,97 mm |

5

| Toleranz $d_1$ |
|---|

. 29 . IK . HA | SCPP625

6 7 8 9

6

| Nutzlänge l3 |
|---|

7

| Innenkühlung |
|---|

8

| Schaft |
|---|
| HA |
| HB |

9

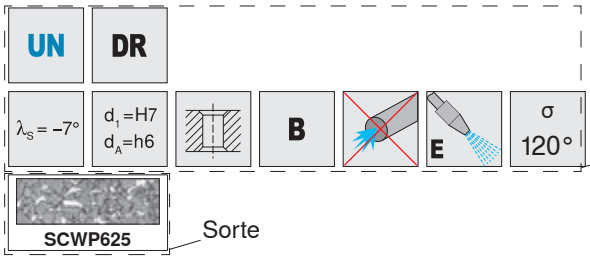
| Sorte |
|---|

# Symbolerklärung

Vollhartmetallwerkzeuge Reiben

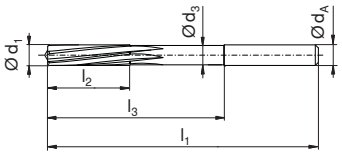
| | |
|---|---|
| **UN** | Werkstoffgruppe, z.B. UN = Universal |
| σ 120° | Spitzenwinkel am Hilfszentrum |
| **HSC DR** | Werkzeuggruppe, z.B. HSC-DR = HSC Durchgangs-Reibahle |
| **B** | Werkzeugform, z.B. B = Drallgenutet |
| **H7** | Bohrungstoleranz |
|  | ohne Innenkühlung |
|  | mit Innenkühlung zentral |

| | |
|---|---|
|  | mit Innenkühlung radial |
|  E | Emulsion empfohlen |
|  | Durchgangsbohrung |
|  | Sacklochbohrung |
| HA  | Schaftausführung DIN6535-HA |
| $\lambda_S = -7°$ | Drallwinkel |








Schaftausführung

| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|
| 1,0 | DR.UN.0602.0100H7.14.HA | 4 | 0,9 | 50 | 6 | 16 | 3 | W0602010000 |

Materialkurztext — Abmessungen — Materialnummer

| Sortenbezeichnung | Normbezeichnung | | Schneidstoffart | Anwendungsbereich | P | M | K | N | S | H |
|---|---|---|---|---|---|---|---|---|---|---|
| | ISO | ANSI | | 01 05 10 15 20 25 30 35 40 45 50 | Stahl | Rostfrei | Eisenguss | NE-Metalle | Hochwarmfest | Harte Werkstoffe |
| **SCPP625** | HC-P25 | C6 | P | | ● | ○ | ○ | ○ | ○ | |
| **SCWP625** | HW-P25 | C6 | W | | ● | | ○ | ○ | ○ | |
| **SCPH605** | HC-H05 | C4 | P | | ○ | ○ | ○ | | | ● |

01 05 10 15 20 25 30 35 40 45 50

● Hauptanwendung

○ Erweiterte Anwendung

# Sortenbeschreibung

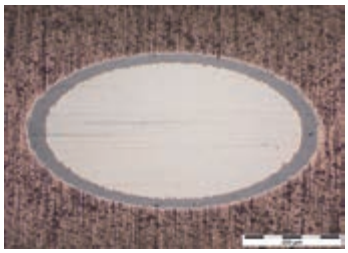
Vollhartmetallwerkzeuge Reiben



## SCPP625

HC-P25

● ○ ○ ○ ○



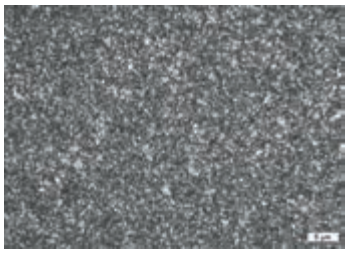
**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,5 µm | Härte: $HV_{30}$ 1620 | Beschichtungsart: Ti Al C N | Beschichtungsaufbau: Mehrlage

**Einsatzempfehlung:**
Gute Kombination aus Hartmetall und Beschichtung für universell einsetzbare Werkzeuge

## SCWP625

HW-P25

● ○ ○ ○



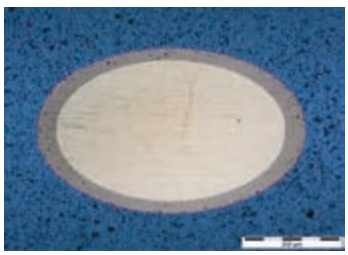
**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: Ti Al C N | Beschichtungsaufbau: Mehrlage

**Einsatzempfehlung:**
Feinstkornhartmetall zur universellen spanenden Bearbeitung von legierten und unlegierten Stählen, Titanlegierungen und Nickelbasislegierungen

## SCPH605

HC-H05

○ ○ ○ ●



**Spezifikation:**
Korngröße / mittlere Korngröße: Feinst / 0,7 µm | Härte: $HV_{30}$ 1600 | Beschichtungsart: Ti Al Si N | Beschichtungsaufbau: Mehrlage

**Einsatzempfehlung:**
Gute Kombination aus Hartmetall und Beschichtung zur Hartbearbeitung

| Werkzeugtyp | Ausführung | Ø-Bereich [mm] | Toleranz | Drallwinkel | Drallrichtung | Zähnezahl | Innenkühlung | Schaft | Lochnorm | Seite |
|---|---|---|---|---|---|---|---|---|---|---|
| **UN** | **DR** | Durchgangs-Reibahle, unbeschichtet | | | | | | | | |
| W0602 |  ähnlich DIN 212 | 1.0 - 12.0 | **H7** | $\lambda_S = -7°$ | links | 3 - 6 |  |  HA |  | F454 |
| **UN** | **HSC DR** | HSC Durchgangs-Reibahle, beschichtet | | | | | | | | |
| W0606 |  Werksnorm | 4.0 - 20.0 | **H7** | $\lambda_S = -7°$ | links | 6 - 6 |  |  HA |  | F458 |
| **UN** | **HSC SLR** | HSC Sackloch-Reibahle, beschichtet | | | | | | | | |
| W0607 |  Werksnorm | 4.0 - 20.0 | **H7** | $\lambda_S = 0°$ | gerade | 6 - 6 |  |  HA |  | F460 |
| **H** | **SLR** | Sackloch-Reibahle, beschichtet | | | | | | | | |
| W0603 |  ähnlich DIN 212 | 3.0 - 12.0 | **H7** | $\lambda_S = 0°$ | gerade | 4 - 6 |  |  HA |  | F462 |

# W0602, unbeschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 1,0 = Ø 4,0 | f [mm/U] > Ø 4,0 = Ø 8,0 | f [mm/U] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 18 | 0,1 | 0,2 | 0,238 |
| 1.1.2 | | | 17 | 0,08 | 0,16 | 0,195 |
| 1.2.1 | Baustahl | | 14 | 0,1 | 0,2 | 0,238 |
| 1.2.2 | | | 12 | 0,08 | 0,16 | 0,195 |
| 1.2.3 | | | 10 | 0,075 | 0,15 | 0,175 |
| 1.3.1 | Federstahl | | 12 | 0,075 | 0,15 | 0,175 |
| 1.3.2 | | | 10 | 0,075 | 0,15 | 0,175 |
| 1.3.3 | | | | | | |
| 2.1.1 | Einsatzstahl | | 14 | 0,1 | 0,2 | 0,238 |
| 2.1.2 | | | 13 | 0,08 | 0,16 | 0,195 |
| 2.1.3 | | | 12 | 0,08 | 0,16 | 0,195 |
| 2.2.1 | Nitrierstahl | | 14 | 0,1 | 0,2 | 0,238 |
| 2.2.2 | | | 10 | 0,075 | 0,15 | 0,175 |
| 2.3.1 | Vergütungsstahl | | 11 | 0,08 | 0,16 | 0,195 |
| 2.3.2 | | | 10 | 0,075 | 0,15 | 0,175 |
| 2.3.3 | | | 11 | 0,08 | 0,16 | 0,195 |
| 2.3.4 | | | 10 | 0,075 | 0,15 | 0,175 |
| 2.3.5 | | | 9 | 0,063 | 0,125 | 0,15 |
| 2.3.6 | | | 8 | 0,063 | 0,125 | 0,15 |
| 3.1.1 | Werkzeugstahl unlegiert | | 9 | 0,075 | 0,15 | 0,175 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 11 | 0,08 | 0,16 | 0,195 |
| 3.2.2 | | | 10 | 0,08 | 0,16 | 0,195 |
| 3.2.3 | | | 9 | 0,075 | 0,15 | 0,175 |
| 3.2.4 | | | | | | |
| 3.2.5 | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 10 | 0,08 | 0,16 | 0,195 |
| 3.3.2 | | | 9 | 0,075 | 0,15 | 0,175 |
| 3.3.3 | | | | | | |
| 3.3.4 | | | | | | |
| 3.3.5 | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | |
| 3.5.2 | | 55–58 HRC | | | | |
| 3.5.3 | | 58–60 HRC | | | | |
| 3.5.4 | | 60–62 HRC | | | | |
| 3.5.5 | | 62–64 HRC | | | | |
| 4.1.1 | rostfreier Stahl | | | | | |
| 4.1.2 | | | | | | |
| 4.1.3 | | | | | | |
| 4.1.4 | | | | | | |
| 4.1.5 | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | |
| 4.2.2 | | | | | | |
| 4.2.3 | | | | | | |
| 4.2.4 | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 14 | 0,063 | 0,125 | 0,15 |
| 5.1.2 | | | 13 | 0,08 | 0,16 | 0,195 |
| 5.1.3 | | | 9 | 0,063 | 0,125 | 0,15 |
| 5.2.1 | rostfreier Stahlguss | | | | | |
| 5.2.2 | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 15 | 0,125 | 0,25 | 0,325 |
| 6.1.2 | | | 12 | 0,113 | 0,225 | 0,275 |
| 6.1.3 | | | 10 | 0,1 | 0,2 | 0,238 |
| 6.1.4 | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 15 | 0,113 | 0,225 | 0,275 |
| 6.2.2 | | | 12 | 0,1 | 0,2 | 0,238 |
| 6.2.3 | | | 11 | 0,1 | 0,2 | 0,238 |
| 6.3.1 | GTW weisser Temperguss | | 15 | 0,113 | 0,225 | 0,275 |
| 6.3.2 | | | 12 | 0,1 | 0,2 | 0,238 |
| 6.4.1 | GTS schwarzer Temperguss | | 15 | 0,113 | 0,225 | 0,275 |
| 6.4.2 | | | 12 | 0,1 | 0,2 | 0,238 |
| 7.1.1 | Aluminium | | 30 | 0,1 | 0,2 | 0,238 |
| 7.1.2 | | | 30 | 0,1 | 0,2 | 0,238 |
| 7.1.3 | | | 30 | 0,1 | 0,2 | 0,238 |
| 7.1.4 | | | 30 | 0,1 | 0,2 | 0,238 |
| 7.1.5 | | | 25 | 0,1 | 0,2 | 0,238 |
| 7.1.6 | | | 20 | 0,1 | 0,2 | 0,238 |
| 7.2.1 | Magnesium | | 30 | 0,1 | 0,2 | 0,238 |
| 7.2.2 | | | 25 | 0,1 | 0,2 | 0,238 |
| 7.3.1 | Kupfer | | 35 | 0,1 | 0,2 | 0,238 |
| 7.3.2 | | | 30 | 0,1 | 0,2 | 0,238 |
| 7.3.3 | | | 25 | 0,1 | 0,2 | 0,238 |
| 7.3.4 | | | | | | |
| 7.3.5 | | | | | | |
| 7.3.6 | | | | | | |
| 7.4.1 | CuZn (Messing) | | 25 | 0,1 | 0,2 | 0,238 |
| 7.4.2 | | | 30 | 0,1 | 0,2 | 0,238 |
| 7.5.1 | CuSn (Bronze) | | 25 | 0,1 | 0,2 | 0,238 |
| 7.5.2 | | | 30 | 0,1 | 0,2 | 0,238 |
| 7.6.1 | CuAlFe (Ampco) | | | | | |
| 7.6.2 | | | | | | |
| 7.8.1 | Titan | | 15 | 0,05 | 0,1 | 0,113 |
| 7.8.2 | | | 15 | 0,05 | 0,1 | 0,113 |
| 7.8.3 | | | 10 | 0,05 | 0,1 | 0,113 |

# W0602, unbeschichtet

Durchgangs-Reibahle

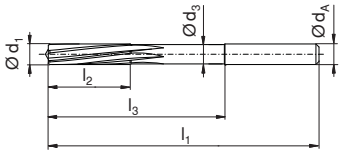
UN | DR

$\lambda_S$ = –7° | $d_1$=H7 $d_A$=h6 | B | E

SCWP625








| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|
| 0,98 | DR.UN.0602.0098H7.14.HA | 4 | 0,9 | 50 | 6 | 16 | 3 | W0602009800 |
| 0,99 | DR.UN.0602.0099H7.14.HA | 4 | 0,9 | 50 | 6 | 16 | 3 | W0602009900 |
| 1,0 | DR.UN.0602.0100H7.14.HA | 4 | 0,9 | 50 | 6 | 16 | 3 | W0602010000 |
| 1,01 | DR.UN.0602.0101H7.14.HA | 4 | 0,9 | 50 | 6 | 16 | 3 | W0602010100 |
| 1,02 | DR.UN.0602.0102H7.14.HA | 4 | 0,9 | 50 | 6 | 16 | 3 | W0602010200 |
| 1,03 | DR.UN.0602.0103H7.14.HA | 4 | 0,9 | 50 | 6 | 16 | 3 | W0602010300 |
| 1,48 | DR.UN.0602.0148H7.13.HA | 4 | 1,4 | 50 | 9 | 16 | 3 | W0602014800 |
| 1,49 | DR.UN.0602.0149H7.13.HA | 4 | 1,4 | 50 | 9 | 16 | 3 | W0602014900 |
| 1,5 | DR.UN.0602.0150H7.13.HA | 4 | 1,4 | 50 | 9 | 16 | 3 | W0602015000 |
| 1,51 | DR.UN.0602.0151H7.13.HA | 4 | 1,4 | 50 | 9 | 16 | 3 | W0602015100 |
| 1,52 | DR.UN.0602.0152H7.13.HA | 4 | 1,4 | 50 | 9 | 16 | 3 | W0602015200 |
| 1,97 | DR.UN.0602.0197H7.13.HA | 4 | 1,86 | 50 | 12 | 16 | 4 | W0602019700 |
| 1,98 | DR.UN.0602.0198H7.13.HA | 4 | 1,86 | 50 | 12 | 16 | 4 | W0602019800 |
| 1,99 | DR.UN.0602.0199H7.13.HA | 4 | 1,86 | 50 | 12 | 16 | 4 | W0602019900 |
| 2,0 | DR.UN.0602.0200H7.13.HA | 4 | 1,86 | 50 | 12 | 16 | 4 | W0602020000 |
| 2,01 | DR.UN.0602.0201H7.13.HA | 4 | 1,86 | 50 | 12 | 16 | 4 | W0602020100 |
| 2,02 | DR.UN.0602.0202H7.13.HA | 4 | 1,86 | 50 | 12 | 16 | 4 | W0602020200 |
| 2,03 | DR.UN.0602.0203H7.13.HA | 4 | 1,86 | 50 | 12 | 16 | 4 | W0602020300 |
| 2,97 | DR.UN.0602.0297H7.25.HA | 4 | 2,81 | 64 | 17 | 30 | 4 | W0602029700 |
| 2,98 | DR.UN.0602.0298H7.25.HA | 4 | 2,81 | 64 | 17 | 30 | 4 | W0602029800 |
| 2,99 | DR.UN.0602.0299H7.25.HA | 4 | 2,81 | 64 | 17 | 30 | 4 | W0602029900 |
| 3,0 | DR.UN.0602.0300H7.25.HA | 4 | 2,81 | 64 | 17 | 30 | 4 | W0602030000 |
| 3,01 | DR.UN.0602.0301H7.25.HA | 4 | 2,96 | 64 | 17 | 30 | 4 | W0602030100 |
| 3,02 | DR.UN.0602.0302H7.25.HA | 4 | 2,96 | 64 | 17 | 30 | 4 | W0602030200 |
| 3,03 | DR.UN.0602.0303H7.25.HA | 4 | 2,96 | 64 | 17 | 30 | 4 | W0602030300 |
| 3,97 | DR.UN.0602.0397H7.37.HA | 4 | 3,71 | 77 | 21 | 43 | 4 | W0602039700 |
| 3,98 | DR.UN.0602.0398H7.37.HA | 4 | 3,71 | 77 | 21 | 43 | 4 | W0602039800 |
| 3,99 | DR.UN.0602.0399H7.37.HA | 4 | 3,71 | 77 | 21 | 43 | 4 | W0602039900 |
| 4,0 | DR.UN.0602.0400H7.37.HA | 4 | 3,71 | 77 | 21 | 43 | 4 | W0602040000 |
| 4,01 | DR.UN.0602.0401H7.37.HA | 4 | 3,96 | 77 | 21 | 43 | 4 | W0602040100 |
| 4,02 | DR.UN.0602.0402H7.37.HA | 4 | 3,96 | 77 | 21 | 43 | 4 | W0602040200 |
| 4,03 | DR.UN.0602.0403H7.37.HA | 4 | 3,96 | 77 | 21 | 43 | 4 | W0602040300 |
| 4,97 | DR.UN.0602.0497H7.43.HA | 6 | 4,46 | 93 | 26 | 51 | 6 | W0602049700 |
| 4,98 | DR.UN.0602.0498H7.43.HA | 6 | 4,46 | 93 | 26 | 51 | 6 | W0602049800 |
| 4,99 | DR.UN.0602.0499H7.43.HA | 6 | 4,46 | 93 | 26 | 51 | 6 | W0602049900 |
| 5,0 | DR.UN.0602.0500H7.43.HA | 6 | 4,46 | 93 | 26 | 51 | 6 | W0602050000 |
| 5,01 | DR.UN.0602.0501H7.43.HA | 6 | 4,96 | 93 | 26 | 51 | 6 | W0602050100 |
| 5,02 | DR.UN.0602.0502H7.43.HA | 6 | 4,96 | 93 | 26 | 51 | 6 | W0602050200 |
| 5,03 | DR.UN.0602.0503H7.43.HA | 6 | 4,96 | 93 | 26 | 51 | 6 | W0602050300 |
| 5,97 | DR.UN.0602.0597H7.42.HA | 6 | 5,26 | 93 | 26 | 51 | 6 | W0602059700 |
| 5,98 | DR.UN.0602.0598H7.42.HA | 6 | 5,26 | 93 | 26 | 51 | 6 | W0602059800 |
| 5,99 | DR.UN.0602.0599H7.42.HA | 6 | 5,26 | 93 | 26 | 51 | 6 | W0602059900 |
| 6,0 | DR.UN.0602.0600H7.42.HA | 6 | 5,26 | 93 | 26 | 51 | 6 | W0602060000 |
| 6,01 | DR.UN.0602.0601H7.42.HA | 6 | 5,96 | 93 | 26 | 51 | 6 | W0602060100 |
| 6,02 | DR.UN.0602.0602H7.42.HA | 6 | 5,96 | 93 | 26 | 51 | 6 | W0602060200 |
| 6,03 | DR.UN.0602.0603H7.42.HA | 6 | 5,96 | 93 | 26 | 51 | 6 | W0602060300 |
| 7,0 | DR.UN.0602.0700H7.56.HA | 8 | 6,66 | 109 | 31 | 67 | 6 | W0602070000 |
| 7,97 | DR.UN.0602.0797H7.63.HA | 8 | 7,46 | 117 | 33 | 75 | 6 | W0602079700 |

# W0602, unbeschichtet

Schnittdatenempfehlung

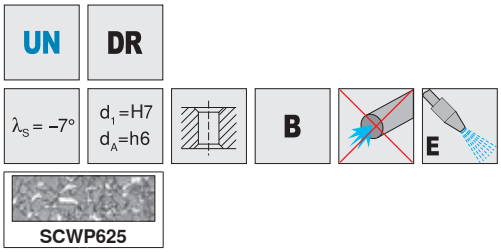


| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 1,0 = Ø 4,0 | f [mm/U] > Ø 4,0 = Ø 8,0 | f [mm/U] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 18 | 0,1 | 0,2 | 0,238 |
| 1.1.2 | | | 17 | 0,08 | 0,16 | 0,195 |
| 1.2.1 | Baustahl | | 14 | 0,1 | 0,2 | 0,238 |
| 1.2.2 | | | 12 | 0,08 | 0,16 | 0,195 |
| 1.2.3 | | | 10 | 0,075 | 0,15 | 0,175 |
| 1.3.1 | Federstahl | | 12 | 0,075 | 0,15 | 0,175 |
| 1.3.2 | | | 10 | 0,075 | 0,15 | 0,175 |
| 1.3.3 | | | | | | |
| 2.1.1 | Einsatzstahl | | 14 | 0,1 | 0,2 | 0,238 |
| 2.1.2 | | | 13 | 0,08 | 0,16 | 0,195 |
| 2.1.3 | | | 12 | 0,08 | 0,16 | 0,195 |
| 2.2.1 | Nitrierstahl | | 14 | 0,1 | 0,2 | 0,238 |
| 2.2.2 | | | 10 | 0,075 | 0,15 | 0,175 |
| 2.3.1 | Vergütungsstahl | | 11 | 0,08 | 0,16 | 0,195 |
| 2.3.2 | | | 10 | 0,075 | 0,15 | 0,175 |
| 2.3.3 | | | 11 | 0,08 | 0,16 | 0,195 |
| 2.3.4 | | | 10 | 0,075 | 0,15 | 0,175 |
| 2.3.5 | | | 9 | 0,063 | 0,125 | 0,15 |
| 2.3.6 | | | 8 | 0,063 | 0,125 | 0,15 |
| 3.1.1 | Werkzeugstahl unlegiert | | 9 | 0,075 | 0,15 | 0,175 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 11 | 0,08 | 0,16 | 0,195 |
| 3.2.2 | | | 10 | 0,08 | 0,16 | 0,195 |
| 3.2.3 | | | 9 | 0,075 | 0,15 | 0,175 |
| 3.2.4 | | | | | | |
| 3.2.5 | | | | | | |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 10 | 0,08 | 0,16 | 0,195 |
| 3.3.2 | | | 9 | 0,075 | 0,15 | 0,175 |
| 3.3.3 | | | | | | |
| 3.3.4 | | | | | | |
| 3.3.5 | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | |
| 3.5.2 | | 55–58 HRC | | | | |
| 3.5.3 | | 58–60 HRC | | | | |
| 3.5.4 | | 60–62 HRC | | | | |
| 3.5.5 | | 62–64 HRC | | | | |
| 4.1.1 | rostfreier Stahl | | | | | |
| 4.1.2 | | | | | | |
| 4.1.3 | | | | | | |
| 4.1.4 | | | | | | |
| 4.1.5 | | | | | | |
| 4.2.1 | hochwarmfeste Legierungen | | | | | |
| 4.2.2 | | | | | | |
| 4.2.3 | | | | | | |
| 4.2.4 | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 14 | 0,063 | 0,125 | 0,15 |
| 5.1.2 | | | 13 | 0,08 | 0,16 | 0,195 |
| 5.1.3 | | | 9 | 0,063 | 0,125 | 0,15 |
| 5.2.1 | rostfreier Stahlguss | | | | | |
| 5.2.2 | | | | | | |
| 6.1.1 | GG mit lamellarem Graphit | | 15 | 0,125 | 0,25 | 0,325 |
| 6.1.2 | | | 12 | 0,113 | 0,225 | 0,275 |
| 6.1.3 | | | 10 | 0,1 | 0,2 | 0,238 |
| 6.1.4 | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 15 | 0,113 | 0,225 | 0,275 |
| 6.2.2 | | | 12 | 0,1 | 0,2 | 0,238 |
| 6.2.3 | | | 11 | 0,1 | 0,2 | 0,238 |
| 6.3.1 | GTW weisser Temperguss | | 15 | 0,113 | 0,225 | 0,275 |
| 6.3.2 | | | 12 | 0,1 | 0,2 | 0,238 |
| 6.4.1 | GTS schwarzer Temperguss | | 15 | 0,113 | 0,225 | 0,275 |
| 6.4.2 | | | 12 | 0,1 | 0,2 | 0,238 |
| 7.1.1 | Aluminium | | 30 | 0,1 | 0,2 | 0,238 |
| 7.1.2 | | | 30 | 0,1 | 0,2 | 0,238 |
| 7.1.3 | | | 30 | 0,1 | 0,2 | 0,238 |
| 7.1.4 | | | 30 | 0,1 | 0,2 | 0,238 |
| 7.1.5 | | | 25 | 0,1 | 0,2 | 0,238 |
| 7.1.6 | | | 20 | 0,1 | 0,2 | 0,238 |
| 7.2.1 | Magnesium | | 30 | 0,1 | 0,2 | 0,238 |
| 7.2.2 | | | 25 | 0,1 | 0,2 | 0,238 |
| 7.3.1 | Kupfer | | 35 | 0,1 | 0,2 | 0,238 |
| 7.3.2 | | | 30 | 0,1 | 0,2 | 0,238 |
| 7.3.3 | | | 25 | 0,1 | 0,2 | 0,238 |
| 7.3.4 | | | | | | |
| 7.3.5 | | | | | | |
| 7.3.6 | | | | | | |
| 7.4.1 | CuZn (Messing) | | 25 | 0,1 | 0,2 | 0,238 |
| 7.4.2 | | | 30 | 0,1 | 0,2 | 0,238 |
| 7.5.1 | CuSn (Bronze) | | 25 | 0,1 | 0,2 | 0,238 |
| 7.5.2 | | | 30 | 0,1 | 0,2 | 0,238 |
| 7.6.1 | CuAlFe (Ampco) | | | | | |
| 7.6.2 | | | | | | |
| 7.8.1 | Titan | | 15 | 0,05 | 0,1 | 0,113 |
| 7.8.2 | | | 15 | 0,05 | 0,1 | 0,113 |
| 7.8.3 | | | 10 | 0,05 | 0,1 | 0,113 |

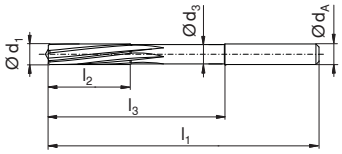
# W0602, unbeschichtet

Durchgangs-Reibahle








| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|
| 7,98 | DR.UN.0602.0798H7.63.HA | 8 | 7,46 | 117 | 33 | 75 | 6 | W0602079800 |
| 7,99 | DR.UN.0602.0799H7.63.HA | 8 | 7,46 | 117 | 33 | 75 | 6 | W0602079900 |
| 8,0 | DR.UN.0602.0800H7.63.HA | 8 | 7,46 | 117 | 33 | 75 | 6 | W0602080000 |
| 8,01 | DR.UN.0602.0801H7.63.HA | 8 | 7,9 | 117 | 33 | 75 | 6 | W0602080100 |
| 8,02 | DR.UN.0602.0802H7.63.HA | 8 | 7,9 | 117 | 33 | 75 | 6 | W0602080200 |
| 8,03 | DR.UN.0602.0803H7.63.HA | 8 | 7,9 | 117 | 33 | 75 | 6 | W0602080300 |
| 9,0 | DR.UN.0602.0900H7.65.HA | 10 | 8,4 | 125 | 36 | 79 | 6 | W0602090000 |
| 9,97 | DR.UN.0602.0997H7.72.HA | 10 | 9,4 | 133 | 41 | 87 | 6 | W0602099700 |
| 9,98 | DR.UN.0602.0998H7.72.HA | 10 | 9,4 | 133 | 41 | 87 | 6 | W0602099800 |
| 9,99 | DR.UN.0602.0999H7.72.HA | 10 | 9,4 | 133 | 41 | 87 | 6 | W0602099900 |
| 10,0 | DR.UN.0602.1000H7.72.HA | 10 | 9,4 | 133 | 41 | 87 | 6 | W0602100000 |
| 10,01 | DR.UN.0602.1001H7.72.HA | 10 | 9,9 | 133 | 41 | 87 | 6 | W0602100100 |
| 10,02 | DR.UN.0602.1002H7.72.HA | 10 | 9,9 | 133 | 41 | 87 | 6 | W0602100200 |
| 10,03 | DR.UN.0602.1003H7.72.HA | 10 | 9,9 | 133 | 41 | 87 | 6 | W0602100300 |
| 11,97 | DR.UN.0602.1197H7.81.HA | 12 | 11,6 | 150 | 44 | 99 | 6 | W0602119700 |
| 11,98 | DR.UN.0602.1198H7.81.HA | 12 | 11,6 | 150 | 44 | 99 | 6 | W0602119800 |
| 11,99 | DR.UN.0602.1199H7.81.HA | 12 | 11,6 | 150 | 44 | 99 | 6 | W0602119900 |
| 12,0 | DR.UN.0602.1200H7.81.HA | 12 | 11,6 | 150 | 44 | 99 | 6 | W0602120000 |
| 12,01 | DR.UN.0602.1201H7.81.HA | 12 | 11,6 | 150 | 44 | 99 | 6 | W0602120100 |
| 12,02 | DR.UN.0602.1202H7.81.HA | 12 | 11,6 | 150 | 44 | 99 | 6 | W0602120200 |
| 12,03 | DR.UN.0602.1203H7.81.HA | 12 | 11,6 | 150 | 44 | 99 | 6 | W0602120300 |

# W0606, beschichtet

Schnittdatenempfehlung

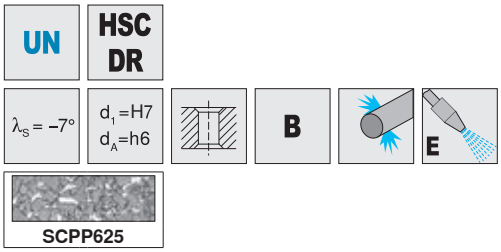


| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 4,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 150 | 0,3 | 0,6 | 1 | 1,2 |
| 1.1.2 | | | 100 | 0,3 | 0,6 | 1 | 1,2 |
| 1.2.1 | Baustahl | | 150 | 0,3 | 0,6 | 1 | 1,2 |
| 1.2.2 | | | 100 | 0,3 | 0,6 | 1 | 1,2 |
| 1.2.3 | | | 90 | 0,3 | 0,6 | 1 | 1,2 |
| 1.3.1 | Federstahl | | 90 | 0,2 | 0,4 | 0,7 | 0,9 |
| 1.3.2 | | | 80 | 0,2 | 0,4 | 0,7 | 0,9 |
| 1.3.3 | | | | | | | |
| 2.1.1 | Einsatzstahl | | 120 | 0,3 | 0,6 | 1 | 1,2 |
| 2.1.2 | | | 100 | 0,3 | 0,6 | 1 | 1,2 |
| 2.1.3 | | | 100 | 0,3 | 0,6 | 1 | 1,2 |
| 2.2.1 | Nitrierstahl | | 100 | 0,3 | 0,6 | 1 | 1,2 |
| 2.2.2 | | | 130 | 0,2 | 0,4 | 0,7 | 0,9 |
| 2.3.1 | Vergütungsstahl | | 100 | 0,3 | 0,6 | 1 | 1,2 |
| 2.3.2 | | | 130 | 0,2 | 0,4 | 0,7 | 0,9 |
| 2.3.3 | | | 120 | 0,2 | 0,4 | 0,7 | 0,9 |
| 2.3.4 | | | 100 | 0,2 | 0,4 | 0,7 | 0,9 |
| 2.3.5 | | | 100 | 0,2 | 0,4 | 0,7 | 0,9 |
| 2.3.6 | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 80 | 0,3 | 0,6 | 1 | 1,2 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 130 | 0,2 | 0,4 | 0,7 | 0,9 |
| 3.2.2 | | | 100 | 0,2 | 0,4 | 0,7 | 0,9 |
| 3.2.3 | | | 80 | 0,2 | 0,4 | 0,7 | 0,9 |
| 3.2.4 | | | 60 | 0,2 | 0,4 | 0,7 | 0,9 |
| 3.2.5 | | | 60 | 0,2 | 0,4 | 0,7 | 0,9 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 100 | 0,2 | 0,4 | 0,7 | 0,9 |
| 3.3.2 | | | 80 | 0,2 | 0,4 | 0,7 | 0,9 |
| 3.3.3 | | | 60 | 0,2 | 0,4 | 0,7 | 0,9 |
| 3.3.4 | | | 60 | 0,2 | 0,4 | 0,7 | 0,9 |
| 3.3.5 | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | 30 | 0,08 | 0,16 | 0,195 | 0,23 |
| 4.1.2 | | | 25 | 0,08 | 0,16 | 0,195 | 0,23 |
| 4.1.3 | | | 20 | 0,08 | 0,16 | 0,195 | 0,23 |
| 4.1.4 | | | 20 | 0,08 | 0,16 | 0,195 | 0,23 |
| 4.1.5 | | | 30 | 0,08 | 0,16 | 0,195 | 0,23 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | |
| 4.2.2 | | | | | | | |
| 4.2.3 | | | | | | | |
| 4.2.4 | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 100 | 0,2 | 0,4 | 0,7 | 0,9 |
| 5.1.2 | | | 95 | 0,2 | 0,4 | 0,7 | 0,9 |
| 5.1.3 | | | 90 | 0,2 | 0,4 | 0,7 | 0,9 |
| 5.2.1 | rostfreier Stahlguss | | 25 | 0,08 | 0,16 | 0,195 | 0,23 |
| 5.2.2 | | | 20 | 0,08 | 0,16 | 0,195 | 0,23 |
| 6.1.1 | GG mit lamellarem Graphit | | 80 | 0,3 | 0,6 | 1 | 1,2 |
| 6.1.2 | | | 80 | 0,3 | 0,6 | 1 | 1,2 |
| 6.1.3 | | | 70 | 0,3 | 0,6 | 1 | 1,2 |
| 6.1.4 | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 70 | 0,3 | 0,6 | 1 | 1,2 |
| 6.2.2 | | | 65 | 0,3 | 0,6 | 1 | 1,2 |
| 6.2.3 | | | 55 | 0,3 | 0,6 | 1 | 1,2 |
| 6.3.1 | GTW weisser Temperguss | | 70 | 0,3 | 0,6 | 1 | 1,2 |
| 6.3.2 | | | 65 | 0,3 | 0,6 | 1 | 1,2 |
| 6.4.1 | GTS schwarzer Temperguss | | 70 | 0,3 | 0,6 | 1 | 1,2 |
| 6.4.2 | | | 65 | 0,3 | 0,6 | 1 | 1,2 |
| 7.1.1 | Aluminium | | 200 | 0,3 | 0,6 | 1 | 1,2 |
| 7.1.2 | | | 200 | 0,3 | 0,6 | 1 | 1,2 |
| 7.1.3 | | | 200 | 0,3 | 0,6 | 1 | 1,2 |
| 7.1.4 | | | 200 | 0,3 | 0,6 | 1 | 1,2 |
| 7.1.5 | | | 180 | 0,3 | 0,6 | 1 | 1,2 |
| 7.1.6 | | | 170 | 0,3 | 0,6 | 1 | 1,2 |
| 7.2.1 | Magnesium | | 200 | 0,3 | 0,6 | 1 | 1,2 |
| 7.2.2 | | | 180 | 0,3 | 0,6 | 1 | 1,2 |
| 7.3.1 | Kupfer | | 220 | 0,3 | 0,6 | 1 | 1,2 |
| 7.3.2 | | | 200 | 0,3 | 0,6 | 1 | 1,2 |
| 7.3.3 | | | 180 | 0,3 | 0,6 | 1 | 1,2 |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | 140 | 0,3 | 0,6 | 1 | 1,2 |
| 7.4.2 | | | 200 | 0,3 | 0,6 | 1 | 1,2 |
| 7.5.1 | CuSn (Bronze) | | 120 | 0,3 | 0,6 | 1 | 1,2 |
| 7.5.2 | | | 200 | 0,3 | 0,6 | 1 | 1,2 |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | 60 | 0,2 | 0,4 | 0,7 | 0,9 |
| 7.8.2 | | | 60 | 0,2 | 0,4 | 0,7 | 0,9 |
| 7.8.3 | | | 30 | 0,15 | 0,25 | 0,45 | 0,6 |

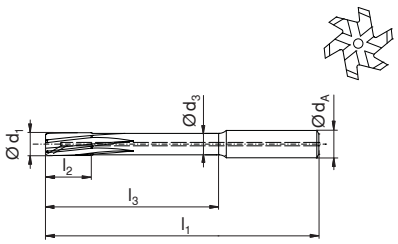
# W0606, beschichtet

HSC Durchgangs-Reibahle








| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|
| 3,97 | HSC-DR.UN.0606.0397H7.29.IK.HA | 6 | 3,73 | 75 | 12 | 35 | 6 | W0606039750 |
| 3,98 | HSC-DR.UN.0606.0398H7.29.IK.HA | 6 | 3,74 | 75 | 12 | 35 | 6 | W0606039850 |
| 3,99 | HSC-DR.UN.0606.0399H7.29.IK.HA | 6 | 3,75 | 75 | 12 | 35 | 6 | W0606039950 |
| 4,0 | HSC-DR.UN.0606.0400H7.29.IK.HA | 6 | 3,76 | 75 | 12 | 35 | 6 | W0606040050 |
| 4,01 | HSC-DR.UN.0606.0401H7.29.IK.HA | 6 | 3,77 | 75 | 12 | 35 | 6 | W0606040150 |
| 4,02 | HSC-DR.UN.0606.0402H7.29.IK.HA | 6 | 3,78 | 75 | 12 | 35 | 6 | W0606040250 |
| 4,03 | HSC-DR.UN.0606.0403H7.29.IK.HA | 6 | 3,79 | 75 | 12 | 35 | 6 | W0606040350 |
| 4,97 | HSC-DR.UN.0606.0497H7.27.IK.HA | 6 | 4,67 | 75 | 12 | 35 | 6 | W0606049750 |
| 4,98 | HSC-DR.UN.0606.0498H7.27.IK.HA | 6 | 4,68 | 75 | 12 | 35 | 6 | W0606049850 |
| 4,99 | HSC-DR.UN.0606.0499H7.27.IK.HA | 6 | 4,69 | 75 | 12 | 35 | 6 | W0606049950 |
| 5,0 | HSC-DR.UN.0606.0500H7.27.IK.HA | 6 | 4,7 | 75 | 12 | 35 | 6 | W0606050050 |
| 5,01 | HSC-DR.UN.0606.0501H7.27.IK.HA | 6 | 4,71 | 75 | 12 | 35 | 6 | W0606050150 |
| 5,02 | HSC-DR.UN.0606.0502H7.27.IK.HA | 6 | 4,72 | 75 | 12 | 35 | 6 | W0606050250 |
| 5,03 | HSC-DR.UN.0606.0503H7.27.IK.HA | 6 | 4,73 | 75 | 12 | 35 | 6 | W0606050350 |
| 5,97 | HSC-DR.UN.0606.0597H7.26.IK.HA | 6 | 5,61 | 75 | 12 | 35 | 6 | W0606059750 |
| 5,98 | HSC-DR.UN.0606.0598H7.26.IK.HA | 6 | 5,62 | 75 | 12 | 35 | 6 | W0606059850 |
| 5,99 | HSC-DR.UN.0606.0599H7.26.IK.HA | 6 | 5,63 | 75 | 12 | 35 | 6 | W0606059950 |
| 6,0 | HSC-DR.UN.0606.0600H7.26.IK.HA | 6 | 5,64 | 75 | 12 | 35 | 6 | W0606060050 |
| 6,01 | HSC-DR.UN.0606.0601H7.26.IK.HA | 6 | 5,65 | 75 | 12 | 35 | 6 | W0606060150 |
| 6,02 | HSC-DR.UN.0606.0602H7.26.IK.HA | 6 | 5,66 | 75 | 12 | 35 | 6 | W0606060250 |
| 6,03 | HSC-DR.UN.0606.0603H7.26.IK.HA | 6 | 5,67 | 75 | 12 | 35 | 6 | W0606060350 |
| 7,0 | HSC-DR.UN.0606.0700H7.49.IK.HA | 8 | 6,58 | 100 | 16 | 60 | 6 | W0606070050 |
| 7,97 | HSC-DR.UN.0606.0797H7.48.IK.HA | 8 | 7,49 | 100 | 16 | 60 | 6 | W0606079750 |
| 7,98 | HSC-DR.UN.0606.0798H7.48.IK.HA | 8 | 7,5 | 100 | 16 | 60 | 6 | W0606079850 |
| 7,99 | HSC-DR.UN.0606.0799H7.48.IK.HA | 8 | 7,51 | 100 | 16 | 60 | 6 | W0606079950 |
| 8,0 | HSC-DR.UN.0606.0800H7.48.IK.HA | 8 | 7,52 | 100 | 16 | 60 | 6 | W0606080050 |
| 8,01 | HSC-DR.UN.0606.0801H7.48.IK.HA | 8 | 7,53 | 100 | 16 | 60 | 6 | W0606080150 |
| 8,02 | HSC-DR.UN.0606.0802H7.48.IK.HA | 8 | 7,54 | 100 | 16 | 60 | 6 | W0606080250 |
| 8,03 | HSC-DR.UN.0606.0803H7.48.IK.HA | 8 | 7,55 | 100 | 16 | 60 | 6 | W0606080350 |
| 9,97 | HSC-DR.UN.0606.0997H7.61.IK.HA | 10 | 9,37 | 120 | 20 | 76 | 6 | W0606099750 |
| 9,98 | HSC-DR.UN.0606.0998H7.61.IK.HA | 10 | 9,38 | 120 | 20 | 76 | 6 | W0606099850 |
| 9,99 | HSC-DR.UN.0606.0999H7.61.IK.HA | 10 | 9,39 | 120 | 20 | 76 | 6 | W0606099950 |
| 10,0 | HSC-DR.UN.0606.1000H7.61.IK.HA | 10 | 9,4 | 120 | 20 | 76 | 6 | W0606100050 |
| 10,01 | HSC-DR.UN.0606.1001H7.61.IK.HA | 10 | 9,41 | 120 | 20 | 76 | 6 | W0606100150 |
| 10,02 | HSC-DR.UN.0606.1002H7.61.IK.HA | 10 | 9,42 | 120 | 20 | 76 | 6 | W0606100250 |
| 10,03 | HSC-DR.UN.0606.1003H7.61.IK.HA | 10 | 9,43 | 120 | 20 | 76 | 6 | W0606100350 |
| 11,97 | HSC-DR.UN.0606.1197H7.53.IK.HA | 12 | 11,25 | 120 | 20 | 71 | 6 | W0606119750 |
| 11,98 | HSC-DR.UN.0606.1198H7.53.IK.HA | 12 | 11,26 | 120 | 20 | 71 | 6 | W0606119850 |
| 11,99 | HSC-DR.UN.0606.1199H7.53.IK.HA | 12 | 11,27 | 120 | 20 | 71 | 6 | W0606119950 |
| 12,0 | HSC-DR.UN.0606.1200H7.53.IK.HA | 12 | 11,28 | 120 | 20 | 71 | 6 | W0606120050 |
| 12,01 | HSC-DR.UN.0606.1201H7.53.IK.HA | 12 | 11,29 | 120 | 20 | 71 | 6 | W0606120150 |
| 12,02 | HSC-DR.UN.0606.1202H7.53.IK.HA | 12 | 11,3 | 120 | 20 | 71 | 6 | W0606120250 |
| 12,03 | HSC-DR.UN.0606.1203H7.53.IK.HA | 12 | 11,31 | 120 | 20 | 71 | 6 | W0606120350 |
| 14,0 | HSC-DR.UN.0606.1400H7.60.IK.HA | 14 | 13,16 | 130 | 22 | 81 | 6 | W0606140050 |
| 16,0 | HSC-DR.UN.0606.1600H7.74.IK.HA | 16 | 15,04 | 150 | 25 | 98 | 6 | W0606160050 |
| 18,0 | HSC-DR.UN.0606.1800H7.71.IK.HA | 18 | 16,92 | 150 | 25 | 98 | 6 | W0606180050 |
| 20,0 | HSC-DR.UN.0606.2000H7.66.IK.HA | 20 | 18,8 | 150 | 25 | 96 | 6 | W0606200050 |

# W0607, beschichtet

Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 4,0 = Ø 4,0 | > Ø 4,0 = Ø 8,0 | > Ø 8,0 = Ø 16,0 | > Ø 16,0 = Ø 20,0 |
|---|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 150 | 0,3 | 0,6 | 1 | 1,2 |
| 1.1.2 | | | 100 | 0,3 | 0,6 | 1 | 1,2 |
| 1.2.1 | Baustahl | | 150 | 0,3 | 0,6 | 1 | 1,2 |
| 1.2.2 | | | 100 | 0,3 | 0,6 | 1 | 1,2 |
| 1.2.3 | | | 90 | 0,3 | 0,6 | 1 | 1,2 |
| 1.3.1 | Federstahl | | 90 | 0,2 | 0,4 | 0,7 | 0,9 |
| 1.3.2 | | | 80 | 0,2 | 0,4 | 0,7 | 0,9 |
| 1.3.3 | | | | | | | |
| 2.1.1 | Einsatzstahl | | 120 | 0,3 | 0,6 | 1 | 1,2 |
| 2.1.2 | | | 100 | 0,3 | 0,6 | 1 | 1,2 |
| 2.1.3 | | | 100 | 0,3 | 0,6 | 1 | 1,2 |
| 2.2.1 | Nitrierstahl | | 100 | 0,3 | 0,6 | 1 | 1,2 |
| 2.2.2 | | | 130 | 0,2 | 0,4 | 0,7 | 0,9 |
| 2.3.1 | Vergütungsstahl | | 100 | 0,3 | 0,6 | 1 | 1,2 |
| 2.3.2 | | | 130 | 0,2 | 0,4 | 0,7 | 0,9 |
| 2.3.3 | | | 120 | 0,2 | 0,4 | 0,7 | 0,9 |
| 2.3.4 | | | 100 | 0,2 | 0,4 | 0,7 | 0,9 |
| 2.3.5 | | | 100 | 0,2 | 0,4 | 0,7 | 0,9 |
| 2.3.6 | | | | | | | |
| 3.1.1 | Werkzeugstahl unlegiert | | 80 | 0,3 | 0,6 | 1 | 1,2 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 130 | 0,2 | 0,4 | 0,7 | 0,9 |
| 3.2.2 | | | 100 | 0,2 | 0,4 | 0,7 | 0,9 |
| 3.2.3 | | | 80 | 0,2 | 0,4 | 0,7 | 0,9 |
| 3.2.4 | | | 60 | 0,2 | 0,4 | 0,7 | 0,9 |
| 3.2.5 | | | 60 | 0,2 | 0,4 | 0,7 | 0,9 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 100 | 0,2 | 0,4 | 0,7 | 0,9 |
| 3.3.2 | | | 80 | 0,2 | 0,4 | 0,7 | 0,9 |
| 3.3.3 | | | 60 | 0,2 | 0,4 | 0,7 | 0,9 |
| 3.3.4 | | | 60 | 0,2 | 0,4 | 0,7 | 0,9 |
| 3.3.5 | | | | | | | |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | | | | | |
| 3.5.2 | | 55–58 HRC | | | | | |
| 3.5.3 | | 58–60 HRC | | | | | |
| 3.5.4 | | 60–62 HRC | | | | | |
| 3.5.5 | | 62–64 HRC | | | | | |
| 4.1.1 | rostfreier Stahl | | 30 | 0,08 | 0,16 | 0,195 | 0,23 |
| 4.1.2 | | | 25 | 0,08 | 0,16 | 0,195 | 0,23 |
| 4.1.3 | | | 20 | 0,08 | 0,16 | 0,195 | 0,23 |
| 4.1.4 | | | 20 | 0,08 | 0,16 | 0,195 | 0,23 |
| 4.1.5 | | | 30 | 0,08 | 0,16 | 0,195 | 0,23 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | | |
| 4.2.2 | | | | | | | |
| 4.2.3 | | | | | | | |
| 4.2.4 | | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 100 | 0,2 | 0,4 | 0,7 | 0,9 |
| 5.1.2 | | | 95 | 0,2 | 0,4 | 0,7 | 0,9 |
| 5.1.3 | | | 90 | 0,2 | 0,4 | 0,7 | 0,9 |
| 5.2.1 | rostfreier Stahlguss | | 25 | 0,08 | 0,16 | 0,195 | 0,23 |
| 5.2.2 | | | 20 | 0,08 | 0,16 | 0,195 | 0,23 |
| 6.1.1 | GG mit lamellarem Graphit | | 80 | 0,3 | 0,6 | 1 | 1,2 |
| 6.1.2 | | | 80 | 0,3 | 0,6 | 1 | 1,2 |
| 6.1.3 | | | 70 | 0,3 | 0,6 | 1 | 1,2 |
| 6.1.4 | | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 70 | 0,3 | 0,6 | 1 | 1,2 |
| 6.2.2 | | | 65 | 0,3 | 0,6 | 1 | 1,2 |
| 6.2.3 | | | 55 | 0,3 | 0,6 | 1 | 1,2 |
| 6.3.1 | GTW weisser Temperguss | | 70 | 0,3 | 0,6 | 1 | 1,2 |
| 6.3.2 | | | 65 | 0,3 | 0,6 | 1 | 1,2 |
| 6.4.1 | GTS schwarzer Temperguss | | 70 | 0,3 | 0,6 | 1 | 1,2 |
| 6.4.2 | | | 65 | 0,3 | 0,6 | 1 | 1,2 |
| 7.1.1 | Aluminium | | 200 | 0,3 | 0,6 | 1 | 1,2 |
| 7.1.2 | | | 200 | 0,3 | 0,6 | 1 | 1,2 |
| 7.1.3 | | | 200 | 0,3 | 0,6 | 1 | 1,2 |
| 7.1.4 | | | 200 | 0,3 | 0,6 | 1 | 1,2 |
| 7.1.5 | | | 180 | 0,3 | 0,6 | 1 | 1,2 |
| 7.1.6 | | | 170 | 0,3 | 0,6 | 1 | 1,2 |
| 7.2.1 | Magnesium | | 200 | 0,3 | 0,6 | 1 | 1,2 |
| 7.2.2 | | | 180 | 0,3 | 0,6 | 1 | 1,2 |
| 7.3.1 | Kupfer | | 220 | 0,3 | 0,6 | 1 | 1,2 |
| 7.3.2 | | | 200 | 0,3 | 0,6 | 1 | 1,2 |
| 7.3.3 | | | 180 | 0,3 | 0,6 | 1 | 1,2 |
| 7.3.4 | | | | | | | |
| 7.3.5 | | | | | | | |
| 7.3.6 | | | | | | | |
| 7.4.1 | CuZn (Messing) | | 140 | 0,3 | 0,6 | 1 | 1,2 |
| 7.4.2 | | | 200 | 0,3 | 0,6 | 1 | 1,2 |
| 7.5.1 | CuSn (Bronze) | | 120 | 0,3 | 0,6 | 1 | 1,2 |
| 7.5.2 | | | 200 | 0,3 | 0,6 | 1 | 1,2 |
| 7.6.1 | CuAlFe (Ampco) | | | | | | |
| 7.6.2 | | | | | | | |
| 7.8.1 | Titan | | 60 | 0,2 | 0,4 | 0,7 | 0,9 |
| 7.8.2 | | | 60 | 0,2 | 0,4 | 0,7 | 0,9 |
| 7.8.3 | | | 30 | 0,15 | 0,25 | 0,45 | 0,6 |

# W0607, beschichtet

HSC Sackloch-Reibahle

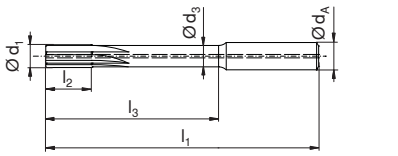


UN | HSC SLR

$\lambda_S = 0°$ | $d_1$=H7 $d_A$=h6 | A | E

SCPP625






| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|
| 3,97 | HSC-SLR.UN.0607.0397H7.29.IK.HA | 6 | 3,73 | 75 | 12 | 35 | 6 | W0607039750 |
| 3,98 | HSC-SLR.UN.0607.0398H7.29.IK.HA | 6 | 3,74 | 75 | 12 | 35 | 6 | W0607039850 |
| 3,99 | HSC-SLR.UN.0607.0399H7.29.IK.HA | 6 | 3,75 | 75 | 12 | 35 | 6 | W0607039950 |
| 4,0 | HSC-SLR.UN.0607.0400H7.29.IK.HA | 6 | 3,76 | 75 | 12 | 35 | 6 | W0607040050 |
| 4,01 | HSC-SLR.UN.0607.0401H7.29.IK.HA | 6 | 3,77 | 75 | 12 | 35 | 6 | W0607040150 |
| 4,02 | HSC-SLR.UN.0607.0402H7.29.IK.HA | 6 | 3,78 | 75 | 12 | 35 | 6 | W0607040250 |
| 4,03 | HSC-SLR.UN.0607.0403H7.29.IK.HA | 6 | 3,79 | 75 | 12 | 35 | 6 | W0607040350 |
| 4,97 | HSC-SLR.UN.0607.0497H7.27.IK.HA | 6 | 4,67 | 75 | 12 | 35 | 6 | W0607049750 |
| 4,98 | HSC-SLR.UN.0607.0498H7.27.IK.HA | 6 | 4,68 | 75 | 12 | 35 | 6 | W0607049850 |
| 4,99 | HSC-SLR.UN.0607.0499H7.27.IK.HA | 6 | 4,69 | 75 | 12 | 35 | 6 | W0607049950 |
| 5,0 | HSC-SLR.UN.0607.0500H7.27.IK.HA | 6 | 4,7 | 75 | 12 | 35 | 6 | W0607050050 |
| 5,01 | HSC-SLR.UN.0607.0501H7.27.IK.HA | 6 | 4,71 | 75 | 12 | 35 | 6 | W0607050150 |
| 5,02 | HSC-SLR.UN.0607.0502H7.27.IK.HA | 6 | 4,72 | 75 | 12 | 35 | 6 | W0607050250 |
| 5,03 | HSC-SLR.UN.0607.0503H7.27.IK.HA | 6 | 4,73 | 75 | 12 | 35 | 6 | W0607050350 |
| 5,97 | HSC-SLR.UN.0607.0597H7.26.IK.HA | 6 | 5,61 | 75 | 12 | 35 | 6 | W0607059750 |
| 5,98 | HSC-SLR.UN.0607.0598H7.26.IK.HA | 6 | 5,62 | 75 | 12 | 35 | 6 | W0607059850 |
| 5,99 | HSC-SLR.UN.0607.0599H7.26.IK.HA | 6 | 5,63 | 75 | 12 | 35 | 6 | W0607059950 |
| 6,0 | HSC-SLR.UN.0607.0600H7.26.IK.HA | 6 | 5,64 | 75 | 12 | 35 | 6 | W0607060050 |
| 6,01 | HSC-SLR.UN.0607.0601H7.26.IK.HA | 6 | 5,65 | 75 | 12 | 35 | 6 | W0607060150 |
| 6,02 | HSC-SLR.UN.0607.0602H7.26.IK.HA | 6 | 5,66 | 75 | 12 | 35 | 6 | W0607060250 |
| 6,03 | HSC-SLR.UN.0607.0603H7.26.IK.HA | 6 | 5,67 | 75 | 12 | 35 | 6 | W0607060350 |
| 7,97 | HSC-SLR.UN.0607.0797H7.48.IK.HA | 8 | 7,49 | 100 | 16 | 60 | 6 | W0607079750 |
| 7,98 | HSC-SLR.UN.0607.0798H7.48.IK.HA | 8 | 7,5 | 100 | 16 | 60 | 6 | W0607079850 |
| 7,99 | HSC-SLR.UN.0607.0799H7.48.IK.HA | 8 | 7,51 | 100 | 16 | 60 | 6 | W0607079950 |
| 8,0 | HSC-SLR.UN.0607.0800H7.48.IK.HA | 8 | 7,52 | 100 | 16 | 60 | 6 | W0607080050 |
| 8,01 | HSC-SLR.UN.0607.0801H7.48.IK.HA | 8 | 7,53 | 100 | 16 | 60 | 6 | W0607080150 |
| 8,02 | HSC-SLR.UN.0607.0802H7.48.IK.HA | 8 | 7,54 | 100 | 16 | 60 | 6 | W0607080250 |
| 8,03 | HSC-SLR.UN.0607.0803H7.48.IK.HA | 8 | 7,55 | 100 | 16 | 60 | 6 | W0607080350 |
| 9,97 | HSC-SLR.UN.0607.0997H7.61.IK.HA | 10 | 9,37 | 120 | 20 | 76 | 6 | W0607099750 |
| 9,98 | HSC-SLR.UN.0607.0998H7.61.IK.HA | 10 | 9,38 | 120 | 20 | 76 | 6 | W0607099850 |
| 9,99 | HSC-SLR.UN.0607.0999H7.61.IK.HA | 10 | 9,39 | 120 | 20 | 76 | 6 | W0607099950 |
| 10,0 | HSC-SLR.UN.0607.1000H7.61.IK.HA | 10 | 9,4 | 120 | 20 | 76 | 6 | W0607100050 |
| 10,01 | HSC-SLR.UN.0607.1001H7.61.IK.HA | 10 | 9,41 | 120 | 20 | 76 | 6 | W0607100150 |
| 10,02 | HSC-SLR.UN.0607.1002H7.61.IK.HA | 10 | 9,42 | 120 | 20 | 76 | 6 | W0607100250 |
| 10,03 | HSC-SLR.UN.0607.1003H7.61.IK.HA | 10 | 9,43 | 120 | 20 | 76 | 6 | W0607100350 |
| 11,97 | HSC-SLR.UN.0607.1197H7.53.IK.HA | 12 | 11,25 | 120 | 20 | 71 | 6 | W0607119750 |
| 11,98 | HSC-SLR.UN.0607.1198H7.53.IK.HA | 12 | 11,26 | 120 | 20 | 71 | 6 | W0607119850 |
| 11,99 | HSC-SLR.UN.0607.1199H7.53.IK.HA | 12 | 11,27 | 120 | 20 | 71 | 6 | W0607119950 |
| 12,0 | HSC-SLR.UN.0607.1200H7.53.IK.HA | 12 | 11,28 | 120 | 20 | 71 | 6 | W0607120050 |
| 12,01 | HSC-SLR.UN.0607.1201H7.53.IK.HA | 12 | 11,29 | 120 | 20 | 71 | 6 | W0607120150 |
| 12,02 | HSC-SLR.UN.0607.1202H7.53.IK.HA | 12 | 11,3 | 120 | 20 | 71 | 6 | W0607120250 |
| 12,03 | HSC-SLR.UN.0607.1203H7.53.IK.HA | 12 | 11,31 | 120 | 20 | 71 | 6 | W0607120350 |
| 16,0 | HSC-SLR.UN.0607.1600H7.74.IK.HA | 16 | 15,04 | 150 | 25 | 98 | 6 | W0607160050 |
| 18,0 | HSC-SLR.UN.0607.1800H7.71.IK.HA | 18 | 16,92 | 150 | 25 | 98 | 6 | W0607180050 |
| 20,0 | HSC-SLR.UN.0607.2000H7.66.IK.HA | 20 | 18,8 | 150 | 25 | 96 | 6 | W0607200050 |

# W0603, beschichtet

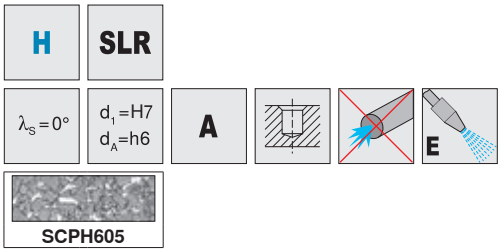
Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 4,0 | f [mm/U] > Ø 4,0 = Ø 8,0 | f [mm/U] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 20 | 0,1 | 0,2 | 0,238 |
| 1.1.2 | | | 19 | 0,08 | 0,16 | 0,195 |
| 1.2.1 | Baustahl | | 16 | 0,1 | 0,2 | 0,238 |
| 1.2.2 | | | 14 | 0,08 | 0,16 | 0,195 |
| 1.2.3 | | | 12 | 0,075 | 0,15 | 0,175 |
| 1.3.1 | Federstahl | | 14 | 0,075 | 0,15 | 0,175 |
| 1.3.2 | | | 12 | 0,075 | 0,15 | 0,175 |
| 1.3.3 | | | | | | |
| 2.1.1 | Einsatzstahl | | 16 | 0,1 | 0,2 | 0,238 |
| 2.1.2 | | | 15 | 0,08 | 0,16 | 0,195 |
| 2.1.3 | | | 14 | 0,08 | 0,16 | 0,195 |
| 2.2.1 | Nitrierstahl | | 16 | 0,1 | 0,2 | 0,238 |
| 2.2.2 | | | 12 | 0,075 | 0,15 | 0,175 |
| 2.3.1 | Vergütungsstahl | | 13 | 0,08 | 0,16 | 0,195 |
| 2.3.2 | | | 12 | 0,075 | 0,15 | 0,175 |
| 2.3.3 | | | 13 | 0,08 | 0,16 | 0,195 |
| 2.3.4 | | | 12 | 0,075 | 0,15 | 0,175 |
| 2.3.5 | | | 11 | 0,063 | 0,125 | 0,15 |
| 2.3.6 | | | 10 | 0,063 | 0,125 | 0,15 |
| 3.1.1 | Werkzeugstahl unlegiert | | 11 | 0,075 | 0,15 | 0,175 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 13 | 0,08 | 0,16 | 0,195 |
| 3.2.2 | | | 12 | 0,08 | 0,16 | 0,195 |
| 3.2.3 | | | 11 | 0,075 | 0,15 | 0,175 |
| 3.2.4 | | | 10 | 0,063 | 0,125 | 0,15 |
| 3.2.5 | | | 9 | 0,063 | 0,125 | 0,15 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 12 | 0,08 | 0,16 | 0,195 |
| 3.3.2 | | | 11 | 0,075 | 0,15 | 0,175 |
| 3.3.3 | | | 10 | 0,063 | 0,125 | 0,15 |
| 3.3.4 | | | 9 | 0,063 | 0,125 | 0,15 |
| 3.3.5 | | | 9 | 0,063 | 0,125 | 0,15 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | 8 | 0,075 | 0,15 | 0,175 |
| 3.5.2 | | 55–58 HRC | 8 | 0,063 | 0,125 | 0,15 |
| 3.5.3 | | 58–60 HRC | 7 | 0,063 | 0,125 | 0,15 |
| 3.5.4 | | 60–62 HRC | 6 | 0,05 | 0,1 | 0,113 |
| 3.5.5 | | 62–64 HRC | 5 | 0,05 | 0,1 | 0,113 |
| 4.1.1 | rostfreier Stahl | | 11 | 0,063 | 0,125 | 0,15 |
| 4.1.2 | | | 8 | 0,05 | 0,1 | 0,113 |
| 4.1.3 | | | 9 | 0,063 | 0,125 | 0,15 |
| 4.1.4 | | | | | | |
| 4.1.5 | | | 11 | 0,063 | 0,125 | 0,15 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | |
| 4.2.2 | | | | | | |
| 4.2.3 | | | | | | |
| 4.2.4 | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 16 | 0,063 | 0,125 | 0,15 |
| 5.1.2 | | | 15 | 0,08 | 0,16 | 0,195 |
| 5.1.3 | | | 11 | 0,063 | 0,125 | 0,15 |
| 5.2.1 | rostfreier Stahlguss | | | | | |
| 5.2.2 | | | 11 | 0,063 | 0,125 | 0,15 |
| 6.1.1 | GG mit lamellarem Graphit | | 17 | 0,125 | 0,25 | 0,325 |
| 6.1.2 | | | 14 | 0,113 | 0,225 | 0,275 |
| 6.1.3 | | | 12 | 0,1 | 0,2 | 0,238 |
| 6.1.4 | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 17 | 0,113 | 0,225 | 0,275 |
| 6.2.2 | | | 14 | 0,1 | 0,2 | 0,238 |
| 6.2.3 | | | 13 | 0,1 | 0,2 | 0,238 |
| 6.3.1 | GTW weisser Temperguss | | 17 | 0,113 | 0,225 | 0,275 |
| 6.3.2 | | | 14 | 0,1 | 0,2 | 0,238 |
| 6.4.1 | GTS schwarzer Temperguss | | 17 | 0,113 | 0,225 | 0,275 |
| 6.4.2 | | | 14 | 0,1 | 0,2 | 0,238 |
| 7.1.1 | Aluminium | | | | | |
| 7.1.2 | | | | | | |
| 7.1.3 | | | | | | |
| 7.1.4 | | | | | | |
| 7.1.5 | | | | | | |
| 7.1.6 | | | | | | |
| 7.2.1 | Magnesium | | | | | |
| 7.2.2 | | | | | | |
| 7.3.1 | Kupfer | | | | | |
| 7.3.2 | | | | | | |
| 7.3.3 | | | | | | |
| 7.3.4 | | | | | | |
| 7.3.5 | | | | | | |
| 7.3.6 | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | |
| 7.4.2 | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | |
| 7.5.2 | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | |
| 7.6.2 | | | | | | |
| 7.8.1 | Titan | | | | | |
| 7.8.2 | | | | | | |
| 7.8.3 | | | | | | |

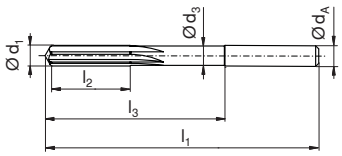
# W0603, beschichtet

Sackloch-Reibahle








| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|
| 2,97 | SLR.H.0603.0297H7.25.HA | 4 | 2,81 | 64 | 17 | 30 | 4 | W0603029770 |
| 2,98 | SLR.H.0603.0298H7.25.HA | 4 | 2,81 | 64 | 17 | 30 | 4 | W0603029870 |
| 2,99 | SLR.H.0603.0299H7.25.HA | 4 | 2,81 | 64 | 17 | 30 | 4 | W0603029970 |
| 3,0 | SLR.H.0603.0300H7.25.HA | 4 | 2,81 | 64 | 17 | 30 | 4 | W0603030070 |
| 3,01 | SLR.H.0603.0301H7.25.HA | 4 | 2,96 | 64 | 17 | 30 | 4 | W0603030170 |
| 3,02 | SLR.H.0603.0302H7.25.HA | 4 | 2,96 | 64 | 17 | 30 | 4 | W0603030270 |
| 3,03 | SLR.H.0603.0303H7.25.HA | 4 | 2,96 | 64 | 17 | 30 | 4 | W0603030370 |
| 3,97 | SLR.H.0603.0397H7.37.HA | 4 | 3,71 | 77 | 21 | 43 | 4 | W0603039770 |
| 3,98 | SLR.H.0603.0398H7.37.HA | 4 | 3,71 | 77 | 21 | 43 | 4 | W0603039870 |
| 3,99 | SLR.H.0603.0399H7.37.HA | 4 | 3,71 | 77 | 21 | 43 | 4 | W0603039970 |
| 4,0 | SLR.H.0603.0400H7.37.HA | 4 | 3,71 | 77 | 21 | 43 | 4 | W0603040070 |
| 4,01 | SLR.H.0603.0401H7.37.HA | 4 | 3,96 | 77 | 21 | 43 | 4 | W0603040170 |
| 4,02 | SLR.H.0603.0402H7.37.HA | 4 | 3,96 | 77 | 21 | 43 | 4 | W0603040270 |
| 4,03 | SLR.H.0603.0403H7.37.HA | 4 | 3,96 | 77 | 21 | 43 | 4 | W0603040370 |
| 4,97 | SLR.H.0603.0497H7.43.HA | 6 | 4,46 | 93 | 26 | 51 | 6 | W0603049770 |
| 4,98 | SLR.H.0603.0498H7.43.HA | 6 | 4,46 | 93 | 26 | 51 | 6 | W0603049870 |
| 4,99 | SLR.H.0603.0499H7.43.HA | 6 | 4,46 | 93 | 26 | 51 | 6 | W0603049970 |
| 5,0 | SLR.H.0603.0500H7.43.HA | 6 | 4,46 | 93 | 26 | 51 | 6 | W0603050070 |
| 5,01 | SLR.H.0603.0501H7.43.HA | 6 | 4,96 | 93 | 26 | 51 | 6 | W0603050170 |
| 5,02 | SLR.H.0603.0502H7.43.HA | 6 | 4,96 | 93 | 26 | 51 | 6 | W0603050270 |
| 5,03 | SLR.H.0603.0503H7.43.HA | 6 | 4,96 | 93 | 26 | 51 | 6 | W0603050370 |
| 5,97 | SLR.H.0603.0597H7.42.HA | 6 | 5,26 | 93 | 26 | 51 | 6 | W0603059770 |
| 5,98 | SLR.H.0603.0598H7.42.HA | 6 | 5,26 | 93 | 26 | 51 | 6 | W0603059870 |
| 5,99 | SLR.H.0603.0599H7.42.HA | 6 | 5,26 | 93 | 26 | 51 | 6 | W0603059970 |
| 6,0 | SLR.H.0603.0600H7.42.HA | 6 | 5,26 | 93 | 26 | 51 | 6 | W0603060070 |
| 6,01 | SLR.H.0603.0601H7.42.HA | 6 | 5,96 | 93 | 26 | 51 | 6 | W0603060170 |
| 6,02 | SLR.H.0603.0602H7.42.HA | 6 | 5,96 | 93 | 26 | 51 | 6 | W0603060270 |
| 6,03 | SLR.H.0603.0603H7.42.HA | 6 | 5,96 | 93 | 26 | 51 | 6 | W0603060370 |
| 7,0 | SLR.H.0603.0700H7.56.HA | 8 | 6,66 | 109 | 31 | 67 | 6 | W0603070070 |
| 7,97 | SLR.H.0603.0797H7.63.HA | 8 | 7,46 | 117 | 33 | 75 | 6 | W0603079770 |
| 7,98 | SLR.H.0603.0798H7.63.HA | 8 | 7,46 | 117 | 33 | 75 | 6 | W0603079870 |
| 7,99 | SLR.H.0603.0799H7.63.HA | 8 | 7,46 | 117 | 33 | 75 | 6 | W0603079970 |
| 8,0 | SLR.H.0603.0800H7.63.HA | 8 | 7,46 | 117 | 33 | 75 | 6 | W0603080070 |
| 8,01 | SLR.H.0603.0801H7.63.HA | 8 | 7,9 | 117 | 33 | 75 | 6 | W0603080170 |
| 8,02 | SLR.H.0603.0802H7.63.HA | 8 | 7,9 | 117 | 33 | 75 | 6 | W0603080270 |
| 8,03 | SLR.H.0603.0803H7.63.HA | 8 | 7,9 | 117 | 33 | 75 | 6 | W0603080370 |
| 9,0 | SLR.H.0603.0900H7.65.HA | 10 | 8,4 | 125 | 36 | 79 | 6 | W0603090070 |
| 9,97 | SLR.H.0603.0997H7.72.HA | 10 | 9,4 | 133 | 41 | 87 | 6 | W0603099770 |
| 9,98 | SLR.H.0603.0998H7.72.HA | 10 | 9,4 | 133 | 41 | 87 | 6 | W0603099870 |
| 9,99 | SLR.H.0603.0999H7.72.HA | 10 | 9,4 | 133 | 41 | 87 | 6 | W0603099970 |
| 10,0 | SLR.H.0603.1000H7.72.HA | 10 | 9,4 | 133 | 41 | 87 | 6 | W0603100070 |
| 10,01 | SLR.H.0603.1001H7.72.HA | 10 | 9,9 | 133 | 41 | 87 | 6 | W0603100170 |
| 10,02 | SLR.H.0603.1002H7.72.HA | 10 | 9,9 | 133 | 41 | 87 | 6 | W0603100270 |
| 10,03 | SLR.H.0603.1003H7.72.HA | 10 | 9,9 | 133 | 41 | 87 | 6 | W0603100370 |
| 11,97 | SLR.H.0603.1197H7.81.HA | 12 | 11,6 | 150 | 44 | 99 | 6 | W0603119770 |
| 11,98 | SLR.H.0603.1198H7.81.HA | 12 | 11,6 | 150 | 44 | 99 | 6 | W0603119870 |
| 11,99 | SLR.H.0603.1199H7.81.HA | 12 | 11,6 | 150 | 44 | 99 | 6 | W0603119970 |
| 12,0 | SLR.H.0603.1200H7.81.HA | 12 | 11,6 | 150 | 44 | 99 | 6 | W0603120070 |

# W0603, beschichtet

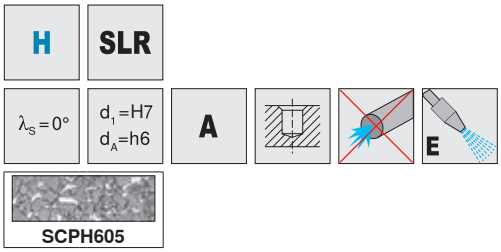
Schnittdatenempfehlung



| Index | Materialbezeichnung | | $V_c$ [m/min] | f [mm/U] = Ø 3,0 = Ø 4,0 | f [mm/U] > Ø 4,0 = Ø 8,0 | f [mm/U] > Ø 8,0 = Ø 12,0 |
|---|---|---|---|---|---|---|
| 1.1.1 | Automatenstahl | | 20 | 0,1 | 0,2 | 0,238 |
| 1.1.2 | | | 19 | 0,08 | 0,16 | 0,195 |
| 1.2.1 | Baustahl | | 16 | 0,1 | 0,2 | 0,238 |
| 1.2.2 | | | 14 | 0,08 | 0,16 | 0,195 |
| 1.2.3 | | | 12 | 0,075 | 0,15 | 0,175 |
| 1.3.1 | Federstahl | | 14 | 0,075 | 0,15 | 0,175 |
| 1.3.2 | | | 12 | 0,075 | 0,15 | 0,175 |
| 1.3.3 | | | | | | |
| 2.1.1 | Einsatzstahl | | 16 | 0,1 | 0,2 | 0,238 |
| 2.1.2 | | | 15 | 0,08 | 0,16 | 0,195 |
| 2.1.3 | | | 14 | 0,08 | 0,16 | 0,195 |
| 2.2.1 | Nitrierstahl | | 16 | 0,1 | 0,2 | 0,238 |
| 2.2.2 | | | 12 | 0,075 | 0,15 | 0,175 |
| 2.3.1 | Vergütungsstahl | | 13 | 0,08 | 0,16 | 0,195 |
| 2.3.2 | | | 12 | 0,075 | 0,15 | 0,175 |
| 2.3.3 | | | 13 | 0,08 | 0,16 | 0,195 |
| 2.3.4 | | | 12 | 0,075 | 0,15 | 0,175 |
| 2.3.5 | | | 11 | 0,063 | 0,125 | 0,15 |
| 2.3.6 | | | 10 | 0,063 | 0,125 | 0,15 |
| 3.1.1 | Werkzeugstahl unlegiert | | 11 | 0,075 | 0,15 | 0,175 |
| 3.2.1 | Werkzeugstahl für Kaltarbeit | | 13 | 0,08 | 0,16 | 0,195 |
| 3.2.2 | | | 12 | 0,08 | 0,16 | 0,195 |
| 3.2.3 | | | 11 | 0,075 | 0,15 | 0,175 |
| 3.2.4 | | | 10 | 0,063 | 0,125 | 0,15 |
| 3.2.5 | | | 9 | 0,063 | 0,125 | 0,15 |
| 3.3.1 | Werkzeugstahl für Warmarbeit | | 12 | 0,08 | 0,16 | 0,195 |
| 3.3.2 | | | 11 | 0,075 | 0,15 | 0,175 |
| 3.3.3 | | | 10 | 0,063 | 0,125 | 0,15 |
| 3.3.4 | | | 9 | 0,063 | 0,125 | 0,15 |
| 3.3.5 | | | 9 | 0,063 | 0,125 | 0,15 |
| 3.5.1 | gehärteter Werkzeugstahl | < 55 HRC | 8 | 0,075 | 0,15 | 0,175 |
| 3.5.2 | | 55–58 HRC | 8 | 0,063 | 0,125 | 0,15 |
| 3.5.3 | | 58–60 HRC | 7 | 0,063 | 0,125 | 0,15 |
| 3.5.4 | | 60–62 HRC | 6 | 0,05 | 0,1 | 0,113 |
| 3.5.5 | | 62–64 HRC | 5 | 0,05 | 0,1 | 0,113 |
| 4.1.1 | rostfreier Stahl | | 11 | 0,063 | 0,125 | 0,15 |
| 4.1.2 | | | 8 | 0,05 | 0,1 | 0,113 |
| 4.1.3 | | | 9 | 0,063 | 0,125 | 0,15 |
| 4.1.4 | | | | | | |
| 4.1.5 | | | 11 | 0,063 | 0,125 | 0,15 |
| 4.2.1 | hochwarmfeste Legierungen | | | | | |
| 4.2.2 | | | | | | |
| 4.2.3 | | | | | | |
| 4.2.4 | | | | | | |
| 5.1.1 | konventioneller Stahlguss | | 16 | 0,063 | 0,125 | 0,15 |
| 5.1.2 | | | 15 | 0,08 | 0,16 | 0,195 |
| 5.1.3 | | | 11 | 0,063 | 0,125 | 0,15 |
| 5.2.1 | rostfreier Stahlguss | | | | | |
| 5.2.2 | | | 11 | 0,063 | 0,125 | 0,15 |
| 6.1.1 | GG mit lamellarem Graphit | | 17 | 0,125 | 0,25 | 0,325 |
| 6.1.2 | | | 14 | 0,113 | 0,225 | 0,275 |
| 6.1.3 | | | 12 | 0,1 | 0,2 | 0,238 |
| 6.1.4 | | | | | | |
| 6.2.1 | GGG mit Kugelgraphit | | 17 | 0,113 | 0,225 | 0,275 |
| 6.2.2 | | | 14 | 0,1 | 0,2 | 0,238 |
| 6.2.3 | | | 13 | 0,1 | 0,2 | 0,238 |
| 6.3.1 | GTW weisser Temperguss | | 17 | 0,113 | 0,225 | 0,275 |
| 6.3.2 | | | 14 | 0,1 | 0,2 | 0,238 |
| 6.4.1 | GTS schwarzer Temperguss | | 17 | 0,113 | 0,225 | 0,275 |
| 6.4.2 | | | 14 | 0,1 | 0,2 | 0,238 |
| 7.1.1 | Aluminium | | | | | |
| 7.1.2 | | | | | | |
| 7.1.3 | | | | | | |
| 7.1.4 | | | | | | |
| 7.1.5 | | | | | | |
| 7.1.6 | | | | | | |
| 7.2.1 | Magnesium | | | | | |
| 7.2.2 | | | | | | |
| 7.3.1 | Kupfer | | | | | |
| 7.3.2 | | | | | | |
| 7.3.3 | | | | | | |
| 7.3.4 | | | | | | |
| 7.3.5 | | | | | | |
| 7.3.6 | | | | | | |
| 7.4.1 | CuZn (Messing) | | | | | |
| 7.4.2 | | | | | | |
| 7.5.1 | CuSn (Bronze) | | | | | |
| 7.5.2 | | | | | | |
| 7.6.1 | CuAlFe (Ampco) | | | | | |
| 7.6.2 | | | | | | |
| 7.8.1 | Titan | | | | | |
| 7.8.2 | | | | | | |
| 7.8.3 | | | | | | |

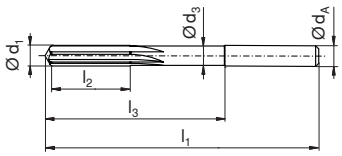
# W0603, beschichtet

Sackloch-Reibahle








| $d_1$ [mm] | Type, Bezeichnung | $d_A$ [mm] | $d_3$ [mm] | $l_1$ [mm] | $l_2$ [mm] | $l_3$ [mm] | z | HA Material |
|---|---|---|---|---|---|---|---|---|
| 12,01 | SLR.H.0603.1201H7.81.HA | 12 | 11,6 | 150 | 44 | 99 | 6 | W0603120170 |
| 12,02 | SLR.H.0603.1202H7.81.HA | 12 | 11,6 | 150 | 44 | 99 | 6 | W0603120270 |
| 12,03 | SLR.H.0603.1203H7.81.HA | 12 | 11,6 | 150 | 44 | 99 | 6 | W0603120370 |



# Technische Informationen

## Werkstofftabelle



| Material-Haupt-gruppe | Material-Unter-gruppe | Qualität | StNr | DIN | AFNOR | UNI | BS | JIS | SS | GOST | UNS | USA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 Automaten-, Bau-, Federstahl | 1.1 Automatenstahl | 1.1.1 bis 500 N/mm² | 1.0711 | 9 S 20 | | CF 9 S 22 | 220 M 07 | SUM 21 | | | G 12120 | 1212 |
| | | | 1.0715 | 9 SMn 28 | S 250 | CF 9 SMn 28 | 230 M 07 | SUM 22 | 1912 | | G 12130 | 1213 |
| | | | 1.0718 | 9 SMnPb 28 | S 250 Pb | CF 9 SMnPb 28 | | SUM 22 L | 1914 | | G 12134 | 12 L 13 |
| | | | 1.0721 | 10 S 20 | 10 F 1 | CF 10 S 20 | 210 M 15 | | | | | 1108 |
| | | | 1.0722 | 10 SPb 20 | 10 PbF 2 | CF 10 SPb 20 | | | | | | 11 L 08 |
| | | | 1.0723 | 15 S 20 | | | 210 A 15 | SUM 32 | 1922 | | | |
| | | | 1.0736 | 9 SMn 36 | S 300 | CF 9 SMn 36 | 240 M 07 | | | | G 12150 | 1215 |
| | | | 1.0737 | 9 SMnPb 36 | S 300 Pb | CF 9 SMnPb 36 | | | 1926 | | G 12144 | 12 L 14 |
| | | 1.1.2 über 500 N/mm² | 1.0726 | 35 S 20 | 35 MF 4 | | 212 M 36 | | 1957 | | G 11400 | 1140 |
| | | | 1.0727 | 45 S 20 | 45 MF 4 | | 212 M 44 | | 1973 | | G 11460 | 1146 |
| | | | 1.0728 | 60 S 20 | 60 MF 4 | | | | | | | |
| | 1.2 Baustahl | 1.2.1 unlegiert bis 500 N/mm² | 1.0037 | St 37-2 | | | | STKM 12 C | | | | |
| | | | 1.0044 | St 44-2 | E 28-2 | Fe 430 B FN | 4360-43 B | SM 41 B | 1412 | | | A 570 Gr. 40 |
| | | | 1.0116 | St 37-3 | E 24-3; E 24-4 | Fe 360 D FF | 4360-40 C | | 1312; 1313 | St 3 kp; ps; sp | | A 573 Gr. 58 |
| | | | 1.0144 | St 44-3 | E 28-3; E 28-4 | Fe 430 D FF | 4360-43 C | SM 41 C | 1412; 1414 | St 4 kp; ps; sp | | A 573 Gr. 70 |
| | | 1.2.2 unlegiert über 500 N/mm² | 1.0050 | St 50-2 | A 50-2 | Fe 490 | 4360-50 B | SS 50 | 2172 | BSt 5 ps; sp | | A 570 Gr. 50 |
| | | | 1.0060 | St 60-2 | A 60-2 | Fe 590; Fe 60-2 | 4360-SSE; SSC | SM 58 | | St 6 ps; sp | | |
| | | | 1.0570 | St 52-3 | E 36-3; E 36-4 | Fe 510 B; C; D | 4360-50 B | SM 50 YA | 2132 | 17 GS | | |
| | | 1.2.3 legiert | 1.5415 | 15 Mo 3 | 15 D 3 | 16 Mo 3 | 1501-240 | | 2912 | | | A 204 Gr. A |
| | | | 1.5423 | 16 Mo 5 | | 16 Mo 5 | 1503-245-420 | | | | G 45200 | 4520 |
| | | | 1.5622 | 14 Ni 6 | 16 N 6 | 14 Ni 6 | | | | | | A 350-LF 5 |
| | | | 1.5680 | 12 Ni 19 | Z 18 N 5 | | | | | | | 2515 |
| | | | 1.7335 | 13 CrMo 4 4 | 15 CD 3.5 | 14 CrMo 4 5 | 1501-620 Gr. 27 | | 2216 | 12ChM; 15ChM | | A 182-F11; F12 |
| | | | 1.7337 | 16 CrMo 4 4 | 15 CD 4.5 | 14 CrMo 4 5 | 1501-620 Gr. 27 | | 2216 | 15ChM | | A 387 Gr. 12 Cl. 2 |
| | | | 1.7380 | 10 CrMo 9 10 | 10 CD 9.10 | 12 CrMo 9 10 | 1501-622 Gr. 31; 45 | | 2218 | | J 21890 | A 182-F22 |
| | | | 1.7709 | 21 CrMoV 5 7 | | | | | | | | |
| | | | 1.7715 | 14 MoV 6 3 | | | 1503-660-440 | | | | | |
| | | | 1.7735 | 14 CrMoV 6 9 | 15 CDV 6 | | | | | | | |
| | 1.3 Federstahl | 1.3.1 geglüht (bis 250 HB) | 1.0904 | 55 Si 7 | 55 S 7 | 55 Si 8 | 250 A 53 | | 2085; 2090 | 55S2 | | 9255 |
| | | | 1.0961 | 60 SiCr 7 | 60 SC 7 | 60 SiCr 8 | | SUP 7 | | | | 9262 |
| | | | 1.1231 | Ck 67 | XC 68 | C 70 | 060 A 67 | | 1770 | 70 | G 10700 | 1070 |
| | | | 1.1248 | Ck 75 | XC 75 | C 75 | 060 A 78 | | 1774; 1778 | 75 | G 10780 | 1078; 1080 |
| | | | 1.1274 | Ck 101 | XC 100 | | 060 A 96 | SUP 4 | 1870 | | G 10950 | 1095 |
| | | | 1.2101 | 62 SiMnCr 4 | | | | | | | | |
| | | | 1.2103 | 58 SiCr 8 | | | | | | | | |
| | | | 1.7103 | 67 SiCr 5 | | | | | | | | |
| | | | 1.7176 | 55 Cr 3 | 55 C 3 | 55 Cr 3 | 527 A 60 | SUP 9 (A) | 2253 | 50ChGA | G 51550 | 5155 |
| | | | 1.8159 | 50 CrV 4 | 50 CV 4 | 51 CrV 4 | 735 A 50 | SUP 10 | 2230 | 50ChGFA | G 61500 | 6150 |
| | | 1.3.2 naturhart | 1.0904 | 55 Si 7 | 55 S 7 | 55 Si 8 | 250 A 53 | | 2085; 2090 | 55S2 | | 9255 |
| | | | 1.0961 | 60 SiCr 7 | 60 SC 7 | 60 SiCr 8 | | SUP 7 | | | | 9262 |
| | | | 1.1231 | Ck 67 | XC 68 | C 70 | 060 A 67 | | 1770 | 70 | G 10700 | 1070 |
| | | | 1.1248 | Ck 75 | XC 75 | C 75 | 060 A 78 | | 1774; 1778 | 75 | G 10780 | 1078; 1080 |
| | | | 1.1274 | Ck 101 | XC 100 | | 060 A 96 | SUP 4 | 1870 | | G 10950 | 1095 |
| | | | 1.2101 | 62 SiMnCr 4 | | | | | | | | |
| | | | 1.2103 | 58 SiCr 8 | | | | | | | | |
| | | | 1.7103 | 67 SiCr 5 | | | | | | | | |
| | | | 1.7176 | 55 Cr 3 | 55 C 3 | 55 Cr 3 | 527 A 60 | SUP 9 (A) | 2253 | 50ChGA | G 51550 | 5155 |
| | | | 1.8159 | 50 CrV 4 | 50 CV 4 | 51 CrV 4 | 735 A 50 | SUP 10 | 2230 | 50ChGFA | G 61500 | 6150 |
| | | 1.3.3 federhart | 1.0904 | 55 Si 7 | 55 S 7 | 55 Si 8 | 250 A 53 | | 2085; 2090 | 55S2 | | 9255 |
| | | | 1.0961 | 60 SiCr 7 | 60 SC 7 | 60 SiCr 8 | | SUP 7 | | | | 9262 |
| | | | 1.1231 | Ck 67 | XC 68 | C 70 | 060 A 67 | | 1770 | 70 | G 10700 | 1070 |
| | | | 1.1248 | Ck 75 | XC 75 | C 75 | 060 A 78 | | 1774; 1778 | 75 | G 10780 | 1078; 1080 |
| | | | 1.1274 | Ck 101 | XC 100 | | 060 A 96 | SUP 4 | 1870 | | G 10950 | 1095 |

| Material-Haupt-gruppe | Material-Unter-gruppe | Qualität | StNr | DIN | AFNOR | UNI | BS | JIS | SS | GOST | UNS | USA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 Automaten-, Bau-, Federstahl | 1.3 Federstahl | federhart | 1.2101 | 62 SiMnCr 4 | | | | | | | | |
| | | | 1.2103 | 58 SiCr 8 | | | | | | | | |
| | | | 1.7103 | 67 SiCr 5 | | | | | | | | |
| | | | 1.7176 | 55 Cr 3 | 55 C 3 | 55 Cr 3 | 527 A 60 | SUP 9 (A) | 2253 | 50ChGA | G 51550 | 5155 |
| | | | 1.8159 | 50 CrV 4 | 50 CV 4 | 51 CrV 4 | 735 A 50 | SUP 10 | 2230 | 50ChGFA | G 61500 | 6150 |
| 2 Einsatz-, Nitrier-, Vergütungsstahl | 2.1 Einsatzstahl | 2.1.1 bis 150 HB | 1.0301 | C 10 | AF 34 C 10; XC 10 | C 10 | 045 M 10 | S 10 C | | 10 | G 10100 | 1010 |
| | | | 1.0401 | C 15 | AF3 7 C 12; XC 18 | C 15; C 16 | 080 M 15 | | 1350 | | G 10170 | 1015 |
| | | | 1.1121 | Ck 10 | XC 10 | C 10 | 045 M 10 | S 10 C; S 9 CK | 1265 | 08; 10 | G 10100 | 1010 |
| | | | 1.1141 | Ck 15 | XC 15; XC 18 | C 15; C 16 | 080 M 15 | S 15 C; S 15 CK | 1370 | 15 | G 10170 | 1015 |
| | | 2.1.2 150 - 200 HB | 1.7012 | 13 Cr 2 | | | | | | | | |
| | | | 1.7015 | 15 Cr 3 | 12 C 3 | | 523 M 15 | SCr 415 (H) | | 15Ch | G 50150 | 5015 |
| | | 2.1.3 über 200 HB | 1.5732 | 14 NiCr 10 | 14 NC 11 | 16 NiCr 11 | | SNC 415 (H) | | | | 3415 |
| | | | 1.5752 | 14 NiCr 14 | 12 NC 15 | | 655 M 13 | SNC 815 (H) | | | G 33106 | 3310; 9314 |
| | | | 1.5860 | 14 NiCr 18 | | | | | | | | |
| | | | 1.5919 | 15 CrNi 6 | 16 NC 6 | 16 CrNi 4 | S 107 | | | | | |
| | | | 1.5920 | 18 CrNi 8 | 20 NC 6 | | | | | | | |
| | | | 1.6523 | 21 NiCrMo 2 | 20 NCD 2 | 20 NiCrMo 2 | 805 M 20 | SNCM 220 (H) | 2506 | | G 86170 | 8620 |
| | | | 1.6587 | 17 CrNiMo 6 | 18 NCD 6 | 18 NiCrMo 7 | 820 A 16 | | | | | |
| | | | 1.7131 | 16 MnCr 5 | 16 MC 4 | 16 MnCr 5 | 527 M 17 | SCR 415 | 2511 | 18ChG | G 51170 | 5115 |
| | | | 1.7139 | 16 MnCrS 5 | | | | | | | | |
| | | | 1.7147 | 20 MnCr 5 | 20 MC 5 | 20 MnCr 5 | | SMnC 420 (H) | | 18ChG | G 51200 | 5120 |
| | | | 1.7149 | 20 MnCrS 5 | | | | | | | | |
| | | | 1.7262 | 15 CrMo 5 | 12 CD 4 | 12 CrMo 4 | | SCM 415 (H) | | | | |
| | | | 1.7264 | 20 CrMo 5 | 18 CD 4 | | | SCM 421 | | | | |
| | | | 1.7271 | 23 CrMoB 3 3 | | | | | | | | |
| | | | 1.7311 | 20 CrMo 2 | | | | | | | | |
| | | | 1.7321 | 20 MoCr 4 | | | | | | | | |
| | | | 1.7323 | 20 MoCrS 4 | | | | | | | | |
| | | | 1.7325 | 25 MoCr 4 | | | | | | | | |
| | | | 1.7326 | 25 MoCrS 4 | | | | | | | | |
| | 2.2 Nitrierstahl | 2.2.1 bis 1000 N/mm² | 1.8504 | 34 CrAl 6 | | | | | | | | |
| | | | 1.8506 | 34 CrAlS 5 | | | | | | | K 23745 | |
| | | | 1.8507 | 34 CrAlMo 5 | 30 CAD 6.12 | 34 CrAlMo 7 | 905 M 31 | | | | K 23545 | A 355 Cl. D |
| | | | 1.8509 | 41 CrAlMo 7 | 40 CAD 6.12 | 41 CrAlMo 7 | 905 M 39 | SACM 645 | 2940 | 38ChMJuA | K 24065 | A 355 Cl. A |
| | | 2.2.2 über 1000 N/mm² | 1.8515 | 31 CrMo 12 | 30 CD 12 | 31 CrMo 12 | 722 M 24 | | 2240 | | | |
| | | | 1.8519 | 31 CrMoV 9 | | | | | | | | |
| | | | 1.8521 | 15 CrMoV 5 9 | | | | | | | | |
| | | | 1.8523 | 39 CrMoV 13 9 | | 36 CrMoV 13 9 | 897 M 39 | | | | | |
| | | | 1.8550 | 34 CrAlNi 7 | | | | | | | K 52440 | |
| | 2.3 Vergütungsstahl | 2.3.1 unlegiert bis 800 N/mm² | 1.0402 | C 22 | AF 42 C 20 | C 20; C 21 | 050 A 20 | | 1450 | 20 | G 10200 | 1020 |
| | | | 1.0406 | C 25 | AF 50 C 30 | C 25 | 070 M 26 | | | | | 1025 |
| | | | 1.0501 | C 35 | AF 55 C 35 | C 35 | 060 A 35 | | 1550 | 35 | G 10350 | 1035 |
| | | | 1.0503 | C 45 | AF 65 C 45 | C 45 | 080 M 46 | | 1650 | 45 | G 10430 | 1045 |
| | | | 1.0511 | C 40 | AF 60 C 40 | C 40 | | | | | | 1040 |
| | | | 1.0528 | C 30 | | | | | | | | |
| | | | 1.1151 | Ck 22 | XC 25; XC 18 | C 20 | 050 A 20 | S 20 C; S 20 CK | | 20 | | 1023 |
| | | | 1.1158 | Ck 25 | XC 25 | C 25 | 070 M 26 | S 25 C | | 25 | G 10250 | 1025 |
| | | | 1.1178 | Ck 30 | | | | | | | | |
| | | | 1.1181 | Ck 35 | XC 38 H1:XC 32 | C 35 | 080 M 36 | S 35 C | 1572 | 35 | G 10340 | 1035 |
| | | | 1.1186 | Ck 40 | XC 42 H1 | C 40 | 080 M 40 | S 40 C | | 40 | | 1040 |
| | | | 1.1191 | Ck 45 | XC 42 | C 45 | 080 M 46 | S 45 C | 1672 | 45 | G 10420 | 1045 |

# Technische Informationen

## Werkstofftabelle

| Material-Haupt-gruppe | Material-Unter-gruppe | Qualität | StNr | DIN | AFNOR | UNI | BS | JIS | SS | GOST | UNS | USA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 Einsatz-, Nitrier-, Vergütungsstahl | 2.3 Vergütungsstahl | 2.3.2 unlegiert 800 - 1000 N/mm² | 1.0535 | C 55 | AF 70 C55 | C 55 | 070 M 55 | | 1655 | 55 | | 1055 |
| | | | 1.0540 | C 50 | | | | | | | | |
| | | | 1.0601 | C 60 | CC 55 | C 60 | 080 A 62 | | | 60 | G 10600 | 1060 |
| | | | 1.1203 | Ck 55 | XC 55 | C50 | 070 M 55 | S 55 C | | 55 | | 1055 |
| | | | 1.1206 | Ck 50 | XC 48 H1 | | 080 M 50 | | | 50 | | 1050 |
| | | | 1.1221 | Ck 60 | XC 60 | C60 | 080 A 62 | S 58 C | 1665; 1678 | 60; 60G | G 10640 | 1060 |
| | | 2.3.3 legiert bis 800 N/mm² | 1.1133 | 20 Mn 5 | 20 M 5 | G 22 Mn 3 | 120 M 19 | SMnC 420 | | | G 10220 | 1022; 1518 |
| | | | 1.3505 | 100 Cr 6 | 100 C 6 | 100 Cr 6 | 534 A 99 | SUJ 2 | 2258 | SchCh 15 | G 52986 | 52100 |
| | | | 1.5120 | 38 MnSi 4 | | | | | | | | |
| | | | 1.5121 | 46 MnSi 4 | | | | | | | | |
| | | | 1.5141 | 53 MnSi 4 | | | | | | | | |
| | | | 1.5710 | 36 NiCr 6 | 35 NC 6 | | 640 A 35 | SNC 236 | | | | 3135 |
| | | | 1.6546 | 40 NiCrMo 2 2 | 40 NCD 2 | 40 NiCrMo 2 (KB) | 311-Type 7 | SNCM 240 | | 38ChGNM | G 87400 | 8740 |
| | | | 1.6565 | 40 NiCrMo 6 | | | 311-Type 6 | SNCM 439 | | 40Ch2N2MA | | 4340 |
| | | | 1.7003 | 38 Cr 2 | 38 C 2 | 38 Cr 2 | | | | | | |
| | | | 1.7006 | 46 Cr 2 | 42 C 2 | 45 Cr 2 | | | | | | 5045 |
| | | | 1.7020 | 32 Cr 2 | | | | | | | | |
| | | | 1.7030 | 28 Cr 4 | | | 530 A 30 | | | 30Ch | | 5130 |
| | | | 1.7033 | 34 Cr 4 | 32 C 4 | 34 Cr 4 (KB) | 530 A 32 | SCr 430 (H) | | 35Ch | G 51320 | 5132 |
| | | | 1.7218 | 25 CrMo 4 | 25 CD 4 | 25 CrMo 4 (KB) | 1717 CDS 110 | SCM 420; SCM 430 | 2225 | 30ChM | G 41300 | 4130 |
| | | | 1.7220 | 34 CrMo 4 | 35 CD 4 | 35 CrMo 4 | 708 A 37 | SCM 432; SCCrM 3 | 2234 | AS38ChGM | G 41350 | 4135; 4137 |
| | | | 1.7223 | 41 CrMo 4 | 42 CD 4 TS | 41 CrMo 4 | 708 M 40 | SCM 440 | 2244 | 40 ChFA | G 41420 | 4142; 4140 |
| | | | 1.7225 | 42 CrMo 4 | 42 CD 4 | 42 CrMo 4 | 708 M 40 | SCM 440 (H) | 2244 | | G 41400 | 4142; 4140 |
| | | | 1.7228 | 50 CrMo 4 | 50 CR MO4 | | 708 A 47 | SCM 445 (H) | | 50ChFA | G 41470 | 4150 |
| | | | 1.8159 | 50 CrV 4 | 50 CV 4 | 51 CrV 4 | 735 A 50 | SUP 10 | 2230 | 50ChGFA | G 61500 | 6150 |
| | | 2.3.4 legiert 800 - 1000 N/mm² | 1.1157 | 40 Mn 4 | 35 M 5 | | 150 M 36 | | | 40G | G 10390 | 1039 |
| | | | 1.1165 | 30 Mn 5 | 35 M 5 | | 120 M 36 | SMn 433 H; SCMn 2 | | 30GSL | | 1330 |
| | | | 1.1167 | 36 Mn 5 | 40 M 5 | | 150 M 36 | SMn 438 (H); SCMn 3 | 2120 | 35G2; 35GL | G 13350 | 1335 |
| | | | 1.1170 | 28 Mn 6 | 20 M 5 | C 28 Mn | 150 M 28 | SCMn 1 | | 30G | | 1330 |
| | | | 1.3561 | 44 Cr 2 | | | | | | | | |
| | | | 1.3563 | 43 CrMo 4 | | | | | | | | |
| | | | 1.3565 | 48 CrMo 4 | | | 817 M 40 | SNC 836 | | | | |
| | | | 1.5120 | 38 MnSi 4 | | | | | | | | |
| | | | 1.5121 | 46 MnSi 4 | | | | | | | | |
| | | | 1.5122 | 37 MnSi 4 | | | | | | | | |
| | | | 1.5131 | 50 MnSi 4 | | | | | | | | |
| | | | 1.5141 | 53 MnSi 4 | | | | | | | | |
| | | | 1.5223 | 42 MnV 7 | | | | | | | | |
| | | | 1.5710 | 36 NiCr 6 | 35 NC 6 | | 640 A 35 | SNC 236 | | | | 3135 |
| | | | 1.5736 | 36 NiCr 10 | 30 NC 11 | 35 NiCr 9 | | SNC 631 (H) | | | | 3435 |
| | | | 1.5755 | 31 NiCr 14 | 18 NC 13 | | 653 M 31 | SNC 836 | | | | |
| | | | 1.6511 | 36 CrNiMo 4 | 40 NCD 3 | 38 NiCrMo 4 (KB) | 816 M 40 | | | 40 ChN2MA | G 98400 | 9840 |
| | | | 1.6513 | 28 NiCrMo 4 | | | | | | | | |
| | | | 1.7003 | 38 Cr 2 | 38 C 2 | 38 Cr 2 | | | | | | |
| | | | 1.7006 | 46 Cr 2 | 42 C 2 | 45 Cr 2 | | | | | | 5045 |
| | | | 1.7030 | 28 Cr 4 | | | 530 A 30 | | | 30Ch | | 5130 |
| | | | 1.7033 | 34 Cr 4 | 32 C 4 | 34 Cr 4 (KB) | 530 A 32 | SCr 430 (H) | | 35Ch | G 51320 | 5132 |
| | | | 1.7034 | 37 Cr 4 | 38 C 4 | 38 Cr 4 | 530 A 36 | SCr 435 H | | 40Ch | | 5135 |
| | | | 1.7035 | 41 Cr 4 | 42 C 4 | 41 Cr 4 | 530 M 40 | SCr 440 (H) | | 40Ch | G 51400 | 5140 |
| | | | 1.7218 | 25 CrMo 4 | 25 CD 4 S | 25 CrMo 4 (KB) | 1717 CDS 110 | SCM 420; SCM 430 | 2225 | 30ChM | G 41300 | 4130 |
| | | | 1.7220 | 34 CrMo 4 | 35 CD 4 | 35 CrMo 4 | 708 A 37 | SCM 432; SCCrM 3 | 2234 | AS38ChGM | G 41350 | 4135; 4137 |
| | | | 1.7223 | 41 CrMo 4 | 42 CD 4 TS | 41 CrMo 4 | 708 M 40 | SCM 440 | 2244 | 40 ChFA | G 41420 | 4142; 4140 |
| | | | 1.7225 | 42 CrMo 4 | 42 CD 4 | 42 CrMo 4 | 708 M 40 | SCM 440 (H) | 2244 | | G 41400 | 4142; 4140 |

| Material-Haupt-gruppe | Material-Unter-gruppe | Qualität | StNr | DIN | AFNOR | UNI | BS | JIS | SS | GOST | UNS | USA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 Einsatz-, Nitrier-, Vergütungsstahl | 2.3 Vergütungsstahl | 2.3.4 legiert 800 - 1000 N/mm² | 1.7228 | 50 CrMo 4 | 50 CR MO4 | | 708 A 47 | SCM 445 (H) | | 50ChFA | G 41470 | 4150 |
| | | | 1.7561 | 42 CrV 6 | | | | | | | | |
| | | | 1.7735 | 14 CrMoV 6 9 | | | | | | | | |
| | | | 1.8159 | 50 CrV 4 | 50 CV 4 | 51 CrV 4 | 735 A 50 | SUP 10 | 2230 | 50ChGFA | G 61500 | 6150 |
| | | 2.3.5 legiert 1000 - 1300 N/mm² | 1.3563 | 43 CrMo 4 | | | | | | | | |
| | | | 1.3565 | 48 CrMo 4 | | | 817 M 40 | SNC 836 | | | | |
| | | | 1.5120 | 38 MnSi 4 | | | | | | | | |
| | | | 1.5121 | 46 MnSi 4 | | | | | | | | |
| | | | 1.5122 | 37 MnSi 4 | | | | | | | | |
| | | | 1.5223 | 42 MnV 7 | | | | | | | | |
| | | | 1.5710 | 36 NiCr 6 | 35 NC 6 | | 640 A 35 | SNC 236 | | | | 3135 |
| | | | 1.5736 | 36 NiCr 10 | 30 NC 11 | 35 NiCr 9 | | SNC 631 (H) | | | | 3435 |
| | | | 1.5864 | 35 NiCr 18 | | | | | | | | |
| | | | 1.6511 | 36 CrNiMo 4 | 40 NCD 3 | 38 NiCrMo 4 (KB) | 816 M 40 | | | 40 ChN2MA | G 98400 | 9840 |
| | | | 1.6580 | 30 CrNiMo 8 | 30 CND 8 | 30 NiCrMo 8 | 823 M 30 | SNCM 431 | | | | |
| | | | 1.6582 | 34 CrNiMo 6 | 35 NCD 6 | 35 NiCrMo 6 (KW) | 817 M 40 | SNCM 447 | 2541 | 38Ch2N2MA | | 4340 |
| | | | 1.7033 | 34 Cr 4 | 32 C 4 | 34 Cr 4 (KB) | 530 A 32 | SCr 430 (H) | | 35Ch | G 51320 | 5132 |
| | | | 1.7034 | 37 Cr 4 | 38 C 4 | 38 Cr 4 | 530 A 36 | SCr 435 H | | 40Ch | | 5135 |
| | | | 1.7035 | 41 Cr 4 | 42 C 4 | 41 Cr 4 | 530 M 40 | SCr 440 (H) | | 40Ch | G 51400 | 5140 |
| | | | 1.7045 | 42 Cr 4 | 42 C 4 TS | 41 Cr 4 | 530 A 40 | SCr 440 | 2245 | 40Ch | | 5140 |
| | | | 1.7218 | 25 CrMo 4 | 25 CD 4 S | 25 CrMo 4 (KB) | 1717 CDS 110 | SCM 420; SCM 430 | 2225 | 30ChM | G 41300 | 4130 |
| | | | 1.7220 | 34 CrMo 4 | 35 CD 4 | 35 CrMo 4 | 708 A 37 | SCM 432; SCCrM 3 | 2234 | AS38ChGM | G 41350 | 4135; 4137 |
| | | | 1.7223 | 41 CrMo 4 | 42 CD 4 TS | 41 CrMo 4 | 708 M 40 | SCM 440 | 2244 | 40 ChFA | G 41420 | 4142; 4140 |
| | | | 1.7225 | 42 CrMo 4 | 42 CD 4 | 42 CrMo 4 | 708 M 40 | SCM 440 (H) | 2244 | | G 41400 | 4142; 4140 |
| | | | 1.7228 | 50 CrMo 4 | 50 CR MO4 | | 708 A 47 | SCM 445 (H) | | 50ChFA | G 41470 | 4150 |
| | | | 1.7361 | 32 CrMo 12 | 30 CD 12 | 32 CrMo 12 | 722 M 24 | | 2240 | | | |
| | | | 1.7561 | 42 CrV 6 | | | | | | | | |
| | | | 1.7707 | 30 CrMoV 9 | | | | | | | | |
| | | | 1.7735 | 14 CrMoV 6 9 | | | | | | | | |
| | | | 1.8159 | 50 CrV 4 | 50 CV 4 | 51 CrV 4 | 735 A 50 | SUP 10 | 2230 | 50ChGFA | G 61500 | 6150 |
| | | | 1.8161 | 58 CrV 4 | | | | | | | | |
| | | 2.3.6 legiert 1000 - 1600 N/mm² | 1.1273 | 90 Mn 4 | | | | | | | | |
| | | | 1.5864 | 35 NiCr 18 | | | | | | | | |
| | | | 1.6580 | 30 CrNiMo 8 | 30 CND 8 | 30 NiCrMo 8 | 823 M 30 | SNCM 431 | | | | |
| | | | 1.6582 | 34 CrNiMo 6 | 35 NCD 6 | 35 NiCrMo 6 (KW) | 817 M 40 | SNCM 447 | 2541 | 38Ch2N2MA | | 4340 |
| | | | 1.6746 | 32 NiCrMo 14 5 | 35 NCD 14 | | 830 M 31 | | | | | |
| | | | 1.7361 | 32 CrMo 12 | 30 CD 12 | 32 CrMo 12 | 722 M 24 | | 2240 | | | |
| | | | 1.7707 | 30 CrMoV 9 | | | | | | | | |
| | | | 1.7735 | 14 CrMoV 6 9 | | | | | | | | |
| | | | 1.8161 | 58 CrV 4 | | | | | | | | |
| 3 Werkzeugstahl | 3.1 Werkzeugstahl unlegiert | 3.1.1 allgemein | 1.1520 | C 70 W1 | | | | | | | | |
| | | | 1.1525 | C 80 W1 | Y1 90; Y1 80 | C 80 KU | | | | U8A | T 72301 | W 108 |
| | | | 1.1620 | C 70 W2 | | | | | | | | |
| | | | 1.1625 | C 80 W2 | | C 80 KU | BW 1 B | SKC 3; SK 5; SK 6 | | U8; 80 | T 72301 | W 1 |
| | | | 1.1645 | C 105 W2 | Y2 105 | C 100 KU | | SK 3 | | U10 | T 72301 | |
| | | | 1.1654 | C 110 W | | | | | | | | |
| | | | 1.1663 | C 125 W | Y2 120 | C 120 KU | | SK 2 | | U13 | T 72301 | W 112 |
| | | | 1.1673 | C 135 W | Y2 140 | C 140 KU | | SK 1 | | | | |
| | | | 1.1730 | C 45 W | Y3 42 | | | | | | | |
| | | | 1.1740 | C 60 W | Y3 55 | | | SK 7 | | | | |
| | | | 1.1744 | C 67 W | | | | | | | | |
| | | | 1.1750 | C 75 W | | | BW 1A | | | 75 | | W 1 |
| | | | 1.1820 | C 55 W | | | | | | | | |

# Technische Informationen

## Werkstofftabelle

| Material-Haupt-gruppe | Material-Unter-gruppe | Qualität | StNr | DIN | AFNOR | UNI | BS | JIS | SS | GOST | UNS | USA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 Werkzeugstahl | 3.1 Werkzeugstahl unlegiert | 3.1.1 allgemein | 1.1830 | C 85 W | Y3 90 | | | SK 5 | | | | |
| | | | 1.1545 | C 105 W1 | Y1 105 | C 100 KU | | | 1880 | U10A | T 72301 | W 110 |
| | 3.2 Werkzeugstahl für Kaltarbeit | 3.2.1 niedrig legiert bis 1000 N/mm² | 1.2067 | 100 Cr 6 | Y 100 C 6 | | BL 3 | | | | T 61203 | L 3 |
| | | | 1.2101 | 62 SiMnCr 4 | | | | | | | | |
| | | | 1.2103 | 58 SiCr 8 | | | | | | | | |
| | | | 1.2108 | 90 CrSi 5 | | | | | | | | |
| | | | 1.2162 | 21 MnCr 5 | 20 NC 5 | | | SCR 420 H | | | | |
| | | | 1.2210 | 115 CrV 3 | 100 C 3 | 107 CrV 3 KU | | | | | T 61202 | L 2 |
| | | | 1.2330 | 35 CrMo 4 | 34 CD 4 | 35 CrMo 4 | 708 A 37 | | 2234 | 35 HM | T 51620 | 4135 |
| | | | 1.2332 | 47 CrMo 4 | 42 CD 4 | 40 CrMo 4 | 708 M 40 | | 2244 | | | 4142 |
| | | | 1.2369 | 81 CrMov 42 16 | | | | | | | | |
| | | | 1.2419 | 105 WCr 6 | 105 WC 13 | 107 WCr 5 KU | | SKS 31 | | ChWG | | |
| | | | 1.2510 | 100 MnCrW 4 | 90 MWCV 5 | 95 MnWCr 5 KU | BO 1 | SKS 3 | 2140 | | T 31501 | O 1 |
| | | | 1.2516 | 120 WV 4 | 110 WC 20 | 110 W 4 KU | BF 1 | | | | | |
| | | | 1.2542 | 45 WCrV 7 | | 45 WCrV 8 KU | BS 1 | | 2710 | | T 41901 | S 1 |
| | | | 1.2550 | 60 WCrV 7 | 55 WC 20 | 55 WCrV 8 KU | | | | | | |
| | | | 1.2721 | 50 NiCr 13 | | | | | | | | |
| | | | 1.2735 | 15 NiCr 14 | 10 NC 12 | | | SNC 22 | | | T 51606 | |
| | | | 1.2762 | 75 CrMoNiW 6 7 | | | | | | | | |
| | | | 1.2826 | 60 MnSiCr 4 | | | | | | | | |
| | | | 1.2833 | 100 V 1 | Y1 105 V | 102 V 2 KU | BW 2 | SKS 43 | | | T 72302 | W 210 |
| | | | 1.2842 | 90 MnCrV 8 | 90 MV 8 | 90 MnVCr 8 KU | BO 2 | | | | T 31502 | O 2 |
| | | 3.2.2 niedrig legiert bis 1200 N/mm² | 1.2312 | 40 CrMnMoS 8 6 | | | | | | | | |
| | | | 1.2711 | 54 NiCrMoV 6 | 55 NCDV 6 | | | | | | | |
| | | 3.2.3 niedrig legiert bis 1500 N/mm² | 1.2713 | 55 NiCrMoV 6 | 55 NCDV 7 | | | SKT 4 | | 5ChNM | T 61206 | L 6 |
| | | 3.2.4 hoch legiert geglüht | 1.2080 | X 210 Cr 12 | Z 200 C 12 | X 210 Cr 13 KU | BD 3 | SKD 1 | | Ch12 | T 30403 | D 3 |
| | | | 1.2083 | X 42 Cr 13 | Z 40 C 14 | X 41 Cr 13 KU | | SUS 420 J 2 | | | | |
| | | | 1.2341 | X 6 CrMo 4 | | | | | | | | |
| | | | 1.2363 | X 100 CrMoV 5 1 | Z 100 CDV 5 | X 100 CrMoV 5 1 KU | BA 2 | SKD 12 | 2260 | | T 30102 | A 2 |
| | | | 1.2379 | X 155 CrVMo 12 1 | Z 160 CDV 12 | X 155 CrVMo 12 1 KU | BD 2 | SKD 11 | | | T 30402 | D 2 |
| | | | 1.2436 | X 210 CrW 12 | Z 200 CW 12 | X 215 CrW 12 1 KU | | SKD 2 | 2312 | | | |
| | | | 1.2601 | X 165 CrMoV 12 | | X 165 CrMoW 12 KU | | | 2310 | | | |
| | | | 1.2764 | X 19 NiCrMo 4 | | | | | | | | |
| | | | 1.2767 | X 45 NiCrMo 4 | Y 35 NCD 16 | 42 NiCrMo 15 7 | | | | | | |
| | | | 1.2885 | X 32 CrMoCoV 3 3 3 | 30 DCKV 28 | | | | | | | |
| | | 3.2.5 hoch legiert vergütet | 1.2316 | X 36 CrMo 17 | | X 38 CrMo 16 1 KU | | | | | | |
| | | | 1.6356 | X 2 NiCoMoTi 18 12 4 | | | | | | | | |
| | | | 1.6358 | X 2 NiCoMoTi 18 9 5 | | | | | | | | |
| | 3.3 Werkzeugstahl für Warmarbeit | 3.3.1 niedrig legiert bis 1200 N/mm² | 1.2311 | 40 CrMnMo 7 | | | | | | | | |
| | | | 1.2738 | 40 CrMnNiMo 8 | | | | | | | | |
| | | | 1.2744 | 57 NiCrMoV 7 7 | | | | | | | | |
| | | 3.3.2 niedrig legiert bis 1500 N/mm² | 1.2713 | 55 NiCrMoV 6 | 55 NCDV 7 | | | SKT 4 | | 5ChNM | T 61206 | L 6 |
| | | 3.3.3 hoch legiert geglüht | 1.2343 | X 38 CrMoV 5 1 | Z 38 CDV 5 | X 37 CrMoV 5 1 KU | BH 11 | SKD 6 | | 4Ch5MFS | T 28811 | H 11 |
| | | | 1.2344 | X 40 CrMoV 5 1 | Z 40 CDV 5 | X 40 CrMo 5 1 1 KU | BH 13 | SKD 61 | 2242 | 4Ch5MF1S | T 20813 | H 13 |
| | | | 1.2365 | X 32 CrMoV 3 3 | 32 DCV 28 | 30 CrMoV 12 27 KU | BH 10 | SKD 7 | | 3Ch3M3F | T 20810 | H 10 |
| | | | 1.2367 | X 38 CrMoV 5 3 | | | | | | | | |
| | | | 1.2567 | X 30 WCrV 5 3 | Z 32 WCV 5 | X 30 WCrV 5 3 KU | | SKD 4 | | | | |
| | | | 1.2581 | X 30 WCrV 9 3 | Z 30 WCV 9 | X 30 WCrV 9 3 KU | BH 21 | SKD 5 | | 3Ch2W8F | T 20821 | H 21 |
| | | | 1.2706 | X 3 NiCrMo 18 8 5 | E-Z 2 NKD 18 | | | | | | K 93120 | |
| | | 3.3.4 hoch legiert vergütet | 1.2709 | X 2 NiCoMoTi 18 9 5 | | | | | | | | |
| | | | | Vergütet | | | | | | | | |

| Material-Haupt-gruppe | Material-Unter-gruppe | Qualität | StNr | DIN | AFNOR | UNI | BS | JIS | SS | GOST | UNS | USA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 Werkzeugstahl | 3.4 Schnellarbeits-stahl | 3.4.1 allgemein | 1.3202 | S 12-1-4-5 | | | | | | | T 12015 | T15 |
| | | | 1.3207 | S 10-4-3-10 | Z 130 WKCDV 10-10-04 | HS 10-4-3-10 | BT 42 | SKH 57 | | | | |
| | | | 1.3243 | S 6-5-2-5 | Z 85 WDKCV 06-05-05- | HS 6-5-2-5 | | SKH 55 | 2723 | R6M5K5 | | |
| | | | 1.3246 | S 7-4-2-5 | Z 110 WKCDV 07-05-04 | HS 7-4-2-5 | | | | | T 11341 | M 41 |
| | | | 1.3247 | S 2-10-1-8 | Z 110 DKCWV 09-08-04 | HS 2-9-1-8 | BM 42 | SKH 51 | | | T 11342 | M 42 |
| | | | 1.3249 | S 2-9-2-8 | | | BM 34 | | | | T 11333 | M 33; M 34 |
| | | | 1.3255 | S 18-1-2-5 | Z 80 WKCV 18-05-04-0 | HS 18-1-1-5 | BT 4 | SKH 3 | | | T 12004 | T 4 |
| | | | 1.3257 | S 18-1-2-15 | | | | | | | | |
| | | | 1.3265 | S 18-1-2-10 | | HS 18-0-1-10 | BT 5 | SKH 4 A | | | T 12005 | T 5 |
| | | | 1.3302 | S 12-1-4 | | | | | | | | |
| | | | 1.3318 | S 12-1-2 | | | | | | | | |
| | | | 1.3333 | S 3-3-2 | | HS 3-3-2 | | | | | | |
| | | | 1.3343 | S 6-5-2 | Z 85 WDCV 06-05-04-0 | HS 6-5-2 | BM 2 | SKH 9; SKH 51 | 2722 | R6AM5 | T 11302 | M 2 |
| | | | 1.3344 | S 6-5-3 | Z 120 WDCV 06-05-04- | HS 6-5-3 | BM 4 | SKH 52; SKH 53 | | | T 11323 | M 3 Cl. 2 |
| | | | 1.3346 | S 2-9-1 | Z 85 DCWV 08-04-02-0 | HS 1-8-1 | BM 1 | | | H41 | T 11301 | H 41; M 1 |
| | | | 1.3348 | S 2-9-2 | Z 100 DCWV 09-04-02- | HS 2-9-2 | | | 2782 | | T 11307 | M 7 |
| | | | 1.3355 | S 18-0-1 | Z 80 WCV 18-04-01 | HS 18-0-1 | BT 1 | SKH 2 | | R18 | T 12001 | T 1 |
| | 3.5 gehärteter Werkzeugstahl | 3.5.1 < 55 HRC | | Gehärtet | | | | | | | | |
| | | 3.5.2 55 – 58 HRC | | Gehärtet | | | | | | | | |
| | | 3.5.3 58 – 60 HRC | | Gehärtet | | | | | | | | |
| | | 3.5.4 60 – 62 HRC | | Gehärtet | | | | | | | | |
| | | 3.5.5 62 – 64 HRC | | Gehärtet | | | | | | | | |
| 4 rostfreier Stahl, hochwarmfeste Legierungen | 4.1 rostfreier Stahl | 4.1.1 ferritisch | 1.4000 | X 6 Cr 13 | Z 6 C 13 | X 6 Cr 13 | 403 S 17 | SUS 403 | 2301 | 08Ch13 | S 40300 | 403 |
| | | | 1.4002 | X 6 CrAl 13 | Z 6 CA 13 | X 6 CrAl 13 | 405 S 17 | SUS 405 | 2302 | | S 40500 | 405 |
| | | | 1.4016 | X 6 Cr 17 | Z 8 C 17 | X 8 Cr 17 | 430 S 15 | SUS 430 | 2320 | 12Ch17 | S 43000 | 430 |
| | | | 1.4113 | X 6 CrMo 17 | Z 8 CD 17.01 | X 8 CrMo 17 | 434 S 17 | SUS 434 | 2325 | | S 43400 | 434 |
| | | | 1.4313 | X 5 CrNi 13 4 | Z 5 CN 13.4 | X 6 CrNi 13 04 | 425 C 11 | SCS 5 | 2385 | | | CA 6-NM |
| | | | 1.4510 | X 6 CrTi 17 | Z 8 CT 17 | X 6 CrTi 17 | | SUS 430 LX | | 08Ch17T | S 43036 | XM 8; 430 Ti |
| | | | 1.4511 | X 8 CrNb 17 | Z 8 CNb 17 | X 6 CrNb 17 | | SUS 430 LX | | | | |
| | | | 1.4512 | X 5 CrTi 12 | Z 6 CT 12 | X 6 CrTi 12 | 409 S 19 | SUH 409 | | | S 40900 | 409 |
| | | 4.1.2 martensitisch | 1.4006 | X 10 Cr 13 | Z 12 C 13 | X 12 Cr 13 | 410 S 21 | SUS 410 | 2302 | 12Ch13 | S 41000 | 410; CA-15 |
| | | | 1.4021 | X 20 Cr 13 | Z 20 C 13 | X 20 Cr 13 | 420 S 37 | SUS 420 J 1 | 2303 | 20Ch13 | S 42000 | 420 |
| | | | 1.4024 | X 15 Cr 13 | Z 13 C 13 | | 420 S 29 | SUS 410 J 1 | | | | |
| | | | 1.4028 | X 30 Cr 13 | Z 30 C 13 | X 30 Cr 13 | 420 S 45 | SUS 420 J 2 | 2304 | 30Ch13 | | |
| | | | 1.4031 | X 38 Cr 13 | Z 40 C 14 | X 40 Cr 14 | | SUS 420 J 2 | 2304 | 40Ch13 | | |
| | | | 1.4034 | X 46 Cr 13 | Z 40 C 14 | X 40 Cr 14 | 420 S 45 | | | 40Ch13 | | |
| | | | 1.4057 | X 20 CrNi 17 2 | Z 15 CN 16.02 | X 16 CrNi 16 | 431 S 29 | SUS 431 | 2321 | 20Ch17N2 | S 43100 | 431 |
| | | | 1.4108 | X 100 CrMo 13 | | | | | | | | |
| | | | 1.4109 | X 65 CrMo 14 | | | | | | | | |
| | | | 1.4112 | X 90 CrMoV 18 | | | | | | | S 44003 | |
| | | | 1.4113 | X 6 CrMo 17 | Z 8 CD 17.01 | X 8 CrMo 17 | 434 S 17 | SUS 434 | 2325 | | S 43400 | 434 |
| | | | 1.4116 | X 45 CrMoV 15 | | | | | | | | |
| | | | 1.4125 | X 105 CrMo 17 | Z 100 CD 17 | X 105 CrMo 17 | | SUS 440 C | | | S 44004 | 440 C |
| | | 4.1.3 austenitisch A5 < 40% | 1.4311 | X 2 CrNiN 18 10 | Z 2 CN 18 .10 | X 2 CrNiN 18 11 | 304 S 62 | SUS 304 LN | 2371 | | S 30453 | 304 LN |
| | | | 1.4401 | X 5 CrNiMo 18 10 | Z 6 CND 17.11 | X 5 CrNiMo 17 12 | 316 S 16 | SUS 316 | 2347 | | S 31600 | 316 |
| | | | 1.4404 | X 2 CrNiMo 17 13 2 | Z 2 CND 17.12 | X 2 CrNiMo 17 12 | 316 S 11 | SUS 316 L | 2348 | | S 31603 | 316 L |
| | | | 1.4406 | X 2 CrNiMoN 17 12 2 | Z 2 CND 17.12 Az | X 2 CrNiMoN 17 12 | 316 S 61 | SUS 316 LN | | | S 31653 | 316 LN |
| | | | 1.4429 | X 2 CrNiMoN 17 13 3 | Z 2 CND 17.13 Az | X 2 CrNiMoN 17 13 | 316 S 62 | SUS 316 LN | 2375 | | S 31653 | 316 LN |
| | | | 1.4435 | X 2 CrNiMo 18 14 3 | Z 2 CND 17.13 | X 2 CrNiMo 17 13 | 316 S 12 | SCS 16; SUS 316 L | 2353 | 03Ch17N14M2 | S 31603 | 316 L |
| | | | 1.4436 | X 5 CrNiMo 17 13 3 | Z 6 CND 17.12 | X 5 CrNiMo 17 13 | 316 S 16 | SUS 316 | 2343 | | S 31600 | 316 |

# Technische Informationen

## Werkstofftabelle

| Material-Haupt-gruppe | Material-Unter-gruppe | Qualität | StNr | DIN | AFNOR | UNI | BS | JIS | SS | GOST | UNS | USA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 rostfreier Stahl, hochwarmfeste Legierungen | 4.1 rostfreier Stahl | 4.1.3 austenitisch A5 < 40% | 1.4438 | X 2 CrNiMo 18 16 4 | Z 2 CND 19.15 | X 2 CrNiMo 18 15 | 317 S 12 | SUS 317 L | 2367 | | S 31703 | 317 L |
| | | | 1.4460 | X 8 CrNiMo 27 5 | Z 5 CND 27.05 Az | | | SUS 329 J 1 | 2324 | | S 32900 | 329 |
| | | | 1.4462 | X 2 CrNiMoN 22 5 | Z 2 CND 22 5 Az | | | | | | S 31803 | |
| | | | 1.4539 | X 2 NiCrMoCu 25 20 5 | Z 1 CNDU 25 20 | | | | | | N 08904 | |
| | | | 1.4541 | X 6 CrNiTi 18 10 | Z 6 CNT 18.10 | X 6 CrNiTi 18 11 | 321 S 12 | SUS 321 | 2337 | 12Ch18N10T | S 32100 | 321 |
| | | | 1.4542 | X 5 CrNiCuNb 17 14 | Z 5 CNU 17.4 | | | SCS 24; SUS 630 | | | S 17400 | 630 |
| | | | 1.4546 | X 5 CrNiNb 18 10 | | X 6 CrNiNb 18 11 | 347 S 18 | | | | S 34800 | 348 |
| | | | 1.4550 | X 6 CrNiNb 18 10 | Z 6 CNNb 18.10 | X 6 CrNiNb 18 11 | 347 S 17 | SUS 347 | 2338 | 08Ch18N12B | S 34700 | 347 |
| | | | 1.4571 | X 6 CrNiMoTi 17 12 2 | Z 6 CNT 17.12 | X 6 CrNiMoTi 17 12 | 320 S 31 | | 2350 | 10Ch17N13M2T | S 31635 | 316 Ti |
| | | | 1.4580 | X 6 CrNiMoNb 17 12 2 | Z 6 CNDNb 17.12 | X 6 CrNiMoNb 17 12 | 318 S 17 | | | 08Ch16N13M2B | S 31640 | 316 Cb |
| | | 4.1.4 austenitisch A5 > 40% | 1.4301 | X 5 CrNi 18 9 | Z 6 CN 18.09 | X 5 CrNi 18 10 | 304 S 15 | SUS 304 | 2332; 2333 | 08Ch18N10 | S 30400 | 304; 304 H |
| | | | 1.4303 | X 5 CrNi 18 12 | Z 8 CN 18.12 | X 8 CrNi 19 10 | 305 S 19 | SUS 305 | | 06Ch18N11 | S 30500 | 308; 305 |
| | | | 1.4306 | X 2 CrNi 19 11 | Z 2 CN 18.10 | X 2 CrNi 18 11 | 304 S 12 | SCS 19 | 2352; 2333 | 03Ch18N11 | S 30403 | 304 L |
| | | | 1.4310 | X 12 CrNi 17 7 | Z 12 CN 17.07 | X 12 CrNi 17 07 | 301 S 21 | SUS 301 | | | S 30100 | 301 |
| | | | 1.4573 | X 10 CrNiMoTi 18 12 | | X 6 CrNiMoTi 17 13 | 320 S 33 | | | 10Ch17N13M3T | S 31635 | 316 Ti |
| | | | 1.4583 | X 10 CrNiMoNb 18 12 | | X 6 CrNiMoNb 17 13 | | | | | | 318 |
| | | 4.1.5 martensitisch | 1.4005 | X 12 CrS 13 | Z 12 CF 13 | X 12 CrS 13 | 416 S 21 | SUS 416 | 2380 | | S 41600 | 416 |
| | | | 1.4104 | X 12 CrMoS 17 | Z 10 CF 17 | X 10 CrS 17 | | SUS 430 F | 2383 | | S 43020 | 430 F |
| | | 4.1.6 austenitisch A5 > 40% | 1.4305 | X 10 CrNiS 18 9 | Z 10 CNF 18.09 | X 10 CrNi 18 09 | 303 S 21 | SUS 303 | 2346 | | S 30300 | 303 |
| | | 4.1.7 geschwefelt | | Geschwefelt | | | | | | | | |
| | 4.2 hochwarmfeste Legierungen | 4.2.1 FE-Legierungen | 1.4718 | X 45 CrSi 9 3 | Z 45 CS 9 | X 45 CrSi 8 | 401 S 45 | SUH 1 | | 40Ch9S2 | S 65007 | HNV 3 |
| | | | 1.4724 | X 10 CrAl 13 | Z 10 C 13 | X 10 CrAl 12 | 403 S 17 | | | 10Ch13SJu | | |
| | | | 1.4742 | X 10 CrAl 18 | Z 10 CAS 18 | X 8 Cr 17 | 430 S 15 | SUS 430; SUH21 | | | | 430 |
| | | | 1.4747 | X 80 CrNiSi 20 | Z 80 CSN 20.02 | X 80 CrSiNi 20 | 443 S 65 | SUH 4 | | | S 65006 | HNV 6 |
| | | | 1.4762 | X 10 CrAl 24 | Z 10 CAS 24 | X 16 Cr 26 | | | | | S 44600 | 446 |
| | | | 1.4828 | X 15 CrNiSi 20 12 | Z 15 CNS 20.12 | | 309 S 24 | SUH 309 | | 20Ch20N14S2 | S 30900 | 309 |
| | | | 1.4841 | X 15 CrNiSi 25 20 | Z 15 CNS 25.20 | X 16 CrNiSi 25 20 | | SUH 310 | | 20Ch25N20S2 | S 31000 | 314; 310 |
| | | | 1.4845 | X 12 CrNi 25 21 | Z 12 CN 25.20 | X 6 CrNi 26 20 | 310 S24 | SUH 310; SUS 310 S | 2361 | | S 31008 | 310 S |
| | | | 1.4864 | X 12 NiCrSi 36 16 | Z 12 NCS 37.18 | | NA 17 | SUH 330 | | | N 08330 | 330 |
| | | | 1.4871 | X 53 CrMnNiN 21 9 | Z 52 CMN 21.09 | X 53 CrMnNiN 21 9 | 349 S 54 | SUH 35; SUH 36 | | 55Ch20G9AN4 | S 63008 | EV 8 |
| | | | 1.4873 | X 45 CrNiW 18 9 | Z 35 CNWS 20.09 | X 45 CrNiW 18 9 | 331 S 40 | SUH 31 | | | | |
| | | | 1.4876 | X 10 NiCrAlTi 33 20 | Z 8 NC 32.21 | | NA 15 (H) | NCF 800 | | | | B 163 |
| | | | 1.4878 | X 12 CrNiTi 18 9 | Z 6 CNT 18.12 (B) | X 6 CrNiTi 18 11 | 321 S 20 | SUS 321 | 2337 | 12Ch18N10T | | 321 |
| | | | 1.4923 | X 22 CrMoV 12 1 | | | 762 | | | | | |
| | | | 1.4935 | X 20 CrMoWV 12 1 | | | | | | | S 42200 | |
| | | | 1.4943 | X 4 NiCrTi 25 15 | Z 6 NCTDV 25.15 B | | HR 251; HR 52; HR 51 | SUH 660 | | | | |
| | | | 1.4945 | X 6 CrNiWNb 16 16 | | | | | | | | |
| | | | 1.4962 | X 12 CrNiWTi 16 3 | | | | | | | | |
| | | | 1.4980 | X 5 NiCrTi 26 15 | | | | | | | S66286 | |
| | | 4.2.2 Ni-Legierung nicht ausge-härtet | 1.4876 | X 10 NiCrAlTi 32 20 | Incoloy 800 | | | | | | | |
| | | | 2.4360 | NiCu30Fe | Monel 400 | | | | | | | |
| | | | 2.4375 | NiCu30Al | Monel K 500 | | | | | | | |
| | | | 2.4603 | NiCr30FeMo | Hastelloy X | | | | | | | |
| | | | 2.4617 | | Hastelloy B-2 | | | | | | | |
| | | | 2.4640 | NiCr15Fe | Inconel 600 | | | | | | | |
| | | | 2.4668 | NiCr19Fe18Nb5Mg | Inconel 718 | | | | | | | |
| | | | 2.4812 | | Hastelloy C | | | | | | | |
| | | | 2.4816 | NiCr15Fe | Inconel 600 | | NA 14 | NCF 600 | | | N 06600 | |
| | | | 2.4856 | NiCr22Mo9Nb | Inconel 625 | | | | | | | |
| | | | 2.4858 | NiCr21Mo | | | NA 16 | NCF 825 | | | N 08825 | |
| | | | 2.4983 | | Udimet 500 | | | | | | | |

| Material-Haupt-gruppe | Material-Unter-gruppe | Qualität | StNr | DIN | AFNOR | UNI | BS | JIS | SS | GOST | UNS | USA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 rostfreier Stahl, hochwarmfeste Legierungen | 4.2 hochwarmfeste Legierungen | 4.2.3 Ni-Legierung ausgehärtet | 2.4630 | NiCr20Ti | Nimonic 75 | | HR 5 | | | | | |
| | | | 2.4631 | NiCr20TiAl | Nimonic 80 A | | HR 401; 601 | NCF 80 A | | | N 07080 | |
| | | | 2.4632 | NiCr20Co18Ti | Nimonic 90 | | | | | | | |
| | | | 2.4634 | NiCo20Cr15MoAlTi | Nimonic 105 | | | | | | | |
| | | | 2.4662 | NiCr13Mo6Ti3 | Nimonic 901 | | | | | | | |
| | | | 2.4670 | | Nimocast 713 | | | | | | | |
| | | | 2.4674 | | Nimocast PK 24 | | | | | | | |
| | | | 2.4951 | NiCr20Ti | Nimonic 75 | | HR 5 | | | | | |
| | | | 2.4952 | NiCr20TiAl | Nimonic 80 A | | | | | | | |
| | | | 2.4969 | NiCr20Co18Ti | Nimonic 90 | | | | | | | |
| | | | 2.4973 | NiCr19Co11MoTi | | | | | | | | |
| | | | 2.6554 | | Waspaloy | | | | | | | |
| | | 4.2.4 Co-Legierung | 2.4711 | CoCr20Ni15Mo | | | | | | | | |
| | | | 2.4964 | CoCr20W15Ni | | | | | | | | |
| | | | 2.4979 | CoCr28MoNi | | | | | | | | |
| | | | 2.4989 | CoCr20NiW | | | | | | | | |
| 5 Stahlguss | 5.1 konventioneller Stahlguss | 5.1.1 unlegiert | 1.0420 | GS-38 | | | | | | | | |
| | | | 1.0446 | GS-45 | | | | | | | | |
| | | | 1.0552 | GS-52 | | | | | | | | |
| | | | 1.0558 | GS-60 | | | | | | | | |
| | | | 1.0619 | GS-C 25 | | | | | | | | |
| | | | 1.1142 | GS-Ck 16 | | | | | | | | |
| | | | 1.1155 | GS-Ck 25 | | | | | | | | |
| | | | 1.1191 | GS-Ck 45 | | | | | | | | |
| | | 5.1.2 niedrig legiert | 1.1118 | GS-24 Mn 6 | | | | | | | | |
| | | | 1.1120 | GS-20 Mn 5 | | | | | | | | |
| | | | 1.1131 | GS-16 Mn 5 | | | | | | | | |
| | | | 1.1136 | GS-24 Mn 4 | | | | | | | | |
| | | | 1.1138 | GS-21 Mn 5 | | | | | | | | |
| | | | 1.1159 | GS-46 Mn4 | | | | | | | | |
| | | | 1.1165 | GS-30 Mn 5 | | | | | | | | |
| | | | 1.1167 | GS-36 Mn 5 | | | | | | | | |
| | | | 1.1168 | GS-40 Mn 5 | | | | | | | | |
| | | | 1.2311 | GS-40 CrMnMo 7 | | | | | | | | |
| | | | 1.2323 | GS-48 CrMoV 6 7 | | | | | | | | |
| | | | 1.2713 | GS-55 NiCrMoV 6 | | | | | | | | |
| | | | 1.2728 | GS-20 MoNi 33 13 | | | | | | | | |
| | | | 1.2887 | GS-34 CoCrMoV 19 12 | | | | | | | | |
| | | | 1.5015 | GS-8 Mn 7 | | | | | | | | |
| | | | 1.5120 | GS-38 MnSi 4 | | | | | | | | |
| | | | 1.5121 | GS-46 MnSi 4 | | | | | | | | |
| | | | 1.5122 | GS-37 MnSi 5 | | | | | | | | |
| | | | 1.5418 | GS-20 MnMo 5 3 | | | | | | | | |
| | | | 1.5419 | GS-22 Mo 4 | | | | | | | | |
| | | | 1.5430 | GS-8 MnMo 7 4 | | | | | | | | |
| | | | 1.5431 | GS-12 MnMo 7 4 | | | | | | | | |
| | | | 1.5475 | GS-20 MnNb 5 | | | | | | | | |
| | | | 1.5485 | GS-20 MnNiTi 5 3 | | | | | | | | |
| | | | 1.5621 | GS-10 Ni 6 | | | | | | | | |
| | | | 1.5633 | GS-24 Ni 8 | | | | | | | | |
| | | | 1.5638 | GS-10 Ni 14 | | | | | | | | |
| | | | 1.5681 | GS-10 Ni 19 | | | | | | | | |
| | | | 1.5919 | GS-15 CrNi 6 | | | | | | | | |

# Technische Informationen

Werkstofftabelle



| Material-Haupt-gruppe | Material-Unter-gruppe | Qualität | StNr | DIN | AFNOR | UNI | BS | JIS | SS | GOST | UNS | USA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 Stahlguss | 5.1 konventioneller Stahlguss | 5.1.2 niedrig legiert | 1.6219 | GS-22 MnNi 5 | | | | | | | | |
| | | | 1.6221 | GS-13 MnNi 6 4 | | | | | | | | |
| | | | 1.6309 | GS-20 MnMoNi 5 5 | | | | | | | | |
| | | | 1.6511 | GS-36 CrNiMo 4 | | | | | | | | |
| | | | 1.6515 | GS-25 CrNiMo 4 | | | | | | | | |
| | | | 1.6552 | GS-24 CrNiMo 3 2 5 | | | | | | | | |
| | | | 1.6570 | GS-30 NiCrMo 8 5 | | | | | | | | |
| | | | 1.6582 | GS-34 CrNiMo 6 | | | | | | | | |
| | | | 1.6740 | GS-33 NiCrMo 7 4 4 | | | | | | | | |
| | | | 1.6741 | GS-38 NiCrMo 8 4 4 | | | | | | | | |
| | | | 1.6748 | GS-40 NiCrMo 6 5 6 | | | | | | | | |
| | | | 1.6750 | GS-20 NiCrMo 3 7 | | | | | | | | |
| | | | 1.6759 | GS-18 NiMoCr 3 6 | | | | | | | | |
| | | | 1.6760 | GS-22 NiMoCr 5 6 | | | | | | | | |
| | | | 1.6779 | GS-14 NiCrMo 10 6 | | | | | | | | |
| | | | 1.6781 | GS-18 NiCrMo 12 6 | | | | | | | | |
| | | | 1.6783 | GS-19 NiCrMo 12 6 | | | | | | | | |
| | | | 1.6916 | GS-12 MnNiCrMo 5 3 | | | | | | | | |
| | | | 1.7131 | GS-16 MnCr 5 | | | | | | | | |
| | | | 1.7147 | GS-20 MnCr 5 | | | | | | | | |
| | | | 1.7218 | GS-25 CrMo 4 | | | | | | | | |
| | | | 1.7219 | GS-26 CrMo 4 | | | | | | | | |
| | | | 1.7220 | GS-34 CrMo 4 | | | | | | | | |
| | | | 1.7225 | GS-42 CrMo 4 | | | | | | | | |
| | | | 1.7228 | GS-50 CrMo 4 | | | | | | | | |
| | | | 1.7341 | GS-34 CrMo 4 4 | | | | | | | | |
| | | | 1.7354 | GS-22 CrMo 5 4 | | | | | | | | |
| | | | 1.7354 | GS-17 CrMnMo 5 5 | | | | | | | | |
| | | | 1.7357 | GS-17 CrMo 5 5 | | | | | | | | |
| | | | 1.7363 | GS-12 CrMo 19 5 | | | | | | | | |
| | | | 1.7377 | GS-17 CrMo 9 10 | | | | | | | | |
| | | | 1.7379 | GS-18 CrMo 9 10 | | | | | | | | |
| | | | 1.7380 | GS-12 CrMo 9 10 | | | | | | | | |
| | | | 1.7382 | GS-19 CrMo 9 10 | | | | | | | | |
| | | | 1.7706 | GS-17 CrMoV 5 11 | | | | | | | | |
| | | | 1.7725 | GS-30 CrMoV 6 4 | | | | | | | | |
| | | | 1.7755 | GS-35 CrMoV 10 4 | | | | | | | | |
| | | | 1.7756 | GS-36 CrMoV 10 4 | | | | | | | | |
| | | | 1.7903 | GS-18 MnCrMo 6 3 | | | | | | | | |
| | | | 1.7906 | GS-19 MnCrMo 6 3 | | | | | | | | |
| | | | 1.7909 | GS-20 MnCrMo 6 3 | | | | | | | | |
| | | | 1.8159 | GS-50 CrV 4 | | | | | | | | |
| | | 5.1.3 hoch legiert | 1.2201 | G-X 165 CrV 12 | | | | | | | | |
| | | | 1.2343 | G-X 38 CrMoV 5 1 | Z 38 CDV 5 | | | | | | | |
| | | | 1.2363 | G-X 100 CrMoV 5 1 | Z 100 CDV 5 | | | | | | | |
| | | | 1.2365 | G-X 32 CrMoV 3 3 | 32 DCV 28 | | | | | | | |
| | | | 1.2367 | G-X 40 CrMoV 5 3 | Z 40 CDV 5 | | | | | | | |
| | | | 1.2392 | G-X 28 CrMoV 5 1 | | | | | | | | |
| | | | 1.2601 | G-X 165 CrMoV 12 | | | | | | | | |
| | | | 1.2606 | G-X 37 CrMoW 5 1 | | | | | | | | |
| | | | 1.2880 | G-X 165 CrCoMo 12 | | | | | | | | |
| | | | 1.3401 | G-X 120 Mn 12 | Z 120 M 12 | XG 120 Mn 12 | Z 120 M 12 | SCMnH 1 | | 110G13L | | A 128 (A) |
| | | | 1.3966 | G-X 25 MnCrNi 8 8 6 | | | | | | | | |

| Material-Haupt-gruppe | Material-Unter-gruppe | Qualität | StNr | DIN | AFNOR | UNI | BS | JIS | SS | GOST | UNS | USA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 Stahlguss | 5.1 konventioneller Stahlguss | 5.1.3 hoch legiert | 1.4710 | G-X 30 CrSi 6 | | | | | | | | |
| | | | 1.4718 | G-X 45 CrSi 9 3 | | | | | | | | |
| | | | 1.5662 | G-X 8 Ni 9 | | | | | | | | |
| | | | 1.6351 | G-X 2 NiCoMoTi 17 10 | | | | | | | | |
| | | | 1.7389 | G-X 12 CrMo 10 1 | | | | | | | | |
| | 5.2 rostfreier Stahlguss | 5.2.1 ferritisch / martensitisch | 1.4001 | G-X 7 Cr 13 | Z 8 C 13 FF | | | | | | | |
| | | | 1.4006 | G-X 10 Cr 13 | Z 10 C 13 | | | | | | | |
| | | | 1.4008 | G-X 8 CrNi 13 | Z 12 CN 13 M | | | | | | | |
| | | | 1.4027 | G-X 20 Cr 14 | Z 20 C 13 M | | 420 C 29 | SCS 2 | | 20Ch13L | | |
| | | | 1.4034 | G-X 46 Cr 13 | Z 40 C 14 | | | | | | | |
| | | | 1.4059 | G-X 22 CrNi 17 | | | | | | | | |
| | | | 1.4085 | G-X 70 Cr 29 | | | | | | | | |
| | | | 1.4086 | G-X 120 Cr 29 | | | | | | | | |
| | | | 1.4107 | G-X 8 CrNi 12 | | | | | | | | |
| | | | 1.4120 | G-X 20 CrMo 13 | | | | | | | | |
| | | | 1.4122 | G-X 35 CrMo 17 | | | | | | | | |
| | | | 1.4136 | G-X 70 CrMo 29 2 | | | | | | | | |
| | | | 1.4138 | G-X 120 CrMo 29 2 | | | | | | | | |
| | | | 1.4313 | G-X 5 CrNi 13 4 | | | | | | | | |
| | | | 1.4339 | G-X 32 CrNi 28 10 | | | | | | | | |
| | | | 1.4340 | G-X 40 CrNi 27 4 | | | | | | | | |
| | | | 1.4405 | G-X 5 CrNiMo 16 5 | | | | | | | | |
| | | | 1.4407 | G-X 5 CrNiMo 13 4 | | | | | | | | |
| | | | 1.4414 | G-X 4 CrNiMo 13 4 | | | | | | | | |
| | | | 1.4464 | G-X 40 CrNiMo 27 5 | | | | | | | | |
| | | | 1.4540 | G-X 4 CrNiCuNb 16 4 | | | | | | | | |
| | | | 1.4729 | G-X 40 CrSi 13 | | | | | | | | |
| | | | 1.4740 | G-X 40 CrSi 17 | | | | | | | | |
| | | | 1.4743 | G-X 160 CrSi 18 | | | | | | | | |
| | | | 1.4745 | G-X 40 CrSi 23 | | | | | | | | |
| | | | 1.4761 | G-X 120 CrSi 23 | | | | | | | | |
| | | | 1.4776 | G-X 40 CrSi 29 | | | | | | | | |
| | | | 1.4777 | G-X 130 CrSi 29 | | | | | | | | |
| | | | 1.4809 | G-X 40 CrNi 23 14 | | | | | | | | |
| | | | 1.4820 | G-X 12 CrNi 26 5 | | | | | | | | |
| | | | 1.4822 | G-X 40 CrNi 24 5 | | | | | | | | |
| | | | 1.4823 | G-X 40 CrNiSi 27 4 | | | | | | | | |
| | | | 1.4825 | G-X 25 CrNiSi 18 9 | | | | | | | | |
| | | | 1.4826 | G-X 40 CrNiSi 22 9 | | | | | | | | |
| | | | 1.4832 | G-X 25 CrNiSi 20 14 | | | | | | | | |
| | | | 1.4837 | G-X 40 CrNiSi 25 12 | | | | | | | | |
| | | | 1.4840 | G-X 15 CrNi 25 20 | | | | | | | | |
| | | | 1.4848 | G-X 40 CrNiSi 25 20 | | | | | | | | |
| | | | 1.4849 | G-X 40 NiCrSiNb 38 1 | | | | | | | | |
| | | | 1.4852 | G-X 40 NiCrNb 35 25 | | | | | | | | |
| | | | 1.4855 | G-X 30 CrNiSiNb 24 2 | | | | | | | | |
| | | | 1.4857 | G-X 40 NiCrSi 35 25 | | | | | | | | |
| | | | 1.4859 | G-X 10 NiCrNb 32 20 | | | | | | | | |
| | | | 1.4865 | G-X 40 NiCrSi 38 18 | | GX 50 NiCr 39 19 | 330 C 40 | SCH 15; SCH 16 | | | | |
| | | | 1.4868 | G-X 50 CrNi 30 30 | | | | | | | | |
| | | | 1.4873 | G-X 45 CrNiW 18 9 | | | | | | | | |
| | | | 1.4928 | G-X 12 CrNiMoCoVN 12 | | | | | | | | |
| | | | 1.4930 | G-X 14 CrCoMo 13 10 | | | | | | | | |

# Technische Informationen

Werkstofftabelle



| Material-Haupt-gruppe | Material-Unter-gruppe | Qualität | StNr | DIN | AFNOR | UNI | BS | JIS | SS | GOST | UNS | USA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 Stahlguss | 5.2 rostfreier Stahlguss | 5.2.1 ferritisch / martensitisch | 1.4931 | G-X 22 CrMoV 12 1 | | | | | | | | |
| | | | 1.4957 | G-X 15 CrNiCo 21 20 | | | | | | | | |
| | | | 1.4968 | G-X 7 CrNiNb 16 13 | | | | | | | | |
| | | | 1.4988 | G-X 8 CrNiMoVNb 16 1 | | | | | | | | |
| | | | 1.6982 | G-X 3 CrNi 13 4 | | | | | | | | |
| | | 5.2.2 austenitisch | 1.3941 | G-X 4 CrNi 18 13 | | | | | | | | |
| | | | 1.3944 | G-X 5 CrNi 18 11 | | | | | | | | |
| | | | 1.3951 | G-X 4 CrNiMoN 22 15 | | | | | | | | |
| | | | 1.3952 | G-X 4 CrNiMoN 18 14 | | | | | | | | |
| | | | 1.3953 | G-X 2 CrNiMo 18 15 | | | | | | | | |
| | | | 1.3955 | G-X 12 CrNi 18 11 | | | | | | | | |
| | | | 1.3959 | G-X 10 CrNiNb 16 13 | | | | | | | | |
| | | | 1.3964 | G-X 4 CrNiMnMoN 19 1 | | | | | | | | |
| | | | 1.4306 | G-X 2 CrNi 18 9 | | | | | | | | |
| | | | 1.4308 | G-X 6 CrNi 18 9 | Z 6 CN 18.10 M | | 304 C 15 | SCS 13 | 2333 | 07Ch18N9L | | CF-8 |
| | | | 1.4312 | G-X 10 CrNi 18 8 | | | | | | | | |
| | | | 1.4347 | G-X 8 CrNi 26 7 | | | | | | | | |
| | | | 1.4404 | G-X 2 CrNiMo 18 10 | | | | | | | | |
| | | | 1.4408 | G-X 6 CrNiMo 18 10 | | | | | | | | |
| | | | 1.4410 | G-X 10 CrNiMo 18 9 | | | | | | | | |
| | | | 1.4437 | G-X 6 CrNiMo 18 12 | | | | | | | | |
| | | | 1.4439 | G-X 3 CrNiMo 17 13 5 | | | | | | | | |
| | | | 1.4446 | G-X 2 CrNiMo 17 13 4 | | | | | | | | |
| | | | 1.4448 | G-X 6 CrNiMo 17 13 | | | | | | | | |
| | | | 1.4463 | G-X 6 CrNiMo 24 8 2 | | | | | | | | |
| | | | 1.4465 | G-X 2 CrNiMoN 25 25 | | | | | | | | |
| | | | 1.4500 | G-X 7 NiCrMoCuNb 25 | | | | | | | | |
| | | | 1.4531 | G-X 2 NiCrMoCuN 20 1 | | | | | | | | |
| | | | 1.4536 | G-X 2 NiCrMoCuN 25 2 | | | | | | | | |
| | | | 1.4552 | G-X 5 CrNiNb 18 9 | | | | | | | | |
| | | | 1.4580 | G-X 10 CrNiMoNb 18 1 | | | | | | | | |
| | | | 1.4581 | G-X 5 CrNiMoNb 18 10 | Z 4 CNDNb 18.12 M | GX 6 CrMoNb 20 11 | 318 C 17 | SCS 22 | | | | |
| | | | 1.4585 | G-X 7 CrNiMoCuNb 18 | | | | | | | | |
| | | | 1.4815 | G-X 8 CrNi 19 10 | | | | | | | | |
| | | | 1.4927 | G-X 5 CrNi 22 10 | | | | | | | | |
| | | | 1.6901 | G-X 8 CrNi 18 10 | | | | | | | | |
| | | | 1.6902 | G-X 6 CrNi 18 10 | | | | | | | | |
| | | | 1.6905 | G-X 5 CrNiNb 18 10 | | | | | | | | |
| 6 Eisenguss | 6.1 GG mit lamellarem Graphit | 6.1.1 unlegiert bis 180 HB | 0.6010 | GG-10 | Ft 10 D | G 10 | | FC 10 | 01 10-00 | Sc 10 | | A48-20 B |
| | | | 0.6015 | GG-15 | Ft 15 D | G 15 | Grade 150 | FC 15 | 01 15-00 | Sc 15 | | A48-25 B |
| | | | 0.6020 | GG-20 | Ft 20 D | G 20 | Grade 220 | FC 20 | 01 20-00 | Sc 20 | | A48-30 B |
| | | 6.1.2 unlegiert über 180 HB | 0.6025 | GG-25 | Ft 25 D | G 25 | Grade 260 | FC 25 | 01 25-00 | Sc 25 | | A48-40 B |
| | | | 0.6030 | GG-30 | Ft 30 D | G 30 | Grade 300 | FC 30 | 01 30-00 | Sc 30 | | A48-45 B |
| | | | 0.6035 | GG-35 | Ft 35 D | G 35 | Grade 350 | FC 35 | 01 35-00 | Sc 35 | | A48-50 B |
| | | | 0.6040 | GG-40 | Ft 40 D | | Grade 400 | | 01 40-00 | Sc 40 | | A48-60 B |
| | | 6.1.3 legiert | 0.6652 | GGL-NiMn 13 7 | L- NM 13 7 | | L-NiMn 13 7 | | | | | |
| | | | 0.6655 | GGL-NiCuCr 15 6 2 | L-NUC 15 6 2 | | L-NiCuCr 15 6 2 | | | | | A 436 Type 1 |
| | | | 0.6656 | GGL-NiCuCr 15 6 3 | L-NUC 15 6 3 | | L-NiCuCr 15 6 3 | | | | | A 436 Type 1b |
| | | | 0.6660 | GGL-NiCr 20 2 | L-NC 20 2 | | L-NiCr 20 2 | | 05 23-00 | | | A 436 Type 2 |
| | | | 0.6661 | GGL-NiCr 20 3 | L-NC 20 3 | | L-NiCr 20 3 | | | | | A 436 Type 2b |
| | | | 0.6667 | GGL-NiSiCr 20 5 3 | L-NSC 20 5 3 | | L-NiSiCr 20 5 3 | | | | | |
| | | | 0.6676 | GGL-NiCr 30 3 | L-NC 30 3 | | L-NiCr 30 3 | | | | | A 436 Type 3 |
| | | | 0.6680 | GGL-NiSiCr 30 5 5 | L-NSC 30 5 5 | | L-NiSiCr 30 5 5 | | | | | A 436 Type 4 |

| Material-Haupt-gruppe | Material-Unter-gruppe | Qualität | StNr | DIN | AFNOR | UNI | BS | JIS | SS | GOST | UNS | USA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 Eisenguss | 6.1 GG mit lamellarem Graphit | 6.1.4 hoch legiert | 0.9620 | G-X 260 NiCr 4 2 | | | Grade 2 A | | 0512-00 | | | A 532 I B NiCr-LC |
| | | | 0.9625 | G-X 330 NiCr 4 2 | | | Grade 2 B | | 0513-00 | | | A 532 I A NiCr-HC |
| | | | 0.9630 | G-X 300 CrNiSi 9 5 2 | | | Grade 2 C; D; E | | 0457-00 | | | A 532 I D Ni-HiCr |
| | | | 0.9635 | G-X 330 CrMo 15 3 | | | Grade 3 A; B | | | | | A 532 II C 15% CrMo- |
| | | | 0.9640 | G-X 300 CrMoNi 15 2 | | | Grade 3 A; B | | | | | |
| | | | 0.9645 | G-X 260 CrMoNi 20 2 | | | Grade 3 C | | | | | A 532 II D 20% CrMo- |
| | | | 0.9650 | G-X 260 Cr 27 | | | Grade 3 D | | 0466-00 | | | A 532 III A 25% Cr |
| | | | 0.9655 | G-X 300 CrMo 27 1 | | | Grade 3 E | | | | | A 532 III A 25% Cr |
| | 6.2 GGG mit Kugel-graphit | 6.2.1 unlegiert bis 180 HB | 0.7033 | GGG-35.3 | | | | | | | | |
| | | | 0.7040 | GGG-40 | FGS 400-12 | GS 400-12 | SNG 420/12 | FCD 40 | 0717-02 | VC 42-12 | | 60-40-18 |
| | | | 0.7043 | GGG-40.3 | FGS 370-17 | GSO 42/17 | SNG 370/17 | | 0717-15 | VC 42-12 | | |
| | | 6.2.2 unlegiert über 180 HB | 0.7050 | GGG-50 | FGS 500-7 | GS 500/7 | SNG 500/7 | FCD 50 | 0727-02 | VC 50-2 | | 65-45-12 |
| | | | 0.7060 | GGG-60 | FGS 600-3 | GS 600/3 | SNG 600/3 | FCD 60 | 0732-03 | VC 60-2 | | 80-55-06 |
| | | | 0.7070 | GGG-70 | FGS 700-2 | GS 700-2 | SNG 700/2 | FCD 70 | 0737-01 | VC 70-2 | | 100-70-03 |
| | | | 0.7080 | GGG-80 | FGS 800-2 | GS 800-2 | SNG 800/2 | | | VC 80-2 | | 120-90-02 |
| | | 6.2.3 legiert | 0.7652 | GGG-NiMn 13 7 | S-NM 13 7 | | S-NiMn 13 7 | | | | | |
| | | | 0.7660 | GGG-NiCr 20 2 | S-NC 20 2 | | S-NiCr 20 2 | | | | | A 439 Type D-2 |
| | | | 0.7661 | GGG-NiCr 20 3 | S-NC 20 3 | | S-NiCr 20 3 | | | | | A 439 Type D-2B |
| | | | 0.7665 | GGG-NiSiCr 20 5 2 | S-NSC 20 5 2 | | S-NiSiCr 20 5 2 | | | | | |
| | | | 0.7670 | GGG-Ni 22 | S-N 22 | | S-Ni 22 | | | | | A 439 Type D-2C |
| | | | 0.7673 | GGG-NiMn 23 4 | S-NM 23 4 | | S-NiMn 23 4 | | | | | A 439 Type D-2M |
| | | | 0.7676 | GGG-NiCr 30 3 | S-NC 30 3 | | S-NiCr 30 3 | | | | | A 439 Type D-3 |
| | | | 0.7677 | GGG-NiCr 30 1 | S-NC 30 1 | | S-NiCr 30 1 | | | | | A 439 Type D-3A |
| | | | 0.7680 | GGG-NiSiCr 30 5 5 | S-NSC 30 5 5 | | S-NiSiCr 30 5 5 | | | | | A 439 Type D-4 |
| | | | 0.7683 | GGG-Ni 35 | S-N 35 | | S-Ni 35 | | | | | A 439 Type D-5 |
| | | | 0.7685 | GGG-NiCr 35 3 | S-NC 35 3 | | S-NiCr 35 3 | | | | | A 439 Type D-5B |
| | 6.3 GTW weisser Temperguss | 6.3.1 bis 180 HB | 0.8035 | GTW-35-04 | | | | | | | | |
| | | | 0.8040 | GTW-40-05 | | | | | | | | |
| | | | 0.8045 | GTW-45-07 | | | | | | | | |
| | | 6.3.2 über 180 HB | 0.8055 | GTW-55 | | | | | | | | |
| | | | 0.8065 | GTW-65 | | | | | | | | |
| | 6.4 GTS schwarzer Temperguss | 6.4.1 bis 180 HB | 0.8135 | GTS-35-10 | MN 35-10 | | B 340/12 | | | | | |
| | | 6.4.2 über 180 HB | 0.8145 | GTS-45-06 | | | P 440/7 | | | | | |
| | | | 0.8155 | GTS-55-04 | MP 50-5 | | P 510/4 | | | | | |
| | | | 0.8165 | GTS-65-02 | MP 60-3 | | P 570/3 | | | | | |
| | | | 0.8170 | GTS-70-02 | IP 70-2 | | P 690/2 | | | | | |
| 7 Nichteisen-Metall | 7.1 Aluminium | 7.1.1 unlegiert | 3.0205 | Al99 | | | | | | | | |
| | | | 3.0255 | Al99.5 | 1050 A | | | | | | | |
| | | | 3.0275 | Al99.7 | | | | | | | | |
| | | | 3.0285 | Al99.8 | | | | | | | | |
| | | | 3.0305 | Al99.9 | | | | | | | | |
| | | 7.1.2 Knetlegierung nicht ausge-härtet | 3.0505 | AlMn0.5Mg0.5 | | | | | | | | |
| | | | 3.0515 | AlMn1 | | | | | | | | |
| | | | 3.0517 | AlMnCu | | | | | | | | |
| | | | 3.0525 | AlMn1Mg0.5 | 3005 | | | | | | | |
| | | | 3.0526 | AlMn1Mg1 | | | | | | | | |
| | | | 3.0915 | AlFeSi | | | | | | | | |
| | | | 3.3307 | Al99.85Mg0.5 | | | | | | | | |
| | | | 3.3308 | Al99.5Mg0.5 | | | | | | | | |
| | | | 3.3315 | AlMg1 | 5005 | | | | | | | |
| | | | 3.3316 | AlMg1.5 | | | | | | | | |
| | | | 3.3317 | Al99.85Mg1 | | | | | | | | |

# Technische Informationen

Werkstofftabelle



| Material-Haupt-gruppe | Material-Unter-gruppe | Qualität | StNr | DIN | AFNOR | UNI | BS | JIS | SS | GOST | UNS | USA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 Nichteisen-Metall | 7.1 Aluminium | 7.1.2 Knetlegierung nicht ausge-härtet | 3.3318 | Al99.9Mg1 | | | | | | | | |
| | | | 3.3326 | AlMg1.8 | | | | | | | | |
| | | | 3.3345 | AlMg4.5 | | | | | | | | |
| | | | 3.3523 | AlMg2.5 | | | | | | | | |
| | | | 3.3525 | AlMg2Mn0.3 | | | | | | | | |
| | | | 3.3527 | AlMg2Mn0.8 | | | | | | | | |
| | | | 3.3535 | AlMg3 | 5754 | | | | | | | |
| | | | 3.3537 | AlMg2.7Mn | | | | | | | | |
| | | | 3.3545 | AlMg4Mn | 5086 | | | | | | | |
| | | | 3.3547 | AlMg4.5Mn | 5087 | | | | | | | |
| | | | 3.3549 | AlMg5Mn | | | | | | | | |
| | | | 3.3555 | AlMg5 | 5056 A | | | | | | | |
| | | | 3.0506 | AlMn0.6 | | | | | | | | |
| | | 7.1.3 Knetlegierung ausgehärtet | 3.0615 | AlMgSiPb | | | | | | | | |
| | | | 3.1255 | AlCuSiMn | 2014 | | | | | | | |
| | | | 3.1305 | AlCu2.5Mg0.5 | | | | | | | | |
| | | | 3.1325 | AlCuMg1 | 2017 A | | | | | | | |
| | | | 3.1355 | AlCuMg2 | 2024 | | | | | | | |
| | | | 3.1645 | AlCuMgPb | 2030 | | | | | | | |
| | | | 3.1655 | AlCuBiPb | 2011 | | | | | | | |
| | | | 3.2307 | Al99.85MgSi | | | | | | | | |
| | | | 3.2315 | AlMgSi1 | 6082 | | | | | | | |
| | | | 3.3206 | AlMgSi0.5 | 6060 | | | | | | | |
| | | | 3.3208 | Al99.9MgSi | | | | | | | | |
| | | | 3.3210 | AlMgSi0.7 | 6005 A | | | | | | | |
| | | | 3.3211 | AlMg1SiCu | 6061 | | | | | | | |
| | | | 3.4335 | AlZn4.5Mg1 | 7020 | | | | | | | |
| | | | 3.4337 | Al99.8ZnMg | | | | | | | | |
| | | | 3.4345 | AlZnMgCu0.5 | | | | | | | | |
| | | | 3.4365 | AlZnMgCu1.5 | 7075 | | | | | | | |
| | | 7.1.4 Gusslegierung bis 6% Si | 3.1371 | G-AlCu4TiMg | | | | | | | | |
| | | | 3.1841 | G-AlCu4Ti | | | | | | | | |
| | | | 3.2134 | G-AlSi5Cu1Mg | | | | | | | | |
| | | | 3.3241 | G-AlMg3Si | | | | | | | | |
| | | | 3.3261 | G-AlMg5Si | | | | | | | | |
| | | | 3.3292 | GD-AlMg9 | | | | | | | | |
| | | | 3.3541 | G-AlMg3 | | | | | | | | |
| | | | 3.3543 | G-AlMg3(Cu) | | | | | | | | |
| | | | 3.3561 | G-AlMg5 | | | | | | | | |
| | | | 3.3591 | G-AlMg10 | | | | | | | | |
| | | 7.1.5 Gusslegierung bis 6-12% Si | 3.2151 | G-AlSi6Cu4 | | | | | | | | |
| | | | 3.2161 | G-AlSi8Cu3 | | | | | | | | |
| | | | 3.2341 | G-AlSi5Mg | | | | | | | | |
| | | | 3.2371 | G-AlSi7Mg | | | | | | | | |
| | | | 3.2373 | G-AlSi9Mg | | | | | | | | |
| | | | 3.2381 | G-AlSi10Mg | | | | | | | | |
| | | | 3.2383 | G-AlSi10Mg(Cu) | | | | | | | | |
| | | | 3.2581 | G-AlSi12 | | | | | | | | |
| | | | 3.2583 | G-AlSi12(Cu) | | | | | | | | |
| | | 7.1.6 Gusslegierung über 12% Si | | G-AlSi18 | | | | | | | | |
| | 7.2 Magnesium | 7.2.1 Knetlegierung | 3.5200 | MgMn2 | | | | | | | | |
| | | | 3.5312 | MgAl3Zn | | | | | | | | |

| Material-Haupt-gruppe | Material-Unter-gruppe | Qualität | StNr | DIN | AFNOR | UNI | BS | JIS | SS | GOST | UNS | USA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 Nichteisen-Metall | 7.2 Magnesium | 7.2.1 Knetlegierung | 3.5612 | MgAl6Zn | | | | | | | | |
| | | | 3.5812 | MgAl8Zn | | | | | | | | |
| | | 7.2.2 Gusslegierung | 3.5101 | G-MgZn4SE1Zr1 | | | | | | | | |
| | | | 3.5102 | G-MgZn5Th2Zr1 | | | | | | | | |
| | | | 3.5103 | G-MgSE3Zn2Zr1 | | | | | | | | |
| | | | 3.5105 | G-MgTh3Zn2Zr1 | | | | | | | | |
| | | | 3.5106 | G-MgAg3Se2Zr1 | | | | | | | | |
| | | | 3.5470 | GD-MgAl4Si1 | | | | | | | | |
| | | | 3.5612 | GD-MgAl6Zn1 | | | | | | | | |
| | | | 3.5662 | G-MgAl6 | | | | | | | | |
| | | | 3.5812 | G-MgAl8Zn1 | | | | | | | | |
| | | | 3.5912 | G-MgAl9Zn1 | | | | | | | | |
| | 7.3 Kupfer | 7.3.1 unlegiert | 2.0040 | OF-Cu | | | | | | | | |
| | | | 2.0060 | E-Cu57 | | | | | | | | |
| | | | 2.0065 | E-Cu58 | | | | | | | | |
| | | | 2.0070 | SE-Cu | | | | | | | | |
| | | | 2.0076 | SW-Cu | | | | | | | | |
| | | | 2.0090 | SF-Cu | | | | | | | | |
| | | 7.3.2 Knetlegierung nicht ausge-härtet | 2.0205 | CuZn0.5 | | | | | | | | |
| | | | 2.1160 | CuPb1P | | | | | | | | |
| | | | 2.1191 | CuAg0.1P | | | | | | | | |
| | | | 2.1203 | CuAg0.1 | | | | | | | | |
| | | | 2.1265 | CuCd0.5 | | | | | | | | |
| | | | 2.1266 | CuCd1 | | | | | | | | |
| | | | 2.1310 | CuFe2P | | | | | | | | |
| | | | 2.1322 | CuMg0.4 | | | | | | | | |
| | | | 2.1323 | CuMg0.7 | | | | | | | | |
| | | | 2.1356 | CuMn3 | | | | | | | | |
| | | | 2.1363 | CuMn2 | | | | | | | | |
| | | | 2.1366 | CuMn5 | | | | | | | | |
| | | | 2.1491 | CuAsP | | | | | | | | |
| | | | 2.1498 | CuSP | | | | | | | | |
| | | | 2.1522 | CuSuMnF34 | | | | | | | | |
| | | | 2.1522 | CuSi2Mn | | | | | | | | |
| | | | 2.1525 | CuSi3Mn | | | | | | | | |
| | | | 2.1546 | CuTeP | | | | | | | | |
| | | 7.3.3 Knetlegierung ausgehärtet | 2.0850 | CuNi2Be | | | | | | | | |
| | | | 2.0853 | CuNi1.5Si | | | | | | | | |
| | | | 2.0855 | CuNi2Si | | | | | | | | |
| | | | 2.0857 | CuNi3Si | | | | | | | | |
| | | | 2.1245 | CuBe1.7 | | | | | | | | |
| | | | 2.1247 | CuBe2 | | | | | | | | |
| | | | 2.1248 | CuBe2Pb | | | | | | | | |
| | | | 2.1285 | CuCo2Be | | | | | | | | |
| | | | 2.1293 | CuCrZr | | | | | | | | |
| | | | 2.1580 | CuZr | | | | | | | | |
| | | 7.3.4 CuNi-Legierung | 2.0830 | CuNi25 | | | | | | | | |
| | | | 2.0842 | CuNi44Mn1 | | | | | | | | |
| | | | 2.0872 | CuNi10Fe1Mn | | | | | | | | |
| | | | 2.0875 | CuNi9Sn2 | | | | | | | | |
| | | | 2.0882 | CuNi30Mn1Fe | | | | | | | | |
| | | | 2.0883 | CuNi30Fe2Mn2 | | | | | | | | |

# Technische Informationen

Werkstofftabelle



| Material-Haupt-gruppe | Material-Unter-gruppe | Qualität | StNr | DIN | AFNOR | UNI | BS | JIS | SS | GOST | UNS | USA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 Nichteisen-Metall | 7.3 Kupfer | 7.3.5 CuNiZn-Legierung langspanend | 2.0730 | CuNi12Zn24 | | | | | | | | |
| | | | 2.0740 | CuNi18Zn20 | | | | | | | | |
| | | | 2.0742 | CuNi18Zn27 | | | | | | | | |
| | | 7.3.6 CuNiZn-Legierung kurzspanend | 2.0771 | CuNi7Zn39Mn5Pb3 | | | | | | | | |
| | | | 2.0780 | CuNi12Zn30Pb1 | | | | | | | | |
| | | | 2.0790 | CuNi18Zn19Pb1 | | | | | | | | |
| | 7.4 CuZn (Messing) | 7.4.1 langspanend | 2.0220 | CuZn5 | | | | | | | | |
| | | | 2.0230 | CuZn10 | | | | | | | | |
| | | | 2.0240 | CuZn15 | | | | | | | | |
| | | | 2.0250 | CuZn20 | | | | | | | | |
| | | | 2.0261 | CuZn28 | | | | | | | | |
| | | | 2.0265 | CuZn30 | | | | | | | | |
| | | | 2.0280 | CuZn33 | | | | | | | | |
| | | | 2.0321 | CuZn37 | | | | | | | | |
| | | | 2.0332 | CuZn37Pb0.5 | | | | | | | | |
| | | | 2.0335 | CuZn36 | | | | | | | | |
| | | | 2.0360 | CuZn40 | | | | | | | | |
| | | | 2.0372 | CuZn39Pb0.5 | | | | | | | | |
| | | 7.4.2 kurzspanend | 2.0331 | CuZn36Pb1.5 | | | | | | | | |
| | | | 2.0371 | CuZn38Pb1.5 | | | | | | | | |
| | | | 2.0375 | CuZn36Pb3 | | | | | | | | |
| | | | 2.0380 | CuZn39Pb2 | | | | | | | | |
| | | | 2.0401 | CuZn39Pb3 | | | | | | | | |
| | | | 2.0402 | CuZn40Pb2 | | | | | | | | |
| | | | 2.0410 | CuZn44Pb2 | | | | | | | | |
| | | | 2.0460 | CuZn20Al2 | | | | | | | | |
| | | | 2.0470 | CuZn28Sn1 | | | | | | | | |
| | | | 2.0490 | CuZn31Si1 | | | | | | | | |
| | | | 2.0500 | CuZn23Al6Mn4Fe3 | | | | | | | | |
| | | | 2.0510 | CuZn37Al1 | | | | | | | | |
| | | | 2.0525 | CuZn38SnAl | | | | | | | | |
| | | | 2.0530 | CuZn38Sn1 | | | | | | | | |
| | | | 2.0540 | CuZn35Ni2 | | | | | | | | |
| | | | 2.0550 | CuZn40Al2 | | | | | | | | |
| | | | 2.0561 | CuZn40Al1 | | | | | | | | |
| | | | 2.0572 | CuZn40Mn1 | | | | | | | | |
| | | | 2.0580 | CuZn40Mn1Pb | | | | | | | | |
| | 7.5 CuSn (Bronze) | 7.5.1 langspanend | 2.1016 | CuSn4 | | | | | | | | |
| | | | 2.1020 | CuSn6 | | | | | | | | |
| | | | 2.1030 | CuSn8 | | | | | | | | |
| | | | 2.1080 | CuSn6Zn6 | | | | | | | | |
| | | 7.5.2 kurzspanend | 2.1086 | G-CuSn10Zn | | | | | | | | |
| | | | 2.1093 | G-CuSn6ZnNi | | | | | | | | |
| | | | 2.1096 | G-CuSn5ZnPb | | | | | | | | |
| | 7.6 CuAlFe (Ampco) | 7.6.1 langspanend | 2.0918 | CuAl5As | | | | | | | | |
| | | | 2.0920 | CuAl8 | | | | | | | | |
| | | | 2.0932 | CuAl8Fe3 | | | | | | | | |
| | | | 2.0936 | CuAl10Fe3Mn2 | | | | | | | | |
| | | | 2.0960 | CuAl9Mn2 | | | | | | | | |
| | | | 2.0966 | CuAl10Ni5Fe4 | | | | | | | | |
| | | | 2.0971 | CuAl9Ni3Fe2 | | | | | | | | |
| | | | 2.0978 | CuAl11Ni6Fe5 | | | | | | | | |
| | | | Ampco 12 | CuAl9Fe3 | | | | | | | | |

| Material-Haupt-gruppe | Material-Unter-gruppe | Qualität | StNr | DIN | AFNOR | UNI | BS | JIS | SS | GOST | UNS | USA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 Nichteisen-Metall | 7.6 CuAlFe (Ampco) | 7.6.1 langspanend | Ampco 16 | CuAl10Fe3 | | | | | | | | |
| | | | Ampco 18 | CuAl10.5Fe3.5 | | | | | | | | |
| | | | Ampco 20 | CuAl11Fe4 | | | | | | | | |
| | | | Ampco 21 | CuAl13Fe4.5 | | | | | | | | |
| | | | Ampco 22 | CuAl14Fe5 | | | | | | | | |
| | | | Ampco 25 | Zn | | | | | | | | |
| | | | Ampco 26 | Zn | | | | | | | | |
| | | | Ampco 45 | CuAl10Fe2.5Ni5Mn1.5 | | | | | | | | |
| | | | Ampco 483 | CuAl9Fe4Ni4.5Mn1 | | | | | | | | |
| | | | Ampco 8 | CuAl6.5Fe2.5Sn | | | | | | | | |
| | | | Ampco M-4 | CuAl10.5Fe4Ni5Mn3.5 | | | | | | | | |
| | | 7.6.2 kurzspanend | | Amco 8 | | | | | | | | |
| | 7.7 Nickel | 7.7.1 unlegiert | 2.1504 | NiAlBz | | | | | | | | |
| | | | 2.4042 | Ni99CSi | | | | | | | | |
| | | | 2.4060 | Ni99.6 | | | | | | | | |
| | | | 2.4062 | Ni99.4Fe | | | | | | | | |
| | | 7.7.2 legiert | | Nickel | | | | | | | | |
| | 7.8 Titan | 7.8.1 unlegiert | 3.7024 | Ti99.5 | | | | | | | | |
| | | | 3.7034 | Ti99.7 | | | | | | | | |
| | | | 3.7055 | Ti99.4 | | | | | | | | |
| | | | 3.7064 | Ti99.2 | | | | | | | | |
| | | 7.8.2 legiert, weich-geglüht | 3.7114 | TiAl5Sn2 | | | | | | | | |
| | | | 3.7124 | TiCu2 | | | | | | | | |
| | | 7.8.3 legiert, ausge-härtet | 3.7144 | TiAl6Sn2Zr4Mo2 | | | | | | | | |
| | | | 3.7154 | TiAl6Zr5 | | | | | | | | |
| | | | 3.7165 | TiAl6V4 | T-A 6 V | | TA 10 bis TA 13 | | | | R 56400 | |
| | | | 3.7174 | TiAl6V6Sn2 | | | | | | | | |
| | | | 3.7184 | TiAl4Mo4Sn2 | | | TA 45 bis TA 51 | | | | | |
| 8 Kunststoff | 8.1 Thermoplast | 8.1.1 Polyethylen | PE | Baylon | Lacqtène | Alkathene | Eraclene | Mirason | | | | Alathon |
| | | | PE | Dekalen | Natène | Carlona | Fertene | Novatec | | | | Bakelite |
| | | | PE | Ertalen | | Escorene | Rumiten | Rexlon | | | | Chemplex |
| | | | PE | Hostalen | | | | Sholex | | | | Dylan |
| | | | PE | Lupolen | | | | Sumikathene | | | | Fortiflex |
| | | | PE | Supralen | | | | Suntec | | | | Marlex |
| | | | PE | Symalen | | | | Staflene | | | | Microthene |
| | | | PE | Vestolen | | | | Yukalon | | | | Paxon |
| | | | PE | | | | | | | | | Petrothene |
| | | | PE | | | | | | | | | Poly-Eth |
| | | | PE | | | | | | | | | Rigidex |
| | | | PE | | | | | | | | | Rotothene |
| | | 8.1.2 Polypropylen | PP | Daplen | Eltex P | Carlona P | Kastilen | Noblene | | | | Pro-fax |
| | | | PP | Hostalen PP | Lacqtène P | Propathene | Moplen | Poly-Pro | | | | Rexene |
| | | | PP | Luparen | Napryl | Procom | | Sho-Allomer | | | | Tenite |
| | | | PP | Novolen | | Propyply | | | | | | |
| | | | PP | Symalen PP | | Propafoil | | | | | | |
| | | | PP | Vestolen PP | | | | | | | | |
| | | 8.1.3 Polyvinylchlorid | PVC | Coroplast | Ekavyl | Breon | Raivinil | Nipeon | Pevikon | | | Dalvin |
| | | | PVC | Hostalit, | | Carina | Sicron | Nipolit | | | | Geon |
| | | | PVC | Mipolam | | Corvic | Vipla | Vinika | | | | Kohinor |
| | | | PVC | Opalon | | Scon | Viplast | Vinichlon | | | | Marvinol |
| | | | PVC | Rhodopas | | Shell PVC | | | | | | Pliovic |
| | | | PVC | Soflex | | Welvic | | | | | | Vygen |

# Technische Informationen

Werkstofftabelle



| Material-Haupt-gruppe | Material-Unter-gruppe | Qualität | StNr | DIN | AFNOR | UNI | BS | JIS | SS | GOST | UNS | USA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 Kunststoff | 8.1 Thermoplast | 8.1.3 Polyvinylchlorid | PVC | Solvec | | | | | | | | |
| | | | PVC | Supradur | | | | | | | | |
| | | | PVC | Trosiplast | | | | | | | | |
| | | | PVC | Trovidur | | | | | | | | |
| | | | PVC | Vestolit | | | | | | | | |
| | | | PVC | Vinidur | | | | | | | | |
| | | | PVC | Vinnol | | | | | | | | |
| | | | PVC | Vinoflex | | | | | | | | |
| | | | PVC | Vinylite | | | | | | | | |
| | | 8.1.4 Polystyrol | PS | Hostyron | Afcolène | Lustrex | Edistir | Diarex | | | | Carinex |
| | | | PS | Lorkalen | Lacqrène | | Lastirol | Esbrite | | | | Dylene |
| | | | PS | Polystyrol | Gédex | | Restirolo | | | | | Styron |
| | | | PS | Styropor | | | | | | | | Toporex |
| | | | PS | Trolitul | | | | | | | | |
| | | | PS | Vestyron | | | | | | | | |
| | | 8.1.5 Polymethylme-thacrylat | PMMA | Acrylglas | Altulite | Diakon | Lacrilex | Delpet | | | | Lucite |
| | | | PMMA | Daglas | | Perspex | Vedril | Shinkolite | | | | Oroglas |
| | | | PMMA | Degalan | | | | Sumipex | | | | Swedcast |
| | | | PMMA | Dewoglas | | | | | | | | |
| | | | PMMA | Plexidur | | | | | | | | |
| | | | PMMA | Plexiglas | | | | | | | | |
| | | | PMMA | Resartglas | | | | | | | | |
| | | 8.1.6 Polytetrafluore-thylen | PTFE | Hostaflon | Soreflon | Fluon | | Neoflon | | | | Halon |
| | | | PTFE | | | | | | | | | Teflon |
| | | 8.1.7 Polyamid | PA | Akulon | Orgamide | Maranyl | Latamid | Amilan | | | | Amidel |
| | | | PA | Durethan | Rilsan | Verton | Nivionplast | Leona | | | | Capron |
| | | | PA | Fabenyl | Technyl | | Renyl | Toray | | | | Fosta Nylon |
| | | | PA | Grilamid | | | Sniamid | Torayca | | | | Minlon |
| | | | PA | Grilon | | | Vydyne | | | | | Plaskon |
| | | | PA | Nylon | | | | | | | | |
| | | | PA | Trogamid | | | | | | | | |
| | | | PA | Ultramid | | | | | | | | |
| | | | PA | Vestamid | | | | | | | | |
| | | 8.1.8 Polycarbonat | PC | Makralon | Orgalan | | Sinvet | Jupilon | | | | Merlon |
| | | | PC | Nuclon | | | | Novarex | | | | Lexan |
| | | | PC | Plastocarbon | | | | Panlite | | | | |
| | | 8.1.9 Polyamid ther-moplastisch | PI | | Kerimel | | | | | | | Torlon |
| | | | PI | | Kinel | | | | | | | Ultem |
| | | | PI | | Nolimid | | | | | | | PI 2080 |
| | 8.2 Duroplast | 8.2.1 Phenol-Formal-dehyd | PF | Alberit | | | Fenochem | | | | | Biralit |
| | | | PF | Bakelit | | | Formolo | | | | | Biratex |
| | | | PF | Bulitol | | | Moldesile | | | | | Birax |
| | | | PF | Durax | | | Vegetalite | | | | | |
| | | | PF | Durophen | | | | | | | | |
| | | | PF | Faturan | | | | | | | | |
| | | | PF | Geax | | | | | | | | |
| | | | PF | Harex | | | | | | | | |
| | | | PF | Luphen | | | | | | | | |
| | | | PF | Pertinax | | | | | | | | |
| | | | PF | Resinol | | | | | | | | |
| | | | PF | Supraplast | | | | | | | | |
| | | | PF | Trolitan | | | | | | | | |
| | | | PF | Trolitax | | | | | | | | |

| Material-Haupt-gruppe | Material-Unter-gruppe | Qualität | StNr | DIN | AFNOR | UNI | BS | JIS | SS | GOST | UNS | USA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 Kunststoff | 8.2 Duroplast | 8.2.2 Melamin-Formaldehyd | MF | Albanit | | Melmex | Melbrite | | Isomin | | | Biramin |
| | | | MF | Duropal | | Formica | Melochem | | Perstorp-Platte | | | Resimene |
| | | | MF | Getalit | | | Minitrack | | | | | |
| | | | MF | Homapal | | | Puriplast | | | | | |
| | | | MF | Hornit | | | | | | | | |
| | | | MF | Madurit | | | | | | | | |
| | | | MF | Maprenal | | | | | | | | |
| | | | MF | Melan | | | | | | | | |
| | | | MF | Melolam | | | | | | | | |
| | | | MF | Melopas | | | | | | | | |
| | | | MF | Nyhamin | | | | | | | | |
| | | | MF | Pressal | | | | | | | | |
| | | | MF | Resart | | | | | | | | |
| | | | MF | Resopal | | | | | | | | |
| | | | MF | Ricolor | | | | | | | | |
| | | | MF | Supraplast | | | | | | | | |
| | | | MF | Trespa-Duro | | | | | | | | |
| | | | MF | Ultrapas | | | | | | | | |
| | | 8.2.3 Harnstoff-Formaldehyd | UF | Bakelite | | | Gabrite | | | | | |
| | | | UF | Carbalit | | | Urochem | | | | | |
| | | | UF | Cibamin | | | | | | | | |
| | | | UF | Kaurit | | | | | | | | |
| | | | UF | Melocol | | | | | | | | |
| | | | UF | Pollopas | | | | | | | | |
| | | | UF | Resamin | | | | | | | | |
| | | | UF | Urecoll | | | | | | | | |
| | | 8.2.4 Polyurethan-harz | PUR | Baydur | | | | | | | | |
| | | | PUR | Bayfill | | | | | | | | |
| | | | PUR | Bayfit | | | | | | | | |
| | | | PUR | Bayflex | | | | | | | | |
| | | | PUR | Baynat | | | | | | | | |
| | | | PUR | Baypreg | | | | | | | | |
| | | | PUR | Contilan | | | | | | | | |
| | | | PUR | Desmodur | | | | | | | | |
| | | | PUR | Elastolan | | | | | | | | |
| | | | PUR | Elastolit | | | | | | | | |
| | | | PUR | Elastopal | | | | | | | | |
| | | | PUR | Elastopan | | | | | | | | |
| | | | PUR | Elastopor | | | | | | | | |
| | | | PUR | Moltopren | | | | | | | | |
| | | | PUR | Vulkollan | | | | | | | | |
| | | 8.2.5 Silikonharz | SI | Baysilon | | | | | | | | Silikon |
| | | | SI | Silastic | | | | | | | | Textolite |
| | | | SI | Silopren | | | | | | | | |
| | | 8.2.6 Polyimid duroplastisch | PI | Sintimid | | | | | | | | Kapton |
| | | | PI | | | | | | | | | Vespel SP |
| | | 8.2.7 ungesättigter Polyesterharz | UP | Alpolit | Norsomix | Crystic Impel | Shimoco | Rigolac | Sonoglas | | | Freeflow |
| | | | UP | Ampal | Stratyl | Uralam | | Vyloglass | | | | Haysite |
| | | | UP | Artrite | | | | | | | | Hetron |
| | | | UP | Dobeckan | | | | | | | | Rosite |
| | | | UP | Durapreg | | | | | | | | Selectron |
| | | | UP | Durax | | | | | | | | |
| | | | UP | Durodet | | | | | | | | |

# Technische Informationen

Werkstofftabelle



| Material-Haupt-gruppe | Material-Unter-gruppe | Qualität | StNr | DIN | AFNOR | UNI | BS | JIS | SS | GOST | UNS | USA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 Kunststoff | 8.2 Duroplast | 8.2.7 ungesättigter Polyesterharz | UP | Hostaset | | | | | | | | |
| | | | UP | Keripol | | | | | | | | |
| | | | UP | Laminac | | | | | | | | |
| | | | UP | Leguval | | | | | | | | |
| | | | UP | Menzolit | | | | | | | | |
| | | | UP | Oldapal | | | | | | | | |
| | | | UP | Palatal | | | | | | | | |
| | | | UP | Polydur | | | | | | | | |
| | | | UP | Polyleit | | | | | | | | |
| | | | UP | Resipol | | | | | | | | |
| | | | UP | Setarol | | | | | | | | |
| | | | UP | Synolite | | | | | | | | |
| | | | UP | Vestopal | | | | | | | | |
| | | | UP | Vetrophen | | | | | | | | |
| | | | UP | Viapal | | | | | | | | |
| | | 8.2.8 Epoxydharz | EP | Araldit | | Epikote | Eponac | Epodite | | | | Conapoxy |
| | | | EP | Beckopox | | Epon | | | | | | Epiphan |
| | | | EP | Duroxyn | | | | | | | | Epocast |
| | | | EP | Epoxin | | | | | | | | Epolene |
| | | | EP | Eurepox | | | | | | | | Epolite |
| | | | EP | Grilonit | | | | | | | | Stycast |
| | | | EP | Lekutherm | | | | | | | | |
| | | | EP | Rütapox | | | | | | | | |
| | | | EP | Trolon | | | | | | | | |
| | 8.3 faserverstärkter Kunststoff | 8.3.1 Aramidfaserver-stärkt | AFK | Kevlar | | | | | | | | |
| | | 8.3.2 Borfaserver-stärkt | BFK | | | | | | | | | |
| | | 8.3.3 Kohlenstofffa-serverstärkt | CFK | | | | | | | | | |
| | | 8.3.4 Glasfaserver-stärkt | GFK | | | | | | | | | |
| | | 8.3.5 Metallfaserver-stärkt | MFK | | | | | | | | | |
| | | 8.3.6 Synthesefaser-verstärkt | SFK | | | | | | | | | |
| | 8.4 Sandwich | 8.4.1 Plastik - Metall - Holz | P - M - H | | | | | | | | | |
| | | 8.4.2 Hohlkörper | Hohlkörper | | | | | | | | | |
| | | 8.4.3 Metall | Metall | | | | | | | | | |
| 9 Graphit | 9.1 Standard Graphit | 9.1.1 Standard Graphit | R8340 | Graphit | | | | | | | | |
| | | | R8500X | Graphit | | | | | | | | |
| | | | Techno-graph 15 | Graphit | | | | | | | | |
| | | | Techno-graph 30 | Graphit | | | | | | | | |
| | | 9.1.2 Verschleiß-festes Graphit | R8510 | Graphit | | | | | | | | |
| | | | R8650 | Graphit | | | | | | | | |
| | | | Union Poco EDM C-3 | Graphit | | | | | | | | |
| | | | Union Poco EDM1 | Graphit | | | | | | | | |
| | | | Union Poco EDM3 | Graphit | | | | | | | | |

| Zugfestigkeit N/mm² | Vickers HV | Brinell HB | Rockwell HRC | Shore C |
|---|---|---|---|---|
| 575 | 180 | 171 | | |
| 595 | 185 | 176 | | |
| 610 | 190 | 181 | | |
| 625 | 195 | 185 | | |
| 640 | 200 | 190 | 12 | |
| 660 | 205 | 195 | 13 | |
| 675 | 210 | 199 | 14 | |
| 690 | 215 | 204 | 15 | |
| 705 | 220 | 209 | 15 | 28 |
| 720 | 225 | 214 | 16 | |
| 740 | 230 | 219 | 17 | 29 |
| 755 | 235 | 223 | 18 | |
| 770 | 240 | 228 | 20.3 | 30 |
| 785 | 245 | 233 | 21.3 | |
| 800 | 250 | 238 | 22.2 | 31 |
| 820 | 255 | 242 | 23.1 | 32 |
| 835 | 260 | 247 | 24 | 33 |
| 850 | 265 | 252 | 24.8 | |
| 865 | 270 | 257 | 25.6 | |
| 880 | 275 | 261 | 26.4 | 34 |
| 900 | 280 | 268 | 27.1 | |
| 915 | 285 | 271 | 27.8 | 35 |
| 930 | 290 | 276 | 28.5 | |
| 950 | 295 | 280 | 29.2 | 36 |
| 965 | 300 | 285 | 29.8 | 37 |
| 995 | 310 | 295 | 31 | 38 |
| 1030 | 320 | 304 | 32.2 | 39 |
| 1060 | 330 | 314 | 33.3 | 40 |
| 1095 | 340 | 323 | 34.3 | 41 |
| 1125 | 350 | 333 | 35.5 | 42 |
| 1155 | 360 | 342 | 36.6 | 43 |
| 1190 | 370 | 352 | 37.7 | 44 |
| 1220 | 380 | 361 | 38.8 | 45 |
| 1255 | 390 | 371 | 39.8 | 46 |
| 1290 | 400 | 380 | 40.8 | 47 |
| 1320 | 410 | 390 | 41.8 | 48 |
| 1350 | 420 | 399 | 42.7 | |
| 1385 | 430 | 409 | 43.6 | 49 |
| 1420 | 440 | 418 | 44.5 | |
| 1455 | 450 | 428 | 45.3 | 51 |
| 1485 | 460 | 437 | 46.1 | 52 |
| 1520 | 470 | 447 | 46.9 | 53 |
| 1555 | 480 | 465 | 47.7 | 54 |
| 1595 | 490 | 466 | 48.4 | |
| 1630 | 500 | 475 | 49.1 | 57 |
| 1665 | 510 | 485 | 49.8 | 58 |
| 1700 | 520 | 494 | 50.5 | 59 |
| 1740 | 530 | 504 | 51.1 | 60 |
| 1775 | 540 | 513 | 51.7 | 61 |
| 1810 | 550 | 523 | 52.3 | 62 |

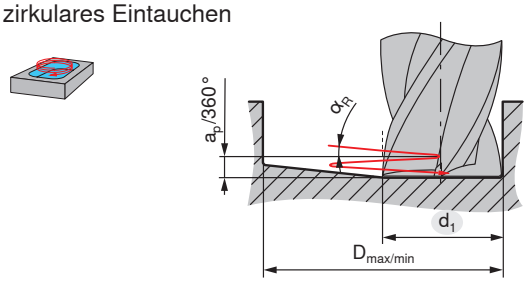
| Zugfestigkeit N/mm² | Vickers HV | Brinell HB | Rockwell HRC | Shore C |
|---|---|---|---|---|
| 1845 | 560 | 532 | 53 | 63 |
| 1880 | 570 | 542 | 53.6 | 64 |
| 1920 | 580 | 551 | 54.1 | 65 |
| 1955 | 590 | 561 | 54.7 | 66 |
| 1995 | 600 | 570 | 55.2 | 67 |
| 2030 | 610 | 580 | 55.7 | 68 |
| 2070 | 620 | 589 | 56.3 | 69 |
| 2105 | 630 | 599 | 56.8 | 70 |
| 2145 | 640 | 608 | 57.3 | 71 |
| 2180 | 650 | 618 | 57.8 | 72 |
| 2210 | 660 | 628 | 58.3 | 73 |
| 2240 | 665 | 633 | 58.8 | 74 |
| 2280 | 670 | 638 | 59.3 | |
| 2310 | 675 | 643 | 59.8 | 75 |
| 2350 | 680 | 648 | 60.3 | 76 |
| 2380 | 685 | 653 | 61.1 | 77 |
| 2410 | 690 | 658 | 61.3 | 78 |
| 2450 | 695 | 663 | 61.7 | 79 |
| 2480 | 710 | 668 | 62.2 | 80 |
| 2520 | 720 | 678 | 62.6 | 81 |
| 2550 | 730 | 683 | 63.1 | 82 |
| 2590 | 740 | 693 | 63.5 | |
| 2630 | 750 | 703 | 63.9 | 83 |
| 2660 | 760 | 708 | 64.3 | 84 |
| 2700 | 770 | 718 | 64.7 | 85 |
| 2730 | 780 | 723 | 65.1 | |
| 2770 | 790 | 733 | 65.5 | 86 |
| 2800 | 800 | 738 | 65.9 | |
| 2840 | 810 | 748 | 66.3 | 87 |
| 2870 | 820 | 753 | 66.7 | 88 |
| 2910 | 830 | 763 | 67 | |
| 2940 | 840 | 768 | 67.4 | 89 |
| 2980 | 850 | | 67.7 | |
| 3010 | 860 | | 68.1 | 90 |
| 3050 | 870 | | 68.4 | |
| 3080 | 880 | | 68.7 | 91 |
| 3120 | 890 | | 69 | |
| 3150 | 900 | | 69.3 | 92 |
| 3190 | 910 | | 69.6 | |
| 3220 | 920 | | 69.9 | |
| 3260 | 930 | | 70.1 | |

Umrechnungswerte sind angenähert nach DIN EN ISO18265 (02-2004)

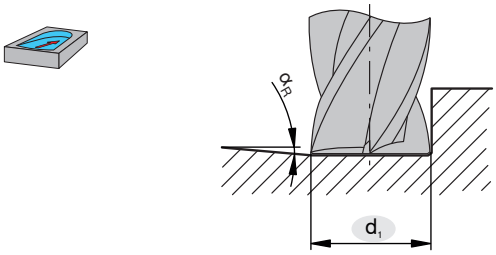
## Eintauchen

Es wird empfohlen, schräg (in Form einer Rampe) oder spiralförmig (zirkular) in das Material einzutauchen. Das direkte "Bohrfräsen" (axiales Eintauchen) wird generell nicht empfohlen, da hier eine Reduzierung der Schnittwerte bis zu 80 % erforderlich ist.
Generell gilt, dass beim Eintauchen die Nebenschneiden des Fräswerkzeugs über bzw. zur Mitte schneidend sein müssen.

zirkulares Eintauchen




schräges Eintauchen




$D_{max}$ [mm] = größter Bohrungs-Ø
$D_{min}$ [mm] = kleinster Bohrungs-Ø

## Eintauchwinkel / Axiale Zustellung beim zirkularen Eintauchen bei einem Bohrungsdurchmesser $D_{min}$

| | | Eintauchwinkel $\alpha_R$ [°] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Werkzeug-Ø $d_1$ [mm]** | **Taschen-Ø $D_{min}$ [mm]** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | Zustellung $a_p$/360° [mm] |
| 3 | 3,90 | 0,1 | 0,1 | 0,2 | 0,2 | 0,3 | 0,3 | 0,4 | 0,4 | 0,5 | |
| 4 | 5,20 | 0,1 | 0,2 | 0,3 | 0,3 | 0,4 | 0,5 | 0,5 | 0,6 | 0,7 | |
| 5 | 6,50 | 0,2 | 0,2 | 0,3 | 0,4 | 0,5 | 0,6 | 0,7 | 0,7 | 0,8 | |
| 6 | 7,80 | 0,2 | 0,3 | 0,4 | 0,5 | 0,6 | 0,7 | 0,8 | 0,9 | 1,0 | |
| 8 | 10,40 | 0,3 | 0,4 | 0,5 | 0,7 | 0,8 | 0,9 | 1,1 | 1,2 | 1,3 | |
| 10 | 13,00 | 0,3 | 0,5 | 0,7 | 0,8 | 1,0 | 1,2 | 1,3 | 1,5 | 1,7 | |
| 12 | 15,60 | 0,4 | 0,6 | 0,8 | 1,0 | 1,2 | 1,4 | 1,6 | 1,8 | 2,0 | |
| 14 | 18,20 | 0,5 | 0,7 | 0,9 | 1,2 | 1,4 | 1,6 | 1,9 | 2,1 | 2,3 | |
| 16 | 20,80 | 0,5 | 0,8 | 1,1 | 1,3 | 1,6 | 1,9 | 2,1 | 21,4 | 2,7 | |
| 18 | 23,40 | 0,6 | 0,9 | 1,2 | 1,5 | 1,8 | 2,1 | 2,4 | 2,7 | 3,0 | |
| 20 | 26,00 | 0,7 | 1,0 | 1,3 | 1,6 | 2,0 | 2,3 | 2,6 | 3,0 | 3,3 | |

Minimaler Taschen-Ø $D_{min} = d_1 * 1,3$
Axiale Zustellung $a_p$/360° $a_p = \tan \alpha_R * \pi * (D_{min} - d_1)$

## Eintauchwinkel / Axiale Zustellung beim zirkularen Eintauchen bei einem Bohrungsdurchmesser $D_{max}$

| | | Eintauchwinkel $\alpha_R$ [°] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Werkzeug-Ø $d_1$ [mm]** | **Taschen-Ø $D_{max}$ [mm]** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | Zustellung $a_p$/360° [mm] |
| 3 | 6,00 | 0,3 | 0,5 | 0,7 | 0,8 | 1,0 | 1,2 | 1,3 | 1,5 | 1,7 | |
| 4 | 8,00 | 0,4 | 0,7 | 0,9 | 1,1 | 1,3 | 1,5 | 1,8 | 2,0 | 2,2 | |
| 5 | 10,00 | 0,5 | 0,8 | 1,1 | 1,4 | 1,7 | 1,9 | 2,2 | 2,5 | 2,8 | |
| 6 | 12,00 | 0,7 | 1,0 | 1,3 | 1,6 | 2,0 | 2,3 | 2,6 | 3,0 | 3,3 | |
| 8 | 16,00 | 0,9 | 1,3 | 1,8 | 2,2 | 2,6 | 3,1 | 3,5 | 4,0 | 4,4 | |
| 10 | 20,00 | 1,1 | 1,6 | 2,2 | 2,7 | 3,3 | 3,9 | 4,4 | 5,0 | 5,5 | |
| 12 | 24,00 | 1,3 | 2,0 | 2,6 | 3,3 | 4,0 | 4,6 | 5,3 | 6,0 | 6,6 | |
| 14 | 28,00 | 1,5 | 2,3 | 2,1 | 3,8 | 4,6 | 5,4 | 6,2 | 7,0 | 7,8 | |
| 16 | 32,00 | 1,8 | 2,6 | 3,5 | 4,4 | 5,3 | 6,2 | 7,1 | 8,0 | 8,9 | |
| 18 | 36,00 | 2,0 | 3,0 | 1,4 | 4,9 | 5,9 | 6,9 | 7,9 | 9,0 | 10,0 | |
| 20 | 40,00 | 2,2 | 3,3 | 4,4 | 5,5 | 6,6 | 7,7 | 8,8 | 10,0 | 11,1 | |

Maximaler Taschen-Ø $D_{max} = d_1 * 2$

## Empfohlene Eintauchwinkel

| | Eintauchwinkel $\alpha_R$ [°] |
|---|---|
| für Fräser mit Zähnezahl z ≤ 3 | 6° - 10° |
| für Fräser mit Zähnezahl z = 4 | 3° - 6° |
| für Fräser mit Zähnezahl z ≥ 5 | 2° - 3° |

| Problemstellung | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Schlechte Oberfläche | | | | Werkzeugverschleiß | | | | |
| Rauhigkeit | Welligkeit | Winkligkeit | Rattern, Vibration | Schneidkanten-/Freiflächenverschleiß | Schneidkantenausbrüche | Werkzeugbruch | Spänestau, Vibrationen | **Ursache, Abhilfe, Maßnahme** |
| ⇧ | ⇧ | ⇧ | | | | | ⇩ | Zähnezahl |
| ⇧ | ⇧ | ⇧ | | | | | | Spiralwinkel |
| ⇧ | ⇧ | ⇧ | ⇩ | ⇩ | | ⇧ | | Schnittgeschwindigkeit |
| ⇩ | ⇩ | ⇩ | | ⇧ | ⇩ | ⇩ | ⇩ | Vorschub |
| ⇩ | ⇩ | ⇩ | | | | ⇩ | ⇩ | Schnitttiefe |
| | | | Gleichlauf | | Gleichlauf | | | Frässtrategie |
| | | | ≈ | | ≈ | | | Werkstückspannung |
| | | | ≈ | | | | | Werkzeugspannung |
| | | | ⇩ | | ⇩ | ⇩ | | Auskraglänge |
| | | | ≈ | | ≈ | | | Spindelspiel |

⇧ erhöhen, vergrößern

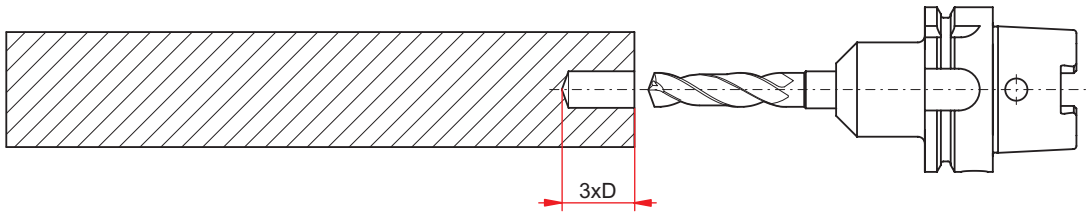
⇩ vermindern, verkleinern

≈ kontrollieren, optimieren

# Technische Informationen

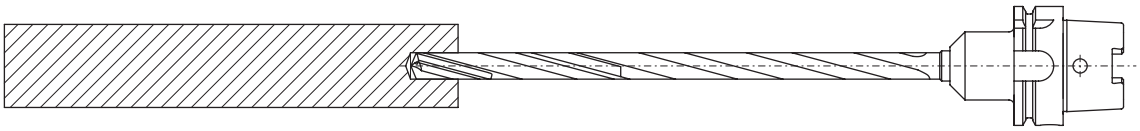
Anwendungshinweise Tieflochspiralbohrer ab 16xØ

## Pilotbohrung setzen



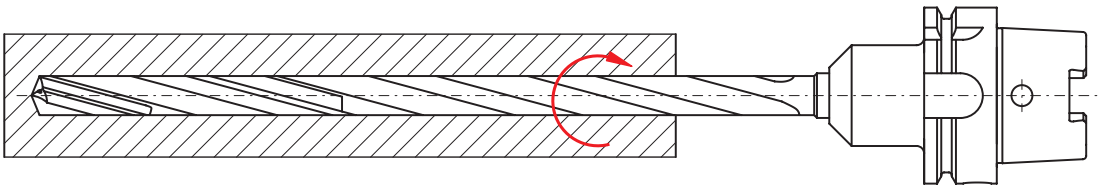

- Für die Pilotbohrung empfehlen wir den Einsatz unseres W0108 (für UN) oder W1205 (für AL).
- Der Pilotbohrer sollte im Durchmesser 0,02 mm größer sein, als der Tieflochbohrer.
- Bitte stellen Sie eine präzise Pilotbohrung mit einer Mindesttiefe von 3xD sicher.

## Eintritt in die Pilotbohrung mit Tieflochbohrer



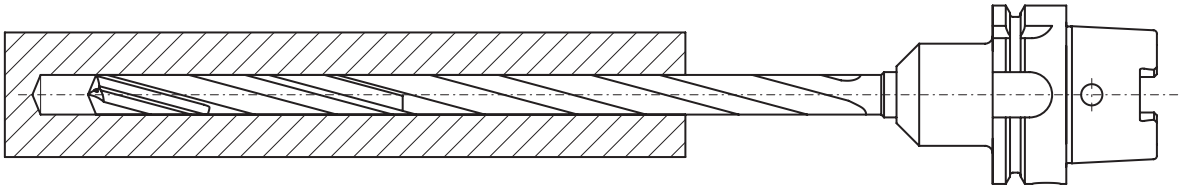
- Tieflochbohrung bis 40xD
  Verwenden Sie eine geringe Drehzahl (n=300 U/min) und einen langsamen Eilvorschub ($v_f$=1000 mm/min) beim Eintritt in die Pilotbohrung. Stoppen Sie 1-2 mm vor Erreichen des Bohrungsgrundes den Vorschub. Anschließend die Drehzahl stufenlos bis zum Erreichen der Zyklusdrehzahl erhöhen.
- Tieflochbohrung ab 40xD
  Mit linksdrehendem Tieflochbohrer mit geringer Drehzahl (n=100 U/min) und einem langsamen Eilvorschub ($v_f$=1000 mm/min) in die Pilotbohrung einfahren. Stoppen Sie 1-2 mm vor Erreichen des Bohrungsgrundes den Vorschub und die Drehzahl. Anschließend das Werkzeug **rechtsdrehend** auf Zyklusdrehzahl bringen.

## Tieflochbohren



- Erhöhen Sie den Vorschub auf die Zyklusgeschwindigkeit.
- Bohren Sie ohne Entspanzyklus bis zur gewünschten Bohrtiefe.

## Herausfahren des Bohrers



- Fahren Sie den Bohrer etwa 1xØ zurück.
- Verringern Sie die Drehzahl stufenlos (n=300 U/min). Mit Eilvorschub ($v_f$=3000 mm/min) aus der Bohrung herausfahren.

# Technische Informationen

Anwendungshinweise Tieflochspiralbohrer ab 16xØ

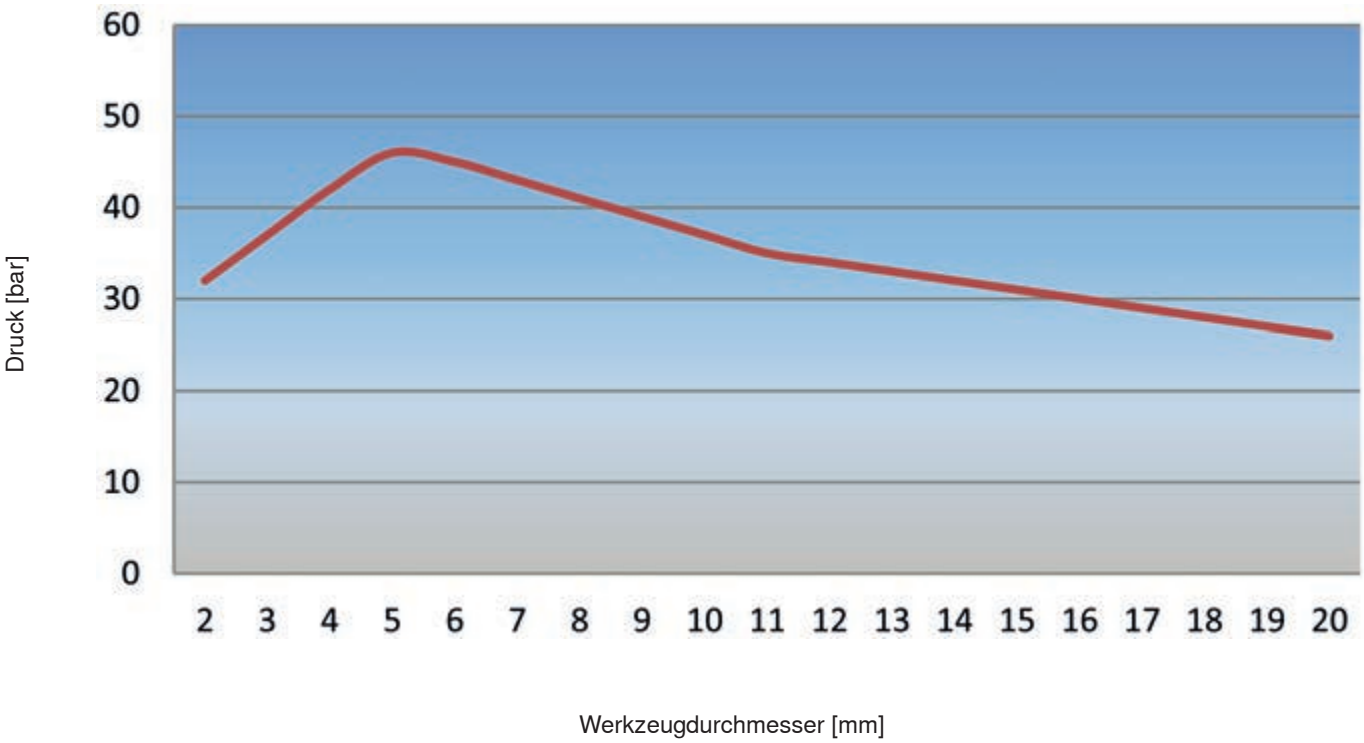
## Hinweis!

- Bei ungünstigen Einsatzbedingungen ist ab einer Bohrtiefe von 30xØ ein Entspanzyklus alle 3xØ erforderlich. Die Entspanaushubbewegung (Rückzugsbewegung) soll auf Pilotbohrungstiefe erfolgen.
- Beim Bohrungsaustritt und beim Durchbohren von Querbohrungen sollte wegen der Ausbruchgefahr der Schneidkanten der Vorschub um 50 % reduziert werden.
- Der empfohlene Kühlmitteldruck ist dem Diagramm Kühldruckempfehlung zu entnehmen (siehe unten).

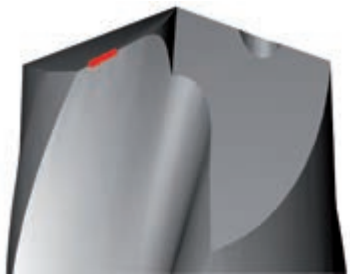
**Es ist unbedingt darauf zu achten, dass Tieflochbohrer NIEMALS mit voller Drehzahl frei im Maschinenraum bewegt werden!**

## Kühlmitteldruck

Kühlmitteldrücke sind grundsätzlich maschinenabhängig, da jede Maschine ein anderes Kühlsystem und somit auch andere Leckverhältnisse aufweist. Die empfohlenen Werte sind speziell auf unsere Werkzeuge und deren Einsatzgebiet angepasst. So wurde z.B. für unsere Tieflochspiralbohrer das erforderliche Kühlmittelvolumen für Stahl ermittelt, da diese Werkzeuge speziell für diesen Werkstoff konzipiert wurden. Sollten andere Materialien gebohrt werden, so ist das angegebene IK-Volumen immer noch mehr als ausreichend. Da für Stahl und speziell für Tieflochbohrer das größte Volumen benötigt wird, kann die Empfehlung für alle Bohrer verallgemeinert werden.

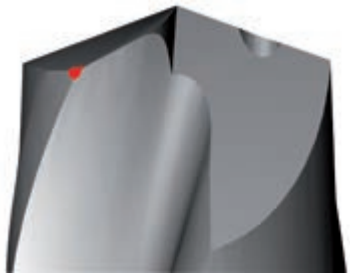


## Aufbauschneide



| Fehler | | Lösung |
|---|---|---|
| Schnittgeschwindigkeit zu gering | - | Schnittgeschwindigkeit erhöhen |
| unzureichende Kühlung | - | Kühlmitteldruck erhöhen und optimale Zufuhr sicherstellen |

## Ausbrüche Schneidecken



| Fehler | | Lösung |
|---|---|---|
| instabile Werkstückspannung | - | Werkstückspannung prüfen |
| Rundlauffehler | - | Rundlauffehler beheben, Spannmittel kontrollieren |
| unzureichende Kühlung | - | Kühlmitteldruck erhöhen und optimale Zufuhr sicherstellen |

## Ausbrüche Hauptschneide



| Fehler | | Lösung |
|---|---|---|
| instabile Werkstückspannung | - | Werkstückspannung prüfen |
| Beschichtung | - | Werkzeugtyp mit geeigneter Beschichtung wählen (zäher) |
| zu großer Werkzeugverschleiß | - | Intervall des Werkzeugwechsels anpassen |

# Technische Informationen

Anwendungshinweise Bohren

## Untypischer Verschleiß der Querschneide



| Fehler | | Lösung |
|---|---|---|
| Vorschub zu groß | - | Vorschub verringern |
| Schnittgeschwindigkeit zu gering | - | Schnittgeschwindigkeit erhöhen |

## Werkzeugbruch



| Fehler | | Lösung |
|---|---|---|
| Vorschub zu groß | - | Vorschub verringern |
| Späne werden nicht abtransportiert (Spänestau) | - | Kühlung – Schnittdaten anpassen |
| zu großer Werkzeugverschleiß | - | Intervall des Werkzeugwechsels anpassen |
| Schnittdaten falsch gewählt | - | siehe Schnittdatenempfehlung |
| instabile Werkstückspannung | - | Werkstückspannung prüfen |
| unzureichende Kühlung | - | Kühlmitteldruck erhöhen und optimale Zufuhr sicherstellen |

| Problemstellung | | | | | | | |
|---|---|---|---|---|---|---|---|
| Bohrungsqualität | | | | | Spanbildung | | |
| Schlechte Oberflächenqualität | Bohrung zu groß | Bohrung zu klein | Schwankende Genauigkeit | Bohrung nicht zylindrisch | Lange Späne | Schlechte Spanabfuhr | **Ursache, Abhilfe, Maßnahme** |
| ≈ | ≈ | | | ≈ | | | Rundlauffehler Aufnahme |
| ≈ | ≈ | | | ≈ | | | Rundlauffehler Spindel |
| | | ⇩ | ⇩ | | | ⇩ | Schnittgeschwindigkeit |
| | | ⇧ | ⇩ | ⇩ | ⇧ | | Vorschub |
| ≈ | | ⇧ | ⇧ | | | ⇧ | Kühlmittel |
| | ≈ | ≈ | | | | | Nenndurchmesser Werkzeug |
| ≈ | ≈ | ≈ | ≈ | ≈ | ≈ | ≈ | Bohrer-Type |

⇧ erhöhen, vergrößern

⇩ vermindern, verkleinern

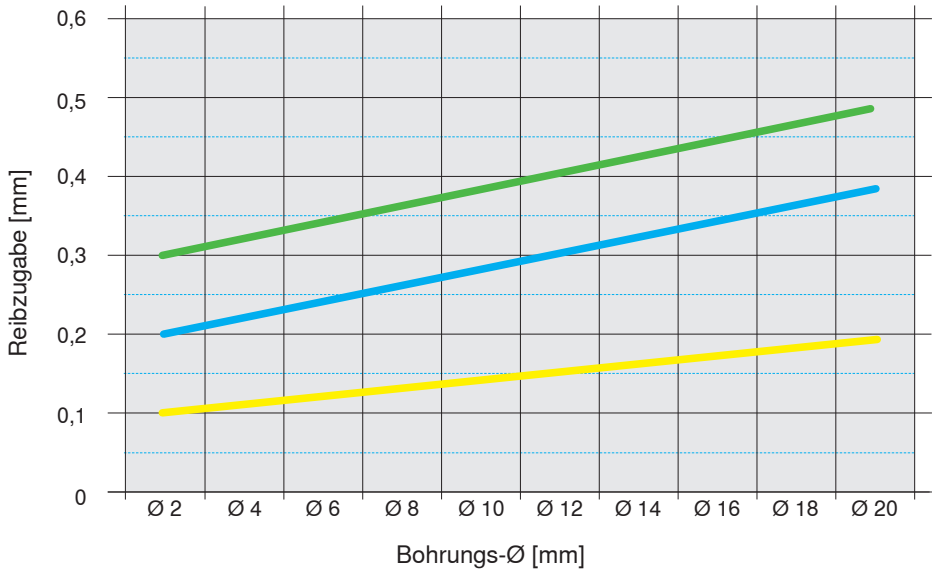
≈ kontrollieren, optimieren

# Technische Informationen

Anwendungshinweise - Reiben

Um ein optimales Bearbeitungsergebnis zu erzielen, ist die Einhaltung einer Mindestspandicke erforderlich. Die Reibzugabe für die Berechnung des Vorbearbeitungs-Ø ist in Abhängigkeit vom Nenndurchmesser der Bohrung und dem zu bearbeitenden Material zu wählen.

Die empfohlenen Werte für die Reibzugabe entnehmen Sie bitte dem unten angeführten Diagramm.




Stahl, GGG, GWT, GTS, ...

Titan, VA, V2A, ...

Alu, Kupfer, Messing, ...

| Problemstellung | | | | | | | Ursache, Abhilfe, Maßnahme |
|---|---|---|---|---|---|---|---|
| Schlechte Bohrungsqualität | | | | | Werkzeugverschleiß | | |
| Schlechte Oberflächenqualität | Bohrung zu groß | Bohrung zu klein | Konische Bohrung | Unrunde Bohrung | Reibahle klemmt | Reibahle bricht aus | |
| ≈ | ≈ | | ≈ | ≈ | | | Rundlauffehler Reibahle |
| ≈ | ≈ | | ≈ | ≈ | | | Rundlauffehler Aufnahme |
| ≈ | ≈ | | ≈ | ≈ | | | Rundlauffehler Spindel |
| ⇩ | ⇩ | ⇧ | | | | | Schnittgeschwindigkeit |
| ⇧ | ⇩ | ⇧ | | | | ⇩ | Vorschub |
| ≈ | | ≈ | | | | | Kühlmittel "fetter" oder Schneidöl verwenden |
| | ≈ | | | | | | Kühlmittel zu fett |
| | ≈ | ≈ | | | ≈ | ≈ | Werkzeugmaße prüfen |
| ≈ | ≈ | | ≈ | ≈ | | | Fehlerhafter Anschnitt |
| ≈ | | | | | ≈ | ≈ | Rundschlifffase zu breit |
| ≈ | | ≈ | | | | | Reibahle stumpf |
| | | ≈ | | | | | Duktiler Werkstoff |
| ≈ | | ≈ | | | ≈ | ≈ | Zu geringes Bearbeitungsaufmaß |
| | | | ≈ | ≈ | | | Vorbohrung und Reibachse fluchtet nicht |
| | | | ≈ | ≈ | | | Pendelhalter verwenden |
| | | | | | ≈ | ≈ | Werkstoff neigt zum Klemmen; Schälreibahle verwenden |
| ≈ | | ≈ | | | | | Beschichten |

⇧ erhöhen, vergrößern

⇩ vermindern, verkleinern

≈ kontrollieren, optimieren

| | |
|---|---|
| **A** | |
| A.. DCLN.. | A228 |
| A.. DDUN.. | A229 |
| A.. DSKN.. | A230 |
| A.. DWLN.. | A231 |
| A.. PCLN.. | A232 |
| A.. PDUN.. | A233 |
| A.. PSKN.. | A234 |
| A.. PTFN.. | A235 |
| A.. PWLN.. | A236 |
| A.. SCFC.. | A237 |
| A.. SCLC.. | A238 |
| A.. SDQC.. | A240 |
| A.. SDUC.. | A241 |
| A.. SDXC.. | A243 |
| A.. SSKC.. | A244 |
| A.. SSSC.. | A245 |
| A.. STFC.. | A246 |
| A.. SVQC.. | A247 |
| A.. SVUC.. | A248 |
| A.. SVXC.. | A250 |
| A.. SVXP.. | A250 |
| **C** | |
| CCGT | A82, A83, A84 |
| CCGW | A84, A92, A93, A94, A95 |
| CCLN | A167 |
| CCMT | A82, A83, A84 |
| CCMX | A96 |
| CKJN | A168 |
| CNGA | A79 |
| CNGM | A63, A64, A65, A66 |
| CNGN | A97 |
| CNGP | A63, A64, A65, A66 |
| CNGX | A79 |
| CNMA | A66 |
| CNMG | A63, A64, A65, A66 |
| CNMM | A65, A66 |
| CNMX | A81 |
| CNNX | A79 |
| CRDN | A169 |
| CRGN | A170 |
| CSBN | A171 |
| CSDN | A172 |
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Technische Änderungen, Produktverbesserungen vorbehalten.

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