

09/2024

schreurs tools Gesamtkatalog  
—  
schreurs tools general catalog

# SPECIAL LINE

## **Hochpräzise Sonderwerkzeuge von schreurs.**

Wir konstruieren und fertigen leistungsfähige VHM-Sonderwerkzeuge auf allerhöchstem Niveau. Mit komplexen Geometrien, Formen und Beschichtungen. Höchstpräzise, reproduzierbar, ab 3 Stück.

## **High-precision special tools.**

We design and manufacture high-performance solid carbide special tools at the very highest level. With complex geometries, shapes and coatings. Highly precise, reproducible, from 3 pieces.



# WERKZEUGE. PRÄZISION. VOLLHARTMETALL. LEISTUNG.

**schreurs** steht seit über 30 Jahren für leistungsfähige VHM-Werkzeuge, exzellente Lieferfähigkeit und hohe Fachkompetenz. Unser Anspruch ist es, unsere Kunden schnell zum Ziel zu bringen: Mit hochpräzisen Werkzeugen, kurzer Reaktionszeit und technischer Unterstützung vor Ort.

Unser Produktportfolio ist perfekt ausgerichtet auf die Anforderungen des modernen Werkzeug- und Formenbaus. Wir bieten eine umfassende Auswahl an Zerspanungswerkzeugen für alle gängigen Anwendungen und Materialien. Über 150.000 unserer Lagerwerkzeuge sind mit High-End Messmaschinen vermessen.

## SONDERWERKZEUGE

Darüber hinaus sind wir Spezialisten in der Konstruktion, Fertigung und Anwendung von VHM-Sonderwerkzeugen. Mit jahrzehntelanger Erfahrung fertigen wir hochperformante Sonderlösungen mit individuellen Formen, Abmessungen und Geometrien. Verlassen Sie sich auf Qualität aus dem Hause **schreurs**.

# TOOLS. PRECISION. SOLID CARBIDE. PERFORMANCE.

For more than 30 years, **schreurs** has stood for high-performance solid carbide tools, excellent delivery capability and high professional competence. Our claim is to get our customers to their goal quickly: With high-precision tools, short response time and technical support on site.

Our product range is perfectly tailored to the demands of modern tool and mould making. We offer a comprehensive selection of machining tools for all standard applications and materials. Over 150,000 stock tools are measured with high-end measuring gauges.

## SPECIAL TOOLS

We are also specialists in the design, manufacture and use of special tools out of solid carbide. We have decades of experience in the manufacture of high-performance special solutions with individual shapes, dimensions and geometries. You can always rely on **schreurs** quality.

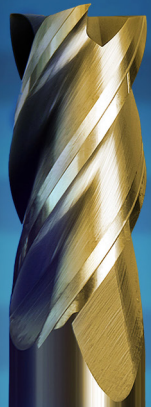
## 150.000 HOCHPRÄZISE VHM- WERKZEUGE SOFORT LIEFERBAR.

Unser Lagerprogramm zeichnet sich durch große Vielfalt, beste Qualität und hohe Präzision aus. Neben einem breiten und tiefen Angebot an **Fräswerkzeugen ab Ø 0,06 mm** bieten wir VHM-Bohr- und Reibwerkzeuge, Kreissägen und Wendepplatten-Werkzeuge. Die hohe Lagerverfügbarkeit, kurze Reaktionszeiten und die Wirtschaftlichkeit unserer Werkzeuge sind Argumente, die für sich sprechen.

## 150.000 HIGH-PRECISION SOLID CARBIDE TOOLS AVAILABLE FROM STOCK

Our range of stock items is characterised by enormous variety, top quality and high precision. Apart from a broad and deep range of milling tools from Ø 0.06 mm we also offer solid carbide drilling and reamers, circular saws and turning plate tools. The high stock availability, short reaction times and the efficiency of our tools are arguments that speak for themselves.





## Performance Line

Höchstleistung beim Schlichten & Schruppen bis 55 HRC.



## Hard Line

Exzellente Ergebnisse für harte Werkstoffe bis 65 HRC.



## Alu Line

Hervorragende Oberflächenqualität für Aluminium, Kupfer und Kunststoffe



## Karat Line

Die Referenz in der Graphit-Zerspanung.



## Neo Line

Präzision beim Schruppen & Schlichten bis 55 HRC.



## X Line

High Performance Kugelfräser bis 62 HRC.



Der Klimawandel ist eine der dringenden globalen Herausforderungen. Wir bei schreurs wollen aus Überzeugung einen Beitrag dazu leisten diesen zu bekämpfen: Wir haben unseren CO<sub>2</sub>-Fußabdruck erhoben, Reduktionsziele formuliert und unvermeidbare Emissionen kompensiert.

Weil wir überzeugt sind, damit das ethisch und wirtschaftlich das Richtige zu tun, gehen wir auch als mittelständisches Unternehmen bereits heute deutlich über externe Erfordernisse hinaus. Ganz besonders stolz sind wir darauf, dass schreurs für 2024/2025 klimagerechtes Unternehmen ist. Für unsere Kunden heißt dies ganz konkret: **Alle schreurs-Produkte sind klimaneutral und gehen mit null Gramm CO<sub>2</sub> in den ökologischen Fußabdruck unsere Kunden mit ein.** Mit unseren Produkten unterstützen wir daher auch Sie, ihr eigenes Klimaziel zu erreichen.

Climate change is one of the most urgent global challenges. We at schreurs are want to make a contribution to combating it: We have surveyed our CO<sub>2</sub> footprint, formulated reduction targets and compensated for unavoidable emissions. .

Because we are convinced that we are doing the right thing ethically and economically, we are already going well beyond external requirements, even as a medium-sized company. We are particularly proud of the fact that schreurs is a climate-friendly company for 2024/2025. For our customers, this means in concrete terms: **All schreurs products are climate-neutral and contribute zero grams of CO<sub>2</sub> to the ecological footprint of our customers.** With our products, we therefore also support you in achieving your own climate goal.

## DIN EN ISO 9001:2015 ZERTIFIZIERTE QUALITÄT

Von **schreurs** dürfen Sie immer beste Qualität erwarten. Deshalb sind wir für Entwicklung, Herstellung und Vertrieb von Präzisions-, Zerspanungswerkzeugen und damit verbundenen Serviceleistungen nach DIN EN ISO 9001 zertifiziert.

## DIN EN ISO 9001:2015 CERTIFIED QUALITY

You can always expect the best quality from schreurs. That is why we are certified according to DIN EN ISO 9001 for the development, manufacture and sale of precision, cutting tools and associated services.

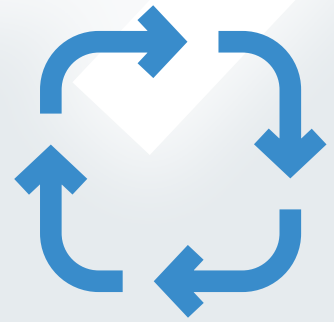




# JETZT RECYCELN

Kosten einsparen und Teil des Recycling-Kreislaufs werden.

# Nachhaltigkeit zahlt sich aus!



1.

Defekte oder verschlissene  
Werkzeuge zurückgeben









2.

Gutschrift für neue  
Werkzeuge erhalten

















Werden Sie Teil des Recycling Kreislaufes und geben Sie Ihre alten Werkzeuge an uns zurück. Daraufhin erhalten Sie eine Gutschrift zum tagesaktuellen Vollhartmetall (VHM) Kurs, die Sie für den Kauf neuer Schreurs Werkzeuge wieder verwenden können.

**Sprechen Sie uns gerne darauf an.**






















**Geometrie / Geometry**

 Werkzeuge mit Eckenradius Tools with corner radius	 Werkzeuge mit Zentrumschnitt Tools with centre cut	 Werkzeuge mit ungleicher Teilung Tools with unequal pitch	 Werkzeuge mit variabler Helix Tools with variable helix
 Werkzeuge mit 16° Schaftwinkel Tools with 16 degree shank angle	 Werkzeuge mit 15° Schaftwinkel Tools with 15 degree shank angle	 Werkzeuge mit 11° Schaftwinkel Tools with 11 degree shank angle	 Schutzfase protection chamfer



















**Toleranzen / Tolerances**

 Vollradius Tol. ± 0,002 mm Radius Tol. ± 0,002 mm	 Vollradius Tol. ± 0,007 mm Radius Tol. ± 0,007 mm	 Eckenradius Tol. 0 / -0,005 mm Corner radius Tol. 0 / -0,005 mm	 Durchmesser Tol. 0 / -0,010 mm Diameter Tol. 0 / -0,010 mm
 Vollradius Tol. ± 0,003 mm Radius Tol. ± 0,003 mm	 Vollradius Tol. ± 0,010 mm Radius Tol. ± 0,010 mm	 Eckenradius Tol. ± 0,015 mm Corner radius Tol. ± 0,015 mm	 Schaft-Toleranz h4 Shank tolerance h4
 Vollradius Tol. ± 0,005 mm Radius Tol. ± 0,005 mm	 Eckenradius Tol. ± 0,003 mm Corner radius Tol. ± 0,003 mm	 Eckenradius Tol. ± 0,010 mm Corner radius Tol. ± 0,010 mm	 Schaft-Toleranz h5 Shank tolerance h5
 Vollradius Tol. 0 / -0,005 mm Radius Tol. 0 / -0,005 mm	 Eckenradius Tol. ± 0,005 mm Corner radius Tol. ± 0,005 mm	 Eckenradius Tol. ± 0,020 mm Corner radius Tol. ± 0,020 mm	 Schaft-Toleranz h6 Shank tolerance h6

**Helix / Point angle**

 gerade genutet straight fluted	 Helix 35°	 Helix 25°	 Helix 32°	 Helix 40°	 60° Spitzenwinkel 60° point angle	 140° Spitzenwinkel 140° point angle
 Helix 20°	 Helix 40°	 Helix 28°	 Helix 38°	 Helix 42°-45°	 90° Spitzenwinkel 90° point angle	 150° Spitzenwinkel 150° point angle
 Helix 30°	 Helix 20°	 Helix 30°	 Helix 37°-40°	 Helix 45°	 130° Spitzenwinkel 130° point angle	 180° Spitzenwinkel 180° point angle

**Beschichtungen / Coatings**

 Dünnschicht für kleine Werkzeuge, TiAlN für Stahl, Guss, allgemeine Verwendung Thin coating for smaller tools, TiAlN for steel, Cast iron and general application	 TiAlN + Nachbehandlung, allgemeine Anwendung ST1 plus post-treatment for general application	 Anwendung Rostfrei, Nickel, Titan und Inconell INOX, nickel, titanium and inconell based applications
 Anwendung Al-Guss und Knetlegierungen, Messing, Kupfer und Bronze Al castings and wrought alloys, brass, copper and bronze applications	 Wie ST-4, für Kleinstwerkzeuge bis 1 mm für Bohr- und Gewindewerkzeuge Like ST4 for very small tools up to 1mm of diameter for drilling and threading tools	 Allgemeine Stähle, gehärtet bis 58 HRC General steels, hardened up to 58 HRC
 Allgemeine Stähle, ab 58 HRC bis ca. 70 HRC General steels, from 58 HRC to 70 HRC	 Nass- und Weichbearbeitung bis 55 HRC Wet and soft machining up to 55 HRC	 Hartbearbeitung bis 70 HRC Hard machining up to 70 HRC
 Anwendungsspezifische Sonderbeschichtung Application-specific special coating	 DLC Beschichtung für Kunststoff und Alu Anwendungen DLC coating for plastic and aluminum applications	 Diamantbesch., versch. Spezifikationen, auch Dünnschichten Diamond coating, var. specifications, also thin-film coatings
 Blue Coating Für Stähle bis 52 HRC Blue Coating For steels up to 52 HRC	 Legierte Stähle, INOX, Titan-Nickel-Legierungen, Inconel Alloy steels, INOX, Titanium-nickel alloys, Inconel	 Performance-Diamantschicht für anspruchsvolle Anwendungen Performance diamond coating for demanding applications
 Stahl im Bereich 52-62 HRC auf TiSiN-Basis Steel in the range 52-62 HRC based on TiSiN	 Anwendungsspezifische High-Performance Sonderbeschichtung Application specific High Performance Special Coating	 Stahl im Bereich 52-70 HRC auf TiSiN-S-Basis Steel in the range 52-70 HRC based on TiSiN-S

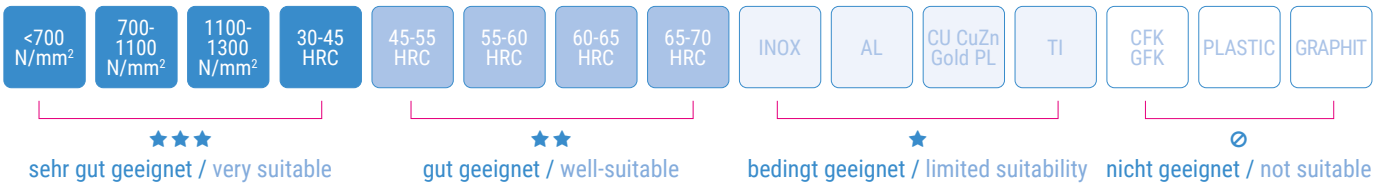


# Welches Werkzeug für welches Material? Die schreurs Farbcodierung

## Which tool for which material? The schreurs colour coding

Zu allen schreurs Werkzeugen finden Sie ab sofort Angaben zur Eignung für insgesamt 15 Materialgruppen. Die Eignung lässt sich aus den Farben der jeweiligen Icons ableiten: je dunkler, desto besser geeignet:

For all schreurs tools, you will now find information on suitability for a total of 15 material groups. The suitability can be derived from the colors of the respective icons: the darker, the more suitable:



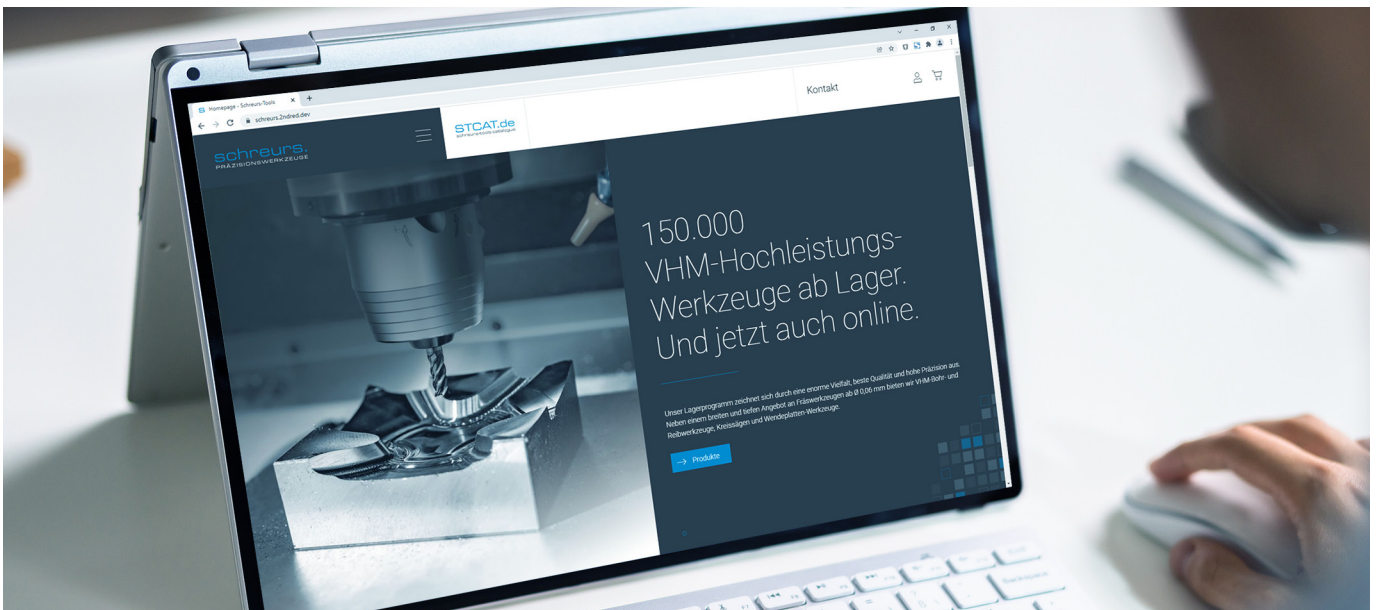
**i** Alle Werkzeuge auf Wunsch auch mit kürzerer Gesamtlänge und Freilegung verfügbar.  
All tools also available with shorter overall length and clearance length on request.

## DER NEUE SCHREURS TOOLS ONLINE-KATALOG

Seit Frühjahr 2022 ist unser neuer Online-Katalog verfügbar. Sie finden dort alle schreurs Werkzeuge mit Ihrem Preis, Verfügbarkeit, CAD-Daten, Schnittdaten und Verfügbarkeit: [www.stcat.de](http://www.stcat.de)

## THE NEW SCHREURS TOOLS ONLINE CATALOG

Since spring 2022 our new online catalog is available. There you will find all schreurs tools with their price, availability, CAD data, cutting data and availability: [www.stcat.de](http://www.stcat.de)

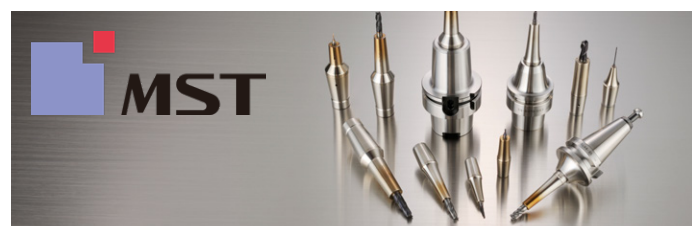
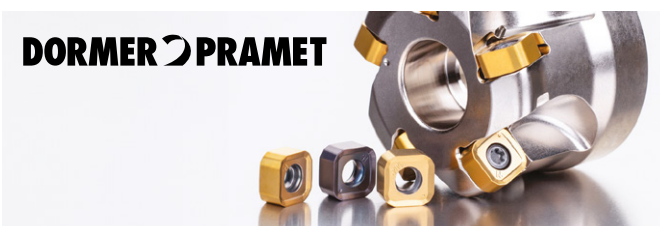


## PARTNERFIRMEN VON SCHREURS TOOLS

Wir sind überzeugt, dass die Partnerschaft mit MST und Dormer Pramet unseren Kunden neue Möglichkeiten eröffnen wird, ihre Fertigungsprozesse zu optimieren und ihre Produktivität zu steigern.

## PARTNER COMPANIES OF SCHREURS TOOLS



We are convinced that the partnership with MST and Dormer Pramet will open up new opportunities for our customers to optimize their manufacturing processes and increase their productivity.



# VHM-Kugelfräser für Bearbeitung bis 70 HRC MICRO MINI

## Solid carbide ballnose end mill for machining up to 70 HRC MICRO MINI

	Best.-Nr. Order no.	Artikelbeschreibung Article description	Abmessungen Dimension	Seite Page
	<b>BMWH</b> <small>MINI</small>	VHM-Kugelfräser, 2-Schneider, Solid carbide ballnose end mill, 2 flutes	ø 0,2 - 2,0 mm, Schaft ø 3 mm ø 0,2 - 2,0 mm, shank ø 3 mm	27
	<b>BXWH</b> <small>MINI</small>	VHM-Kugelfräser, 2-Schneider, Tol. +/- 0,003 mm Solid carbide ballnose end mill, 2 flutes, Tol. +/- 0,003mm	ø 0,2 - 2,0 mm, Schaft ø 3 mm ø 0,2 - 2,0 mm, shank ø 3 mm	28
	<b>BSAH</b> <small>MINI</small>	VHM-Kugelfräser in Hochpräzisionsversion, 2-Schneider Solid carbide ballnose end mill, high-precision version, 2 flutes	ø 0,5 - 6,0 mm, Schaft ø 4/6 mm ø 0,5 - 6,0 mm, shank ø 4/6 mm	29
	<b>BNEH</b> <small>MINI</small> <small>MICRO</small>	VHM-Kugelfräser mit negativem Spanwinkel zum Hartfräsen bis 70 HRC, 2-Schneider Solid carbide ballnose end mill, negative rake angle for hard milling up to 70 HRC, 2 flutes	ø 0,1 - 6,0 mm, Schaft ø 4/6 mm ø 0,1 - 6,0 mm, shank ø 4/6 mm	30-32
	<b>BNLH</b> <small>MINI</small> <small>MICRO</small>	VHM-Kugelfräser mit langer Schneide, negativer Spanwinkel bis 70 HRC, 2-Schneider Solid carbide ballnose end mill, long cutting edge, negative rake angle up to 70 HRC, 2 flutes	ø 0,06 - 12,0 mm, Schaft ø 4 - 12 mm ø 0,06 - 12,0 mm, shank ø 4 - 12 mm	33
	<b>HFBK</b>	VHM-Kugelfräser in kurzer Ausführung zum Hartfräsen bis 70 HRC, 4-Schneider Solid carbide ballnose end mill, short version for hard milling up to 70 HRC, 4 flutes	ø 2,0 - 12,0 mm, Schaft ø 4 - 12 mm ø 2,0 - 12,0 mm, shank ø 4 - 12 mm	37
	<b>HFBL</b>	VHM-Kugelfräser in langer Ausführung zum Hartfräsen bis 70 HRC, 4-Schneider Solid carbide ballnose end mill, long version for hard milling up to 70 HRC, 4 flutes	ø 2,0 - 12,0 mm, Schaft ø 6 - 12 mm ø 2,0 - 12,0 mm, shank ø 6 - 12 mm	37
	<b>SNBN</b>	Neo Line: VHM-Kugelfräser für allgemeinen Einsatz <b>bis zu 55 HRC</b> . Schrupp-, Vorschlicht- und Schlicht-Einsatz mit hohen Schnittwerten Neo Line: Solid carbide ball nose end mill for general use <b>up to 55 HRC</b> . Roughing, pre-finishing and finishing with high cutting values.	ø 0,3 - 12,0 mm, Schaft ø 4 - 12 mm ø 0,3 - 12,0 mm, shank ø 4 - 12 mm	38
	<b>SNBS</b>	Neo Line: VHM-Kugelfräser für allgemeinen Einsatz <b>bis zu 55 HRC</b> . Schrupp-, Vorschlicht- und Schlicht-Einsatz mit hohen Schnittwerten Neo Line: Solid carbide ball nose end mill for general use <b>up to 55 HRC</b> . Roughing, pre-finishing and finishing with high cutting values.	ø 0,2 - 16,0 mm, Schaft ø 4 - 16 mm ø 0,2 - 16,0 mm, shank ø 4 - 16 mm	40
	<b>SHBN</b>	Hard Line: VHM-Kugelfräser für allgemeinen Einsatz <b>bis zu 65 HRC</b> . Schrupp-, Vorschlicht- und Schlicht-Einsatz mit hohen Schnittwerten und Standwegen Hard Line: Solid carbide ball nose end mill for general use <b>up to 65 HRC</b> . Roughing, pre-finishing and finishing application with high cutting values and tool life.	ø 0,2 - 12,0 mm, Schaft ø 4 - 12 mm ø 0,2 - 12,0 mm, shank ø 4 - 12 mm	41-44
	<b>SHBS</b>	Hard Line: VHM-Kugelfräser für allgemeinen Einsatz <b>bis zu 65 HRC</b> . Schrupp-, Vorschlicht- und Schlicht-Einsatz mit hohen Schnittwerten und Standwegen Hard Line: Solid carbide ball nose end mill for general use <b>up to 65 HRC</b> . Roughing, pre-finishing and finishing application with high cutting values and tool life.	ø 0,2 - 16,0 mm, Schaft ø 4 - 16 mm ø 0,2 - 16,0 mm, shank ø 4 - 16 mm	45
	<b>3X408</b>	<b>NEU!</b> X Line: Hi-Performance Kugelfräser 4-schneidig für schrumpfen bis feinstschlichten in Stählen <b>bis 62HRC</b> , zurückgesetztes Zentrum <b>NEU!</b> X Line: High-performance ball nose end mill 4 cutting edges for roughing to ultra-fine finishing, in steels <b>up to 62HRC</b> , recessed center	ø 1,0- 12,0 mm, Schaft ø 4 - 12 mm ø 1,0 - 12,0 mm, shank ø 4 - 12 mm	46
	<b>5X408</b>	<b>NEU!</b> X Line: Hi-Performance Kugelfräser 4-schneidig für schrumpfen bis feinstschlichten in Stählen <b>bis 62HRC</b> , zurückgesetztes Zentrum <b>NEU!</b> X Line: High-performance ball nose end mill 4 cutting edges for roughing to ultra-fine finishing, in steels <b>up to 62HRC</b> , recessed center	ø 6,0 - 12,0 mm, Schaft ø 6 - 12 mm ø 6,0 - 12,0 mm, shank ø 6 - 12 mm	46
	<b>3X409</b>	<b>NEU!</b> X Line: Hi-Performance Kugelfräser 4-schneidig für schrumpfen bis feinstschlichten in Stählen <b>bis 62HRC</b> , Vollradius <b>NEU!</b> X Line: High-performance ball nose end mill 4 cutting edges for roughing to ultra-fine finishing, in steels <b>up to 62HRC</b> , full radius	ø 1,0 - 12,0 mm, Schaft ø 4 - 12 mm ø 1,0 - 12,0 mm, shank ø 4 - 12 mm	47
	<b>5X409</b>	<b>NEU!</b> X Line: Hi-Performance Kugelfräser 4-schneidig für schrumpfen bis feinstschlichten in Stählen <b>bis 62HRC</b> , Vollradius <b>NEU!</b> X Line: High-performance ball nose end mill 4 cutting edges for roughing to ultra-fine finishing, in steels <b>up to 62HRC</b> , full radius	ø 6,0 - 12,0 mm, Schaft ø 6 - 12 mm ø 6,0 - 12,0 mm, shank ø 6 - 12 mm	47

	<b>8X409</b>	<b>NEU!</b> X Line: Hi-Performance Kugelfräser 4-schneidig für schrumpfen bis feinstschlichten in Stählen <b>bis 62HRC</b> , Vollradius <b>NEW!</b> X Line: High-performance ball nose end mill 4 cutting edges for roughing to ultra-fine finishing, in steels <b>up to 62HRC</b> , full radius	ø 4,0 - 8,0 mm, Schaft ø 6 - 10 mm ø 4,0 - 8,0 mm, shank ø 6 - 10 mm	48
	<b>3X609</b>	<b>NEU!</b> X Line: Hi-Performance Kugelfräser 6-schneidig für schrumpfen bis feinstschlichten in Stählen <b>bis 62HRC</b> , Vollradius <b>NEW!</b> X Line: High-performance ball nose end mill 6 cutting edges for roughing to ultra-fine finishing, in steels <b>up to 62HRC</b> , full radius	ø 4,0 - 12,0 mm, Schaft ø 6 - 12 mm ø 4,0 - 12,0 mm, shank ø 6 - 12 mm	48


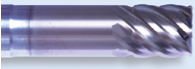











## VHM-Torus- und Schaftfräser für Bearbeitung bis 70 HRC MINI

### Solid carbide end mills & torus end mills for machining up to 70 HRC MINI

	Best.-Nr. Order no.	Artikelbeschreibung Article description	Abmessungen Dimension	Seite Page
	<b>SHWH</b> <small>MINI</small>	VHM-Schaftfräser, 2-Schneider Solid carbide end mill, 2 flutes	ø 0,2 - 0,4 mm, Schaft ø 3 mm ø 0,2 - 0,4 mm, shank ø 3 mm	49
	<b>SXWH</b> <small>MINI</small>	VHM-Schaftfräser, 2-Schneider Solid carbide end mill, 2 flutes	ø 0,1 - 0,4 mm, Schaft ø 3 mm ø 0,1 - 0,4 mm, shank ø 3 mm	49
	<b>CNWH</b> <small>MINI</small>	VHM-Schaft-/Torusfräser, 2-Schneider Solid carbide torus end mill, 2 flutes	ø 0,5 - 2,0 mm, Schaft ø 3 mm ø 0,5 - 2,0 mm, shank ø 3 mm	50
	<b>CXWH</b> <small>MINI</small>	VHM-Schaft-/Torusfräser, 2-Schneider, Tol. +/- 0,003 mm Solid carbide torus end mill, 2 flutes, Tol. +/- 0,003 mm	ø 0,5 - 2,0 mm, Schaft ø 3 mm ø 0,5 - 2,0 mm, shank ø 3 mm	51
	<b>CNTH</b> <small>MINI</small>	VHM-Torusfräser mit kurzer Schneide zum Hartfräsen bis 65 HRC, 2-Schneider Solid carbide end mill with corner radius, short cutting edge for hard milling up to 65 HRC, 2 flutes	ø 0,2 - 6,0 mm, Schaft ø 4/6 mm ø 0,2 - 6,0 mm, shank ø 4/6 mm	52-59
	<b>SHAH</b> <small>MINI</small>	VHM-Schaftfräser, 2-Schneider Solid carbide end mill, 2 flutes	ø 0,2 - 0,4 mm, Schaft ø 4 mm ø 0,2 - 0,4 mm, shank ø 4 mm	60
	<b>CNAH</b> <small>MINI</small>	VHM-Torusfräser, 2-Schneider Solid carbide end mill with corner radius, 2 flutes	ø 0,5 - 6,0 mm, Schaft ø 4/6 mm ø 0,5 - 6,0 mm, shank ø 4/6 mm	61-63
	<b>FHAH</b> <small>MINI</small>	VHM-Schaftfräser, 2-Schneider Solid carbide end mill, 2 flutes	ø 0,5 - 2,0 mm, Schaft ø 4 mm ø 0,5 - 2,0 mm, shank ø 4 mm	64-65
	<b>CNVH</b> <small>MINI</small>	4-Schneider in kurzen und langen Varianten mit ungleicher Teilung und Back Taper Geometrie. Geeignet für Werkstoffe bis 65 HRC 4 flute end mill in short and long variants with unequal pitch and back taper geometry. Suitable for materials up to 65 HRC	ø 0,2 - 6,0 mm, Schaft ø 4/6 mm ø 0,2 - 6,0 mm, shank ø 4/6 mm	66-72
	<b>PRP4 / PRP9</b>	VHM-Rippenfräser mit konischer Halsfreilegung, 4-Schneider Solid carbide radius end mill with clearance length, 4 flutes	ø 1,0 - 6,0 mm. Schaft ø 4 - 8 mm ø 1,0 - 6,0 mm. shank ø 4 - 8 mm	73-74
	<b>HRRK</b>	VHM-Torusfräser, kurze Ausführung zum Hartfräsen bis 65 HRC, 4-Schneider Solid carbide end mill with corner radius, short version for hard milling up to 65 HRC, 4 flutes	ø 2,0 - 12,0 mm, Schaft ø 4 - 12 mm ø 2,0 - 12,0 mm, shank ø 4 - 12 mm	75
	<b>HRRL</b>	VHM-Torusfräser, lange Ausführung zum Hartfräsen bis 65 HRC, 4-Schneider Solid carbide end mill with corner radius, long version for hard milling up to 65 HRC, 4 flutes	ø 2,0 - 12,0 mm, Schaft ø 4 - 12 mm ø 2,0 - 12,0 mm, shank ø 4 - 12 mm	75
	<b>CNBH</b>	VHM-Torusfräser zum Hartfräsen bis 65 HRC, 4-Schneider Solid carbide end mill with corner radius, for hard milling up to 65 HRC	ø 2,0 - 12,0 mm, Schaft ø 6 - 12 mm ø 2,0 - 12,0 mm, shank ø 6 - 12 mm	76
	<b>TNAH</b>	VHM-Torusfräser zum Hartfräsen bis 65 HRC, 2/4-Schneider Solid carbide end mill with corner radius, for hard milling up to 65 HRC	ø 2,0 - 12,0 mm, Schaft ø 4 - 12 mm ø 2,0 - 12,0 mm, shank ø 4 - 12 mm	76
	<b>420</b>	VHM-Torusfräser zum Hartfräsen im Bereich 45-60 HRC Solid carbide end mill with corner radius, for hard milling in the range of 45-60 HRC	ø 3,0 - 12,0 mm, Schaft ø 6 - 12 mm ø 3,0 - 12,0 mm, shank ø 6 - 12 mm	77
	<b>421</b>	VHM-Torusfräser zum Schlichten bis 70 HRC Solid carbide end mill with corner radius for finishing operations up to 70 HRC	ø 2,0 - 12,0 mm, Schaft ø 6 - 12 mm ø 2,0 - 12,0 mm, shank ø 6 - 12 mm	78
	<b>422</b>	VHM-Torusfräser, mit Freilegung, zum Schlichten bis 70 HRC Solid carbide end mill with corner radius, with clearance length, finishing up to 70 HRC	ø 2,0 - 12,0 mm, Schaft ø 6 - 12 mm ø 2,0 - 12,0 mm, shank ø 6 - 12 mm	78

## VHM-Torus- und Schaftfräser für Bearbeitung bis 70 HRC MINI Fortsetzung

### Solid carbide end mills & torus end mills for machining up to 70 HRC MINI Continuation

	Best.-Nr. Order no.	Artikelbeschreibung Article description	Abmessungen Dimension	Seite Page
	<b>486 / 686</b>	VHM-Hochvorschubfräser, extrem stabile Schneidkanten, bis 70 HRC Solid carbide high feed milling cutter up to 70 HRC, extremely stable cutting edges	∅ 3,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 3,0 - 12,0 mm, shank ∅ 6 - 12 mm	79
	<b>CNFH</b>	VHM-Torusfräser, 4/6-Schneider mit unterschiedlichen Eckenradien zum Hartfräsen bis 60 HRC Solid carbide end mill with corner radius, 4/6 flutes with different corner radius for hard milling up to 60 HRC	∅ 3,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 3,0 - 12,0 mm, shank ∅ 6 - 12 mm	80
	<b>HMSK</b>	VHM-Schaftfräser zum Besäumen, Hartfräsen bis 65 HRC, 3/4/6-Schneider in kurzer Ausführung Solid carbide end mill, for trimming operations, hard milling up to 65 HRC, 3/4/6 flutes in short version	∅ 1,0 - 12,0 mm, Schaft ∅ 4 - 12 mm ∅ 1,0 - 12,0 mm, shank ∅ 4 - 12 mm	81
	<b>HMSL</b>	VHM-Schaftfräser zum Besäumen, Hartfräsen bis 65 HRC, 3/4/6-Schneider in langer Ausführung Solid carbide end mill, for trimming operations, hard milling up to 65 HRC, 3/4/6 flutes in long version	∅ 1,0 - 12,0 mm, Schaft ∅ 4 - 12 mm ∅ 1,0 - 12,0 mm, shank ∅ 4 - 12 mm	81
	<b>CNGH</b>	VHM-Schaftfräser universal, 3-Schneider Solid carbide end mill, universal, 3 flutes	∅ 2,0 - 12,0 mm, Schaft ∅ 3 - 12 mm ∅ 2,0 - 12,0 mm, shank ∅ 3 - 12 mm	82
	<b>CHSS / CLSS</b>	VHM-Trochoidalfräser mit ungleicher Teilung, 5-Schneider Solid carbide trochoidal end mill, with unequal pitch, 5 flutes	∅ 3,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 3,0 - 12,0 mm, shank ∅ 6 - 12 mm	83
	<b>CNTF</b>	VHM-Torusfräser zum Abzeilen, Besäumen und trochoidalem Hartfräsen, 5/7-Schneider Solid carbide end mill with corner radius, for trimming and trochoidal operations for hard milling, 5/7 flutes	∅ 6,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 6,0 - 12,0 mm, shank ∅ 6 - 12 mm	84
	<b>CRSF</b>	VHM-Torusfräser zum Hartfräsen von 48 bis 60 HRC, 5/7-Schneider kurze Ausführung Solid carbide end mill with corner radius, for hard milling from 48 to 60 HRC, 5/7 flutes in short version	∅ 4,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 4,0 - 12,0 mm, shank ∅ 6 - 12 mm	84
	<b>SHRN-2</b>	Hard Line: VHM-Torusfräser 2-Schneider für Schrupp-, Vorschlicht- und Schlicht-Einsatz Hard Line: Solid carbide end mill with corner radius, 2-cutter for roughing, semi-finishing and finishing applications	∅ 0,2 - 12,0 mm, Schaft ∅ 4 - 12 mm ∅ 0,2 - 12,0 mm, shank ∅ 4 - 12 mm	85-91
	<b>SHRN-4</b>	Hard Line: VHM-Torusfräser 4-Schneider für Schrupp-, Vorschlicht- und Schlicht-Einsatz Hard Line: Solid carbide end mill with corner radius, 4-cutter for roughing, semi-finishing and finishing applications	∅ 0,8 - 12,0 mm, Schaft ∅ 4 - 12 mm ∅ 0,8 - 12,0 mm, shank ∅ 4 - 12 mm	92-99
	<b>SHRF</b>	Hard Line: VHM-HighFeed-Torusfräser für Schruppeinsatz mit stabiler Kerngeometrie Hard Line: Solid carbide high feed end mill with corner radius, for roughing application with stable core geometry	∅ 1,0 - 16,0 mm, Schaft ∅ 4 - 16 mm ∅ 1,0 - 16,0 mm, shank ∅ 4 - 16 mm	100
	<b>SHRS</b>	Hard Line: VHM-Schaftfräser mit Eckenradius für Schrupp-, Vorschlicht- und Schlicht-Einsatz Hard Line: Solid carbide end mill with corner radius for roughing, semi-finishing and finishing operations	∅ 3,0 - 16,0 mm, Schaft ∅ 6 - 16 mm ∅ 3,0 - 16,0 mm, shank ∅ 6 - 16 mm	101
	<b>SHSL-Z4 / Z6</b>	<b>NEU!</b> Hard Line: VHM-Schaftfräser zum Besäumen, Hartfräsen bis 65 HRC, 4/6-Schneider, in kurzer Ausführung <b>NEW!</b> Hard Line: Solid carbide end mills for trimming operations, hard milling up to 65 HRC, 4/6 flutes, short version	∅ 1,0 - 20,0 mm, Schaft ∅ 6 - 20 mm ∅ 1,0 - 20,0 mm, shank ∅ 6 - 20 mm	102







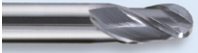


## VHM-Torus- und Schafffräser für Bearbeitung bis 55 HRC MINI

### Solid carbide end mills & torus end mills for machining up to 55 HRC MINI

	Best.-Nr. Order no.	Artikelbeschreibung Article description	Abmessungen Dimension	Seite Page
	<b>SPSS</b>	HPC-Schafffräser mit variabler Helix 35° / 38° und Schutzfase, Allrounder zum Schruppen und Schlichten HPC end mill with variable helix 35° / 38° and protective chamfer, all-rounder for roughing and finishing	ø 6,0 - 20,0 mm, Schaft ø 6 - 20 mm ø 6,0 - 20,0 mm, shank ø 6 - 20 mm	103
	<b>SPSN</b>	HPC-Schafffräser mit ungleicher Teilung, Freilänge 5xD und Schneidlänge 1,5xD, Allrounder zum Schruppen und Schlichten HPC end mill with unequal pitch, clearance length 5xD and cutting length 1.5xD, all-rounder for roughing and finishing	ø 1,0 - 20,0 mm, Schaft ø 4 - 20 mm ø 1,0 - 20,0 mm, shank ø 4 - 20 mm	103
	<b>SPSL</b>	HPC-Schafffräser mit ungleicher Teilung und Schutzfase, diverse Schneidlängen, Allrounder zum Schruppen und Schlichten HPC end mill with unequal pitch and protective chamfer, various cutting lengths, all-rounder for roughing and finishing	ø 1,0 - 20,0 mm, Schaft ø 4 - 20 mm ø 1,0 - 20,0 mm, shank ø 4 - 20 mm	104
	<b>SPRN</b>	HPC-Torusfräser mit ungleicher Teilung, Freilänge 5xD und Schneidlänge 1,5xD, Allrounder zum Schruppen und Schlichten HPC end mill with corner radius, with unequal pitch, clearance length 5xD and cutting length 1.5xD, all-rounder for roughing and finishing	ø 1,0 - 20,0 mm, Schaft ø 4 - 20 mm ø 1,0 - 20,0 mm, shank ø 4 - 20 mm	105-106
	<b>SPRS</b>	HPC-Torusfräser mit ungleicher Teilung, diverse Radien, Allrounder zum Schruppen und Schlichten HPC end mill with corner radius, with unequal pitch, various radii, all-rounder for roughing and finishing	ø 1,0 - 20,0 mm, Schaft ø 4 - 20 mm ø 1,0 - 20,0 mm, shank ø 4 - 20 mm	107-108

## VHM-Fräswerkzeuge für Stahl, Guss und Edelstahl

### Solid carbide milling tools for steel, cast iron and stainless steel

	Best.-Nr. Order no.	Artikelbeschreibung Article description	Abmessungen Dimension	Seite Page
	<b>BMW</b> <small>MINI</small>	VHM-Kugelfräser, 2-Schneider Solid carbide ballnose end mill, 2 flutes	ø 0,2 - 2,0 mm, Schaft ø 3 mm ø 0,2 - 2,0 mm, shank ø 3 mm	27
	<b>BXW</b> <small>MINI</small>	VHM-Kugelfräser, 2-Schneider, Tol. +/- 0,003 mm Solid carbide ballnose end mill, 2 flutes, Tol. +/- 0,003mm	ø 0,2 - 2,0 mm, Schaft ø 3 mm ø 0,2 - 2,0 mm, shank ø 3 mm	28
	<b>BSA</b> <small>MINI</small>	VHM-Kugelfräser in Hochpräzisionsversion, 2-Schneider Solid carbide ballnose end mill, high-precision version, 2 flutes	ø 0,5 - 6,0 mm, Schaft ø 4/6 mm ø 0,5 - 6,0 mm, shank ø 4/6 mm	29
	<b>BNEH</b> <small>MINI</small> <small>MICRO</small>	VHM-Kugelfräser mit negativem Spanwinkel zum Hartfräsen bis 70 HRC, 2-Schneider Solid carbide ballnose end mill, negative rake angle for hard milling up to 70 HRC, 2 flutes	ø 0,1 - 6,0 mm, Schaft ø 4/6 mm ø 0,1 - 6,0 mm, shank ø 4/6 mm	30-32
	<b>BNLH</b> <small>MINI</small> <small>MICRO</small>	VHM-Kugelfräser mit langer Schneide, negativer Spanwinkel bis 70 HRC, 2-Schneider Solid carbide ballnose end mill, long cutting edge, negative rake angle up to 70 HRC, 2 flutes	ø 0,06 - 12,0 mm, Schaft ø 4 - 12 mm ø 0,06 - 12,0 mm, shank ø 4 - 12 mm	33
	<b>BPEX</b> <small>MINI</small>	VHM-Kugelfräser mit positivem Spanwinkel bis 55 HRC, 2-Schneider Solid carbide ballnose end mill, positive rake angle up to 55 HRC, 2 flutes	ø 0,2 - 6,0 mm, Schaft ø 4/6 mm ø 0,2 - 6,0 mm, shank ø 4/6 mm	34-36
	<b>BMAT</b>	VHM-Kugelfräser für Superlegierungen Solid carbide ballnose end mill for super alloys	ø 0,6 - 12,0 mm, Schaft ø 4 - 12 mm ø 0,6 - 12,0 mm, shank ø 4 - 12 mm	109
	<b>HFBK</b>	VHM-Kugelfräser in kurzer Ausführung zum Hartfräsen bis 70 HRC, 4-Schneider Solid carbide ballnose end mill, short version for hard milling up to 70 HRC, 4 flutes	ø 2,0 - 12,0 mm, Schaft ø 4 - 12 mm ø 2,0 - 12,0 mm, shank ø 4 - 12 mm	37
	<b>HFBL</b>	VHM-Kugelfräser in langer Ausführung zum Hartfräsen bis 70 HRC, 4-Schneider Solid carbide ballnose end mill, long version for hard milling up to 70 HRC, 4 flutes	ø 2,0 - 12,0 mm, Schaft ø 6 - 12 mm ø 2,0 - 12,0 mm, shank ø 6 - 12 mm	37

# VHM-Fräswerkzeuge für Stahl, Guss und Edelstahl Fortsetzung

## Solid carbide milling tools for steel, cast iron and stainless steel Continuation

	Best.-Nr. Order no.	Artikelbeschreibung Article description	Abmessungen Dimension	Seite Page
	<b>TNAH</b>	VHM-Torusfräser zum Hartfräsen bis 65 HRC, 2/4-Schneider Solid carbide end mill with corner radius, for hard milling up to 65 HRC	∅ 2,0 - 12,0 mm, Schaft ∅ 4 - 12 mm ∅ 2,0 - 12,0 mm, shank ∅ 4 - 12 mm	76
	<b>486 / 686</b>	VHM-Hochvorschubfräser, extrem stabile Schneidkanten Solid carbide high feed milling cutter, extremely stable cutting edges	∅ 3,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 3,0 - 12,0 mm, shank ∅ 6 - 12 mm	79
	<b>CNFH</b>	VHM-Torusfräser, 4/6-Schneider mit unterschiedlichen Eckenradien zum Hartfräsen bis 60 HRC Solid carbide end mill with corner radius, 4/6 flutes with different corner radius for hard milling up to 60 HRC	∅ 3,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 3,0 - 12,0 mm, shank ∅ 6 - 12 mm	80
	<b>HMSK</b>	VHM-Schaftfräser zum Besäumen, Hartfräsen bis 65 HRC, 3/4/6-Schneider in kurzer Ausführung Solid carbide end mill, for trimming operations, hard milling up to 65 HRC, 3/4/6 flutes in short version	∅ 1,0 - 12,0 mm, Schaft ∅ 4 - 12 mm ∅ 1,0 - 12,0 mm, shank ∅ 4 - 12 mm	81
	<b>HMSL</b>	VHM-Schaftfräser zum Besäumen, Hartfräsen bis 65 HRC, 3/4/6-Schneider in langer Ausführung Solid carbide end mill, for trimming operations, hard milling up to 65 HRC, 3/4/6 flutes in long version	∅ 1,0 - 12,0 mm, Schaft ∅ 4 - 12 mm ∅ 1,0 - 12,0 mm, shank ∅ 4 - 12 mm	81
	<b>CNGH</b>	VHM-Schaftfräser universal, 3-Schneider Solid carbide end mill, universal, 3 flutes	∅ 2,0 - 12,0 mm, Schaft ∅ 3 - 12 mm ∅ 2,0 - 12,0 mm, shank ∅ 3 - 12 mm	82
	<b>CHSS / CLSS</b>	VHM-Trochoidalfräser mit ungleicher Teilung, 5-Schneider Solid carbide trochoidal end mill, with unequal pitch, 5 flutes	∅ 3,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 3,0 - 12,0 mm, shank ∅ 6 - 12 mm	83
	<b>CNTF</b>	VHM-Torusfräser zum Abzeilen, Besäumen und trochoidalem Hartfräsen, 5/7-Schneider Solid carbide end mill with corner radius, for trimming and trochoidal operations for hard milling, 5/7 flutes	∅ 6,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 6,0 - 12,0 mm, shank ∅ 6 - 12 mm	84
	<b>425</b>	VHM-Schaftfräser für rostfreie Stähle und Guss Solid carbide end mill for stainless steel and cast iron	∅ 3,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 3,0 - 12,0 mm, shank ∅ 6 - 12 mm	110
	<b>426</b>	VHM-Torusfräser für rostfreie Stähle und Guss Solid carbide end mill with corner radius for stainless steel and cast iron	∅ 4,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 4,0 - 12,0 mm, shank ∅ 6 - 12 mm	110
	<b>427</b>	VHM-Schaftfräser für rostfreie Stähle und Guss Solid carbide end mill for stainless steel and cast iron	∅ 4,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 4,0 - 12,0 mm, shank ∅ 6 - 12 mm	111
	<b>428</b>	VHM-Schaftfräser, ungleiche Teilung, IK, für rostfreie Stähle & Guss Solid carbide end mill, uneven pitch, inner coolant supply, for stainless steel and cast iron	∅ 4,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 4,0 - 12,0 mm, shank ∅ 6 - 12 mm	111
	<b>SHGU</b>	VHM-Schaftfräser für rostfreie Stähle und Kupfer bis HRC 45 Solid carbide end mill for stainless steel and copper up to HRC 45	∅ 6,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 6,0 - 12,0 mm, shank ∅ 6 - 12 mm	112
	<b>CMFT</b>	VHM-Schaftfräser für rostfreie Stähle und Kupfer bis HRC 55 Solid carbide end mill for stainless steel and copper up to HRC 55	∅ 2,0 - 12,0 mm, Schaft ∅ 4 - 12 mm ∅ 2,0 - 12,0 mm, shank ∅ 4 - 12 mm	113
	<b>CRSF</b>	VHM-Torusfräser zum Hartfräsen von 48 bis 60 HRC, 5/7-Schneider kurze Ausführung Solid carbide end mill with corner radius, for hard milling from 48 to 60 HRC, 5/7 flutes in short version	∅ 4,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 4,0 - 12,0 mm, shank ∅ 6 - 12 mm	84
	<b>229</b>	VHM-Gravierfräser mit Helix, Spitzenwinkel 60° Solid carbide engraving cutter with helix, point angle 60°	∅ 3,0 - 6,0 mm, Schaft ∅ 3 - 6 mm ∅ 3,0 - 6,0 mm, shank ∅ 3 - 6 mm	114
	<b>335 W</b>	VHM-Schaftfräser mit Weldon-Schaft Solid carbide end mills with Weldon shank	∅ 2,0 - 6,0 mm, Schaft ∅ 6 mm ∅ 2,0 - 6,0 mm, shank ∅ 6 mm	114
	<b>334</b>	VHM-Schaftfräser, kurze Ausführung Solid carbide end mills, short version	∅ 1,0 - 6,0 mm, Schaft ∅ 3 - 6 mm ∅ 1,0 - 6,0 mm, shank ∅ 3 - 6 mm	115
	<b>335 H</b>	VHM-Schaftfräser, Speziallänge Solid carbide end mills, special length	∅ 2,0 - 6,0 mm, Schaft ∅ 6 mm ∅ 2,0 - 6,0 mm, shank ∅ 6 mm	115
	<b>335 / 335 L</b>	VHM-Schaftfräser, lange Ausführung Solid carbide end mills, long version	∅ 4,0 - 25,0 mm, Schaft ∅ 4 - 25 mm ∅ 4,0 - 25,0 mm, shank ∅ 4 - 25 mm	116

# VHM-Fräswerkzeuge für Stahl, Guss und Edelstahl Fortsetzung

## Solid carbide milling tools for steel, cast iron and stainless steel Continuation

	Best.-Nr. Order no.	Artikelbeschreibung Article description	Abmessungen Dimension	Seite Page
	<b>491</b>	VHM-Schaftfräser Solid carbide end mills	∅ 6,0 - 15,0 mm, Schaft ∅ 6 - 16 mm ∅ 6,0 - 15,0 mm, shank ∅ 6 - 16 mm	117
	<b>591</b>	VHM-Schaftfräser Solid carbide end mills	∅ 16,0 - 25,0 mm, Schaft ∅ 16 - 25 mm ∅ 16,0 - 25,0 mm, shank ∅ 16 - 25 mm	117
	<b>SN 91 / V / VL</b>	VHM-Torusfräser Solid carbide end mill with corner radius	∅ 6,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 6,0 - 12,0 mm, shank ∅ 6 - 12 mm	124
	<b>SN 64</b>	VHM-Torusfräser Solid carbide end mill with corner radius	∅ 6,0 - 16,0 mm, Schaft ∅ 6 - 16 mm ∅ 6,0 - 16,0 mm, shank ∅ 6 - 16 mm	125
	<b>CLFT</b>	VHM-Torusfräser für Superlegierungen bis HRC 55 Solid carbide end mill with corner radius for superalloys up to 55 HRC	∅ 6,0 - 10,0 mm, Schaft ∅ 6 - 10 mm ∅ 6,0 - 10,0 mm, shank ∅ 6 - 10 mm	126
	<b>SN 66</b>	VHM-Torusfräser Solid carbide end mill with corner radius	∅ 8,0 - 12,0 mm, Schaft ∅ 8 - 12 mm ∅ 8,0 - 12,0 mm, Schaft ∅ 8 - 12 mm	126
	<b>FHGS</b>	VHM-Schaftfräser mit zwei voreilenden Zentrumschneiden (Bohren) Solid carbide end mills with two leading centre cutting edges (drilling)	∅ 1,0 - 12,0 mm, Schaft ∅ 4 - 12 mm ∅ 1,0 - 12,0 mm, shank ∅ 4 - 12 mm	127
	<b>SG 280</b>	VHM-Kugelfräser mit 250° Solid carbide ballnose end mills with 250°	∅ 2,0 - 12,0 mm, Schaft ∅ 3 - 12 mm ∅ 2,0 - 12,0 mm, shank ∅ 3 - 12 mm	128
	<b>297 / 297 L / XL</b>	VHM-Kugelfräser Solid carbide ballnose end mills	∅ 1,0 - 20,0 mm, Schaft ∅ 3 - 20 mm ∅ 1,0 - 20,0 mm, shank ∅ 3 - 20 mm	129
	<b>297 V / VL / VSL</b>	VHM-Kugelfräser, kurze Schneide, lange Ausführung Solid carbide ballnose end mills, short cutting edge, long version	∅ 3,0 - 12,0 mm, Schaft ∅ 3 - 12 mm ∅ 3,0 - 12,0 mm, shank ∅ 3 - 12 mm	130
	<b>297 K / KL</b>	VHM-Kugelfräser, kurze Schneide, konischer Übergang zum Schaft Solid carbide ballnose end mills, short cutting edge, conical transition to shank	∅ 1,0 - 6,0 mm, Schaft ∅ 3 - 8 mm ∅ 1,0 - 6,0 mm, shank ∅ 3 - 8 mm	131
	<b>299 / 293</b>	VHM-Schaftfräser, ohne Eckenradius Solid carbide end mills, without corner radius	∅ 1,0 - 18,0 mm, Schaft ∅ 3 - 18 mm ∅ 1,0 - 18,0 mm, shank ∅ 3 - 18 mm	132
	<b>293 L / XL</b>	VHM-Schaftfräser, lange Ausführung Solid carbide end mills, long version	∅ 2,0 - 25,0 mm, Schaft ∅ 3 - 25 mm ∅ 2,0 - 25,0 mm, shank ∅ 3 - 25 mm	133
	<b>293 V / VL</b>	VHM-Torusfräser, kurze Schneide, lange Ausführung, mit Freilegung Solid carbide end mill with corner radius, short cutting edge, long version, with clearance length	∅ 2,0 - 12,0 mm, Schaft ∅ 3 - 12 mm ∅ 2,0 - 12,0 mm, shank ∅ 3 - 12 mm	134

## VHM-Fräswerkzeuge für Kupfer, Aluminium und Kunststoffe

### Solid carbide milling tools for copper, aluminium and plastics

	Best.-Nr. Order no.	Artikelbeschreibung Article description	Abmessungen Dimension	Seite Page
	<b>BPEX MINI</b>	VHM-Kugelfräser mit positivem Spanwinkel bis 55 HRC, 2-Schneider Solid carbide ballnose end mill, positive rake angle up to 55 HRC, 2 flutes	∅ 0,2 - 6,0 mm, Schaft ∅ 4/6 mm ∅ 0,2 - 6,0 mm, shank ∅ 4/6 mm	34-36
	<b>SHAH MINI</b>	VHM-Schaftfräser, 2-Schneider Solid carbide end mill, 2 flutes	∅ 0,2 - 0,4 mm, Schaft ∅ 4 mm ∅ 0,2 - 0,4 mm, shank ∅ 4 mm	60
	<b>CNAH MINI</b>	VHM-Torusfräser, 2-Schneider Solid carbide end mill with corner radius, 2 flutes	∅ 0,5 - 6,0 mm, Schaft ∅ 4/6 mm ∅ 0,5 - 6,0 mm, shank ∅ 4/6 mm	61-63
	<b>FHAH MINI</b>	VHM-Schaftfräser, 2-Schneider Solid carbide end mill, 2 flutes	∅ 0,5 - 2,0 mm, Schaft ∅ 4 mm ∅ 0,5 - 2,0 mm, shank ∅ 4 mm	64-65
	<b>CNGH</b>	VHM-Schaftfräser universal, 3-Schneider Solid carbide end mill, universal, 3 flutes	∅ 2,0 - 12,0 mm, Schaft ∅ 3 - 12 mm ∅ 2,0 - 12,0 mm, shank ∅ 3 - 12 mm	82
	<b>336</b>	VHM-Fräser für Aluminium, Schaft HA, mit Spanbrecher an der Stirnschneide (ab ∅ 6,0 mm), mit Innenkühlung Solid carbide end mill for aluminium shank HA, chip breaker at the face (from ∅ 6.0 mm), internal cooling	∅ 4,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 4,0 - 12,0 mm, shank ∅ 6 - 12 mm	135
	<b>337</b>	VHM-Schrupfräser für Aluminium, Schaft HA, mit Schruppverzahnung, mit Innenkühlung Solid carbide roughing end mill for aluminium shank HA, with roughing teeth, with internal cooling	∅ 6,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 6,0 - 12,0 mm, shank ∅ 6 - 12 mm	135
	<b>SHZD</b>	VHM-Hochleistungsfräser für Aluminium, Schaft HA Solid carbide high-performance end mill for aluminium shank HA	∅ 1,0 - 12,0 mm, Schaft ∅ 4 - 12 mm ∅ 1,0 - 12,0 mm, shank ∅ 4 - 12 mm	136
	<b>445</b>	VHM-Torusfräser für Aluminium, Schaft HA, unbeschichtet, mit ungleicher Teilung Solid carbide end mill with corner radius for aluminium shank HA, uncoated, with unequal pitch	∅ 3,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 3,0 - 12,0 mm, shank ∅ 6 - 12 mm	137
	<b>CHSS / CLSS</b>	VHM-Trochoidalfräser mit ungleicher Teilung, 5-Schneider Solid carbide trochoidal end mill, with unequal pitch, 5 flutes	∅ 3,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 3,0 - 12,0 mm, shank ∅ 6 - 12 mm	83
	<b>BMAT</b>	VHM-Kugelfräser für Superlegierungen Solid carbide ballnose end mill for super alloys	∅ 0,6 - 12,0 mm, Schaft ∅ 4 - 12 mm ∅ 0,6 - 12,0 mm, shank ∅ 4 - 12 mm	109
	<b>491</b>	VHM-Schaftfräser Solid carbide end mills	∅ 6,0 - 15,0 mm, Schaft ∅ 6 - 16 mm ∅ 6,0 - 15,0 mm, shank ∅ 6 - 16 mm	117
	<b>591</b>	VHM-Schaftfräser Solid carbide end mills	∅ 16,0 - 25,0 mm, Schaft ∅ 16 - 25 mm ∅ 16,0 - 25,0 mm, shank ∅ 16 - 25 mm	117
	<b>SASN</b>	<b>NEU!</b> Alu Line: VHM-Schaftfräser 3-Schneider für Aluminium, Schaft HA <b>NEW!</b> Alu Line: Solid carbide end mill 3 flutes for aluminium, shank HA	∅ 0,8 - 20,0 mm, Schaft ∅ 4 - 20 mm ∅ 0,8 - 20,0 mm, shank ∅ 4 - 20 mm	118
	<b>SASL</b>	<b>NEU!</b> Alu Line: VHM-Schaftfräser 3-Schneider, für Aluminium, lange Schneide, Schaft HA <b>NEW!</b> Alu Line: Solid carbide end mill 3 flutes for aluminium, long cutting edge, shank HA	∅ 1,0 - 20,0 mm, Schaft ∅ 6 - 20 mm ∅ 1,0 - 20,0 mm, shank ∅ 6 - 20 mm	119
	<b>SARS</b>	<b>NEU!</b> Alu Line: VHM-Schrupfräser 3-Schneider für Aluminium, Schaft HA, mit Schruppverzahnung <b>NEW!</b> Alu Line: Solid carbide roughing end mill 3-flute for aluminum, HA shank, with roughing teeth	∅ 6,0 - 20,0 mm, Schaft ∅ 6 - 20 mm ∅ 6,0 - 20,0 mm, shank ∅ 6 - 20 mm	120
	<b>SABN</b>	<b>NEU!</b> Alu Line: VHM-Kugelfräser 2-Schneider für Aluminium, Schaft HA <b>NEW!</b> Alu Line: Solid carbide ball nose end mill 2-cutter for aluminum, shank HA	∅ 0,5 - 16,0 mm, Schaft ∅ 4 - 16 mm ∅ 0,5 - 16,0 mm, shank ∅ 4 - 16 mm	121- 122
	<b>SARN</b>	<b>NEU!</b> Alu Line: VHM-Torusfräser 3-Schneider für Aluminium, Schaft HA <b>NEW!</b> Alu Line: Solid carbide end mill with corner radius 3 flutes for aluminium, shank HA	∅ 3,0 - 20,0 mm, Schaft ∅ 4 - 20 mm ∅ 3,0 - 20,0 mm, shank ∅ 4 - 20 mm	123



## VHM-Fräswerkzeuge für Kupfer, Aluminium und Kunststoffe Fortsetzung

### Solid carbide milling tools for copper, aluminium and plastics Continuation

	<b>SN 91 V / VL</b>	VHM-Torusfräser Solid carbide end mill with corner radius	∅ 6,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 6,0 - 12,0 mm, shank ∅ 6 - 12 mm	124
	<b>SN 64</b>	VHM-Torusfräser Solid carbide end mill with corner radius	∅ 6,0 - 16,0 mm, Schaft ∅ 6 - 16 mm ∅ 6,0 - 16,0 mm, shank ∅ 6 - 16 mm	125
	<b>FHGS</b>	VHM-Schaftfräser mit zwei voreilende Zentrumsschneiden (Bohren) Solid carbide end mills with two leading centre cutting edges (drilling)	∅ 1,0 - 12,0 mm, Schaft ∅ 4 - 12 mm ∅ 1,0 - 12,0 mm, shank ∅ 4 - 12 mm	127
	<b>SG 280</b>	VHM-Kugelfräser mit 250° Solid carbide ballnose end mills with 250°	∅ 2,0 - 12,0 mm, Schaft ∅ 3 - 12 mm ∅ 2,0 - 12,0 mm, shank ∅ 3 - 12 mm	128
	<b>297 / 297 L / XL</b>	VHM-Kugelfräser Solid carbide ballnose end mills	∅ 1,0 - 20,0 mm, Schaft ∅ 3 - 20 mm ∅ 1,0 - 20,0 mm, shank ∅ 3 - 20 mm	129
	<b>297 V / VL / VSL</b>	VHM-Kugelfräser, kurze Schneide, lange Ausführung Solid carbide ballnose end mills, short cutting edge, long version	∅ 3,0 - 12,0 mm, Schaft ∅ 3 - 12 mm ∅ 3,0 - 12,0 mm, shank ∅ 3 - 12 mm	130
	<b>297 K / KL</b>	VHM-Kugelfräser, kurze Schneide, konischer Übergang zum Schaft Solid carbide ballnose end mills, short cutting edge, conical transition to shank	∅ 1,0 - 6,0 mm, Schaft ∅ 3 - 8 mm ∅ 1,0 - 6,0 mm, shank ∅ 3 - 8 mm	131
	<b>SG 928</b>	VHM-Einschneider Solid carbide single cutter	∅ 1,5 - 8,0 mm, Schaft ∅ 2 - 8 mm ∅ 1,5 - 8,0 mm, Schaft ∅ 2 - 8 mm	138
	<b>SA 62</b>	VHM-Torusfräser Solid carbide end mill with corner radius	∅ 6,0 - 20,0 mm, Schaft ∅ 6 - 20 mm ∅ 6,0 - 20,0 mm, shank ∅ 6 - 20 mm	139
	<b>299 / 293</b>	VHM-Schaftfräser, ohne Eckenradius Solid carbide end mills, without corner radius	∅ 1,0 - 18,0 mm, Schaft ∅ 3 - 18 mm ∅ 1,0 - 18,0 mm, Schaft ∅ 3 - 18 mm	132
	<b>293 L / XL</b>	VHM-Schaftfräser, lange Ausführung Solid carbide end mills, long version	∅ 2,0 - 25,0 mm, Schaft ∅ 3 - 25 mm ∅ 2,0 - 25,0 mm, shank ∅ 3 - 25 mm	133
	<b>293 R</b>	VHM-Torusfräser Solid carbide end mill with corner radius	∅ 2,0 - 8,0 mm, Schaft ∅ 3 - 8 mm ∅ 2,0 - 8,0 mm, shank ∅ 3 - 8 mm	140
	<b>293 V / VL</b>	VHM-Torusfräser, kurze Schneide, lange Ausführung, mit Freilegung Solid carbide end mill with corner radius, short cutting edge, long version, with clearance length	∅ 2,0 - 12,0 mm, Schaft ∅ 3 - 12 mm ∅ 2,0 - 12,0 mm, shank ∅ 3 - 12 mm	134
	<b>CNXA</b>	VHM-Schaftfräser mit stabilisiertem Eckenradius Solid carbide end mills with stabilized corner radius	∅ 2,0 - 12,0 mm, Schaft ∅ 3 - 12 mm ∅ 2,0 - 12,0 mm, shank ∅ 3 - 12 mm	141
	<b>CNA A</b>	VHM-Torusfräser Solid carbide end mill with corner radius	∅ 4,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 4,0 - 12,0 mm, shank ∅ 6 - 12 mm	142
	<b>CPRL</b>	VHM-Schaftfräser, lange Ausführung mit polierter Schneide Solid carbide end mills, long version with polished cutting edge	∅ 0,5 - 4,0 mm, Schaft ∅ 4/6 mm ∅ 0,5 - 4,0 mm, shank ∅ 4/6 mm	143
	<b>240</b>	VHM-Schaftfräser mit Schutzfase 0,1mm x 45° Solid carbide end mills with chamfer 0.1mm x 45°	∅ 2,0 - 20,0 mm, Schaft ∅ 3 - 20 mm ∅ 2,0 - 20,0 mm, shank ∅ 3 - 20 mm	144
	<b>SG 400</b>	VHM-Torus-Schrupfräser mit Eckenradius, kurze und lange Ausführung Solid carbide roughing end mill with corner radius, short and long version	∅ 6,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 6,0 - 12,0 mm, shank ∅ 6 - 12 mm	145
	<b>SG 400 R / SG 400 RL</b>	VHM-Kugel-Schrupfräser, kurze und lange Ausführung Solid carbide ballnose roughing end mills, short and long version	∅ 6,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 6,0 - 12,0 mm, Schaft ∅ 6 - 12 mm	146

## Konische VHM-Schaftfräser mit Eckenradius, Formwerkzeuge und Entgrater

### Conical solid carbide end mills with corner radius, forming tools and deburring tools

	Best.-Nr. Order no.	Artikelbeschreibung Article description	Abmessungen Dimension	Seite Page
	<b>SG 280</b>	VHM-Kugelfräser 250° Solid carbide ballnose end mills 250°	∅ 2,0 - 12,0 mm, Schaft ∅ 3 - 12 mm ∅ 2,0 - 12,0 mm, shank ∅ 3 - 12 mm	128
	<b>229</b>	VHM-Gravierfräser 60° Solid carbide engraving cutter 60°	∅ 3,0 - 6,0 mm, Schaft ∅ 3 - 6 mm ∅ 3,0 - 6,0 mm, shank ∅ 3 - 6 mm	114
	<b>SG 928</b>	VHM-Einschneider Solid carbide single cutter	∅ 1,5 - 8,0 mm, Schaft ∅ 2 - 8 mm ∅ 1,5 - 8,0 mm, shank ∅ 2 - 8 mm	138
	<b>HK</b>	VHM-Konusfräser, mit Eckenradius Solid carbide cone cutter, with corner radius	∅ 2,5 - ∅ 9,5 mm, Schaft ∅ 3 - 16 mm ∅ 2,5 - ∅ 9,5 mm, shank ∅ 3 - 16 mm	170 -172
	<b>HKR</b>	VHM-Konusfräser, mit Vollradius Solid carbide cone cutter, with full radius	∅ 2,0 - ∅ 4,0 mm, Schaft ∅ 6/8 mm ∅ 2,0 - ∅ 4,0 mm, shank ∅ 6/8 mm	173
	<b>SG 370 B</b>	VHM-T-Nutenfräser Solid carbide slot milling cutter	∅ 8,0/12,0 mm, Schaft ∅ 4/6 mm ∅ 8,0/12,0 mm, shank ∅ 4/6 mm	174
	<b>SG 370 C</b>	VHM-Spitznutenfräser Solid carbide groove milling cutter (pointed)	∅ 8,0/12,0 mm, Schaft ∅ 4/6 mm ∅ 8,0/12,0 mm, shank ∅ 4/6 mm	174
	<b>SG 370 D</b>	VHM-Radiusnutenfräser Solid carbide groove milling cutter (radius)	∅ 8,0/12,0 mm, Schaft ∅ 4/6 mm ∅ 8,0/12,0 mm, shank ∅ 4/6 mm	175
	<b>SG 380</b>	VHM-Hinterschnittfräser 30° Solid carbide undercut milling cutter 30°	∅ 2,0 - 12,0 mm, Schaft ∅ 4 - 12 mm ∅ 2,0 - 12,0 mm, shank ∅ 4 - 12 mm	175
	<b>SG 350</b>	VHM-NC-Entgrater mit 60° und 90° Solid carbide NC deburrer with 60° and 90°	∅ 6,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 6,0 - 12,0 mm, shank ∅ 6 - 12 mm	176
	<b>SG 350 W</b>	VHM-NC-Entgrater mit Weldon-Schaft, 60° und 90° Solid carbide NC deburrer with weldon shank, 60° and 90°	∅ 6,0 - 12,0 mm, Schaft ∅ 6 - 12 mm ∅ 6,0 - 12,0 mm, shank ∅ 6 - 12 mm	176
	<b>231</b>	VHM-Viertelkreisfräser, Zweischneider Solid carbide quarter circle cutter, 2 flutes	∅ 1,5 - 2,5 mm, Schaft ∅ 4 - 8 mm ∅ 1,5 - 2,5 mm, shank ∅ 4 - 8 mm	177
	<b>431</b>	VHM-Viertelkreisfräser, Vierschneider Solid carbide quarter circle cutter, 4 flutes	∅ 3,5 - 5,5 mm, Schaft ∅ 6 - 16 mm ∅ 3,5 - 5,5 mm, shank ∅ 6 - 16 mm	177

## VHM-Spiralbohrer, NC Anbohrer, Kegelsenker und Reibahlen

### Solid carbide twist drills, NC pilot drills, countersinks and reamers

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	<b>SG 913</b> <b>MINI</b>	VHM-NC-Anbohrer, Spitzenwinkel 130° Solid carbide NC pilot drill, point angle 130°	ø 0,25 - 1,5 mm, Schaft ø 1,5 mm ø 0,25 - 1,5 mm, shank ø 1,5 mm	178
	<b>SG 921</b>	VHM-NC-Anbohrer, Spitzenwinkel 90° Solid carbide NC pilot drill, point angle 90°	ø 3,0 - 12,0 mm, Schaft ø 3 - 12 mm ø 3,0 - 12,0 mm, shank ø 3 - 12 mm	179
	<b>SG 920</b>	VHM-NC-Anbohrer, Spitzenwinkel 120° Solid carbide NC pilot drill, point angle 120°	ø 3,0 - 12,0 mm, Schaft ø 3 - 12 mm ø 3,0 - 12,0 mm, shank ø 3 - 12 mm	179
	<b>SG 914</b>	VHM-NC-Anbohrer, Spitzenwinkel 140° Solid carbide NC pilot drill, point angle 140°	ø 3,0 - 12,0 mm, Schaft ø 3 - 12 mm ø 3,0 - 12,0 mm, shank ø 3 - 12 mm	179
	<b>SG 809</b>	HSS-E NC-Anbohrer 90° HSS-E NC pilot drill 90°	ø 3,0 - 25,0 mm, Schaft ø 3 - 25 mm ø 3,0 - 25,0 mm, shank ø 3 - 25 mm	180
	<b>SG 812</b>	HSS-E NC-Anbohrer 120° HSS-E NC pilot drill 120°	ø 3,0 - 25,0 mm, Schaft ø 3 - 25 mm ø 3,0 - 25,0 mm, shank ø 3 - 25 mm	181
	<b>STBK</b>	VHM-Spiralbohrer 5xD, 130° Spitzenwinkel Solid carbide twist drill 5xD, 130° point angle	ø 0,3 - 2,0 mm, Schaft ø 3 mm ø 0,3 - 2,0 mm, shank ø 3 mm	182
	<b>CUMT</b>	VHM-Spiralbohrer 10-12xD, 150° Spitzenwinkel Solid carbide twist drill 10-12xD, 150° point angle	ø 0,1 - 3,0 mm, Schaft ø 3 mm ø 0,1 - 3,0 mm, shank ø 3 mm	183 -186
	<b>STBL</b>	VHM-Spiralbohrer 15xD, 130° Spitzenwinkel, Abstufung 0,05 mm Solid carbide twist drill, 130° point angle, gradation 0,05 mm	ø 0,5 - 3,0 mm, Schaft ø 3 mm ø 0,5 - 3,0 mm, shank ø 3 mm	187
	<b>SG 25</b>	VHM-Spiralbohrer DIN 6539, 118° Spitzenwinkel Solid carbide twist drill DIN 6539, 118° point angle	ø 0,3 - 16,0 mm ø 0,3 - 16,0 mm	188
	<b>SG 30</b>	VHM-Spiralbohrer DIN 338, 118° Spitzenwinkel Solid carbide twist drill DIN 338, 118° point angle	Ø 1,0 - 13,0 mm Ø 1,0 - 13,0 mm	189
	<b>SG 35</b>	VHM-Spiralbohrer 3xD für Hartbearbeitung von HRC 55 - 70 Solid carbide twist drill 3xD for hard materials from HRC 55 - 70	ø 3,0 - 12,0 mm, Schaft ø 6,0 - 12,0 mm ø 3,0 - 12,0 mm, shank ø 6,0 - 12,0 mm	190
	<b>SG 40</b>	VHM-Universalbohrer 5xD mit Innenkühlung Solid carbide universal twist drill 5xD with inner coolant supply	ø 1,0 - 12,0 mm, Schaft ø 3,0 - 12,0 mm ø 1,0 - 12,0 mm, shank ø 3,0 - 12,0 mm	191 -193
	<b>SG 45</b>	VHM-Spiralbohrer 5xD 180° für schwierige Anbohrverhältnisse, mit doppelter Führungsphase Solid carbide twist drill 5xD with 180 degree point angle, for difficult drilling conditions with double guidings	ø 2,0 - 12,0 mm, Schaft ø 4,0 - 12,0 mm ø 2,0 - 12,0 mm, shank ø 4,0 - 12,0 mm	194
	<b>SG 390</b>	VHM-Untermaß-Stechfräser Solid carbide undersize cutters	ø 2,9 - 15,8 mm, Schaft ø 3 - 16 mm ø 2,9 - 15,8 mm, shank ø 3 - 16 mm	195
	<b>SG 100</b>	VHM-Reibahlen, Linksspirale, rechts-schneidend Solid carbide reamer, left-hand helix, right-hand cutting	ø 0,3 - 20,1 mm, Schaft ø 1,5 - 20 mm ø 0,3 - 20,1 mm, shank ø 1,5 - 20 mm	196 -197
	<b>SG 150</b>	VHM-Reibahlen überlang, Linksspirale, rechts-schneidend Solid carbide reamer overlength, left-hand spiral, right-hand cutting	ø 1,95 - 16,1 mm, Schaft ø 2 - 16 mm ø 1,95 - 16,1 mm, shank ø 2 - 16 mm	198
	<b>SG 120</b>	VHM-Reibahlen, Rechtsspirale, rechts-schneidend Solid carbide reamer, right-hand helix, right-hand cutting	ø 1,51 - 12,6 mm, Schaft ø 2 - 12 mm ø 1,51 - 12,6 mm, shank ø 2 - 12 mm	199
	<b>SG 200</b>	VHM-Reibahlen mit Innenkühlung, gerade-genutet, rechts-schneidend Solid carbide reamer with internal cooling, straight-fluted, right-hand cutting	ø 2,95 - 12,10 mm, Schaft ø 6 - 12 mm ø 2,95 - 12,10 mm, shank ø 6 - 12 mm	200
	<b>SG 300</b>	VHM-Reibahlen für gehärtete Werkstoffe, gerade-genutet, rechts-schneidend Solid carbide reamer for hardened materials, straight-fluted, right-hand cutting	ø 2,95 - 12,12 mm, Schaft ø 6 - 12 mm ø 2,95 - 12,12 mm, shank ø 6 - 12 mm	201
	<b>SG 820</b>	HSS-E Kegelsenker 90° HSS-E countersink 90°w	ø 4,3 - 25,0 mm, Schaft ø 4 - 12 mm ø 4,3 - 25,0 mm, shank ø 4 - 12 mm	202

## Diamantbeschichtete Fräswerkzeuge / Karat Line / für Graphit und abrasive Werkstoffe

### Diamond-coated milling tools / Karat Line / for graphite and abrasive materials

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	<b>ST-TMSC</b>	VHM-Gewindefräser mit Freilegung, metrisch innen ISO 60°, DIN 13, DIN 68 Solid carbide thread milling cutter with clearance length, inside metric ISO 60°, DIN 13, DIN 68	M3 - M12, Schaft $\varnothing$ 4 - 10 mm M3 - M12, shank $\varnothing$ 4 - 10 mm	147
	<b>ST-TBR</b>	VHM-Gewindewirbler mit Freilegung, metrisch innen Solid carbide thread milling cutter with clearance length, inside metric	M3 - M10, Schaft $\varnothing$ 4 - 8 mm M3 - M10, shank $\varnothing$ 4 - 8 mm	147
	<b>SD 600</b>	VHM-Torus-Schrupfräser Solid carbide roughing end mill with corner radius	$\varnothing$ 6,0 - 12,0 mm, Schaft $\varnothing$ 6 - 12 mm $\varnothing$ 6,0 - 12,0 mm, shank $\varnothing$ 6 - 12 mm	148
	<b>SD 600 R / SD 600 RL</b>	VHM-Kugel-Schrupfräser Solid carbide ballnose roughing end mills	$\varnothing$ 6,0 - 12,0 mm, Schaft $\varnothing$ 6 - 12 mm $\varnothing$ 6,0 - 12,0 mm, shank $\varnothing$ 6 - 12 mm	149
	<b>SD 91 V</b>	VHM-Torusfräser Solid carbide end mill with corner radius	$\varnothing$ 6,0 - 12,0 mm, Schaft $\varnothing$ 6 - 12 mm $\varnothing$ 6,0 - 12,0 mm, shank $\varnothing$ 6 - 12 mm	150
	<b>SD 93 / SD 93 L</b>	VHM-Torusfräser mit langer Schneide Solid carbide end mill with corner radius with long cutting edge	$\varnothing$ 2,0 - 8,0 mm, Schaft $\varnothing$ 3 - 8 mm $\varnothing$ 2,0 - 8,0 mm, shank $\varnothing$ 3 - 8 mm	151
	<b>SD 93 V / SD 93 VL</b>	VHM-Torusfräser kurze Schneide, lange Ausführung mit Freilegung Solid carbide end mill with corner radius with short cutting edge, long version with clearance length	$\varnothing$ 3,0 - 12,0 mm, Schaft $\varnothing$ 3 - 12 mm $\varnothing$ 3,0 - 12,0 mm, shank $\varnothing$ 3 - 12 mm	152
	<b>SDM 905 MINI</b>	VHM-Torusfräser Solid carbide end mill with corner radius	$\varnothing$ 0,3 - 2,0 mm, Schaft $\varnothing$ 3 mm $\varnothing$ 0,3 - 2,0 mm, shank $\varnothing$ 3 mm	153
	<b>SDM 940 MINI</b>	VHM-Torusfräser Solid carbide end mill with corner radius	$\varnothing$ 0,2 - 6,0 mm, Schaft $\varnothing$ 4/6 mm $\varnothing$ 0,2 - 6,0 mm, shank $\varnothing$ 4/6 mm	154 -156
	<b>SD 97 V / SD 97 VL</b>	VHM-Kugelfräser, kurze Schneide, lange Ausführung mit Freilegung Solid carbide ballnose end mills, short cutting edge with clearance length	$\varnothing$ 3,0 - 12,0 mm, Schaft $\varnothing$ 3 - 12 mm $\varnothing$ 3,0 - 12,0 mm, shank $\varnothing$ 3 - 12 mm	157
	<b>SD 97 / SD 97 L</b>	VHM-Kugel-Schrupfräser Solid carbide ballnose roughing end mills	$\varnothing$ 1,0 - 12,0 mm, Schaft $\varnothing$ 3 - 12 mm $\varnothing$ 1,0 - 12,0 mm, shank $\varnothing$ 3 - 12 mm	158
	<b>SD 97 K / SD 97 KL</b>	VHM-Kugelfräser, kurze Schneide, konischer Übergang zum Schaft Solid carbide ballnose end mills, short cutting edge, conical transition to shank	$\varnothing$ 1,0 - 6,0 mm, Schaft $\varnothing$ 3 - 8 mm $\varnothing$ 1,0 - 6,0 mm, shank $\varnothing$ 3 - 8 mm	159
	<b>SDM 915 MINI</b>	VHM-Kugelfräser Solid carbide ballnose end mills	$\varnothing$ 0,2 - 2,0 mm, Schaft $\varnothing$ 3 mm $\varnothing$ 0,2 - 2,0 mm, shank $\varnothing$ 3 mm	160
	<b>SDM 945 MINI</b>	VHM-Kugelfräser Solid carbide ballnose end mills	$\varnothing$ 0,2 - 6,0 mm, Schaft $\varnothing$ 4/6 mm $\varnothing$ 0,2 - 6,0 mm, shank $\varnothing$ 4/6 mm	161 -162
	<b>SDM 941 MINI</b>	VHM-Torusfräser - <b>Präzisionsausführung</b> Solid carbide end mill with corner radius - <b>precision design</b>	$\varnothing$ 0,2 - 6,0 mm, Schaft $\varnothing$ 4/6 mm $\varnothing$ 0,2 - 6,0 mm, shank $\varnothing$ 4/6 mm	163 -166
	<b>SDM 946 MINI</b>	VHM-Kugelfräser - <b>Präzisionsausführung</b> Solid carbide ballnose end mills - <b>precision design</b>	$\varnothing$ 0,2 - 6,0 mm, Schaft $\varnothing$ 4/6 mm $\varnothing$ 0,2 - 6,0 mm, shank $\varnothing$ 4/6 mm	167 -168
	<b>SD 92</b>	VHM-Torusfräser Vierschneider <b>Präzisionsausführung</b> Solid carbide end mill with corner radius, 4 flutes, <b>precision design</b>	$\varnothing$ 6,0 - 10,0 mm, Schaft $\varnothing$ 6 - 10 mm $\varnothing$ 6,0 - 10,0 mm, shank $\varnothing$ 6 - 10 mm	169
	<b>SD 99</b>	VHM-Kugelfräser, 3-Schneider <b>Präzisionsausführung</b> Solid carbide ballnose end mill, 3 flutes, <b>precision design</b>	$\varnothing$ 1,0 - 6,0 mm, Schaft $\varnothing$ 4 - 6 mm $\varnothing$ 1,0 - 6,0 mm, shank $\varnothing$ 4 - 6 mm	169

# Wendeschneidplattenwerkzeuge (modular) zum Drehen und Fräsen

## Indexable insert tools (modular) for turning and milling

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## Wendeschneidplattenwerkzeuge (modular) zum Drehen und Fräsen **Fortsetzung**

### Indexable insert tools (modular) for turning and milling **Continuation**

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<b>XDHW ST 11-Coating</b>	Wendeplatten für Fräser ST-X 06 Indexable inserts for milling cutter ST-X 06	225
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<b>CCGT blank</b>	Wendeplatten CC CC indexable inserts	228
<b>CCGT ST2/ST6-Coating</b>	Wendeplatten CC CC indexable inserts	228
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<b>CNMG ST2/ST6-Coating</b>	Wendeplatten CC CC indexable inserts	228
<b>CCGW CBN</b>	Wendeplatten CC Wendeplatten CC	228
<b>CCGT ST11-Coating</b>	Wendeplatten CC CC indexable inserts	228
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<b>SCLCR/L</b>	Bohrstangen für WFM-Werkzeuge Boring bars for WFM tools	229
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<b>DCGT ST11-Coating</b>	Wendeplatten DC für WFM-Werkzeuge Turning inserts DC for WFM tools	230
<b>DCMT ST2/ST6-Coating</b>	Wendeplatten DC für WFM-Werkzeuge Turning inserts DC for WFM tools	230
<b>DCGW CBN</b>	Wendeplatten DC für WFM-Werkzeuge Turning inserts DC for WFM tools	230
<b>SDJCR/L</b>	Drehwendeplattenhalter für WFM-Werkzeuge Turning insert holder for WFM tools	231
<b>SDNCN</b>	Drehwendeplattenhalter für WFM-Werkzeuge Turning insert holder for WFM tools	231
<b>SDQCR</b>	Bohrstangen für WFM-Werkzeuge Boring bars for WFM tools	232
<b>SDUCR</b>	Bohrstangen für WFM-Werkzeuge Boring bars for WFM tools	232

## Wendeschneidplattenwerkzeuge (modular) zum Drehen und Fräsen Fortsetzung

### Indexable insert tools (modular) for turning and milling Continuation

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<b>VCGT SD-Coating</b>	Wendeplatten VC für WFM-Werkzeuge Turning inserts VC for WFM tools	233
<b>VCGT ST 11-Coating</b>	Wendeplatten VC für WFM-Werkzeuge Turning inserts VC for WFM tools	233
<b>VCMT blank</b>	Wendeplatten VC für WFM-Werkzeuge Turning inserts VC for WFM tools	233
<b>VCGW CBN</b>	Wendeplatten VC für WFM-Werkzeuge Turning inserts VC for WFM tools	233
<b>SVJCR/L</b>	Drehwendeplattenhalter für WFM-Werkzeuge Turning insert holder for WFM tools	234
<b>SVVCN</b>	Drehwendeplattenhalter für WFM-Werkzeuge Turning insert holder for WFM tools	234
<b>SVQCR/L</b>	Bohrstangen für WFM-Werkzeuge Boring bars for WFM tools	235
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<b>TPGX SD-Coating</b>	VHM Spezial-Wendeplatte zum Kopieren mit 15° Gesamtwinkel Carbide special insert for copying with 15° angle	238
<b>TPGX ST 11-Coating</b>	VHM Spezial-Wendeplatte zum Kopieren mit 15° Gesamtwinkel Carbide special insert for copying with 15° angle	238
<b>TPGX ST-Coating</b>	VHM Spezial-Wendeplatte zum Kopieren mit 15° Gesamtwinkel VHM Spezial-Wendeplatte zum Kopieren mit 15° Gesamtwinkel	238
<b>STJXR/L</b>	Werkzeughalter Tool holder	238

# Gewindewerkzeuge für Außen- und Innengewinde

## Threading tools for external and internal threads

Best.-Nr. Order no.	Gewinde Thread	Artikelbeschreibung Article description	Steigung Pitch	Seite Page
TMSC	ISO 60°	VHM-Gewindefräser geradegenutet, Innengewinde, 1,5 x Ø Solid carbide thread mills straight fluted, internal thread, 1,5 x Ø	0,4 - 6,0 mm	240
TMSC	ISO 60°	VHM-Gewindefräser geradegenutet, Innengewinde, 1,5 x Ø, metrisch-fein Solid carbide thread mills straight fluted, internal thread, 1,5 x Ø, metric fine	0,5 - 3,0 mm	241
TMSC	ISO 60°	VHM-Gewindefräser geradegenutet, Außengewinde, 1,5 x Ø, metrisch Solid carbide thread mills straight fluted, external thread, 1,5 x Ø, metric	0,5 - 6,0 mm	242
TMSC	ISO 60°	VHM-Gewindefräser geradegenutet, Innengewinde, 2 x Ø, metrisch / metrisch-fein Solid carbide thread mills straight fluted, internal thread, 2 x Ø, metric / metric fine	0,7 - 2,5 mm 0,75 - 2,0 mm	243
TMSC	ISO 60°	VHM-Gewindefräser geradegenutet, Innengewinde, 3 x Ø, metrisch / metrisch-fein Solid carbide thread mills straight fluted, internal thread, 3 x Ø, metric / metric fine	0,7 - 2,5 mm 0,75 - 2,0 mm	244
TMHE	ISO 60°	VHM-Gewindefräser spiralgenutet, Innengewinde, 1,5 x Ø, metrisch Solid carbide thread mills helical fluted, internal thread, 1,5 x Ø, metric	0,35 - 6,0 mm	245
TMHE	ISO 60°	VHM-Gewindefräser spiralgenutet, Innengewinde, 1,5 x Ø, metrisch-fein Solid carbide thread mills helical fluted, internal thread, 1,5 x Ø, metric fine	0,5 - 3,0 mm	246
TMHE	ISO 60°	VHM-Gewindefräser spiralgenutet, Innengewinde, 2 x Ø, metrisch Solid carbide thread mills helical fluted, internal thread, 2 x Ø, metric	0,4 - 3,5 mm	247
TMHE	ISO 60°	VHM-Gewindefräser spiralgenutet, Innengewinde, 2,5 x Ø, metrisch Solid carbide thread mills helical fluted, internal thread, 2,5 x Ø, metric	0,4 - 3,5 mm	248
TMHE	ISO 60°	VHM-Gewindefräser spiralgenutet, Außengewinde, 1,5 x Ø, metrisch Solid carbide thread mills helical fluted, external thread, 1,5 x Ø, metric	0,5 - 6,0 mm	249
TMHE	ISO 60°	VHM-Gewindefräser spiralgenutet, Innengewinde, 2,5 x Ø, metrisch Solid carbide thread mills helical fluted, internal thread, 2,5 x Ø, metric	1,5 - 4,0 mm	250
TMHE	ISO 60°	VHM-Gewindefräser spiralgenutet, mit 45° Senkfase, Innengewinde, 2 x Ø, metrisch Solid carbide thread mills helical fluted, with 45° chamfer, internal thread, 2 x Ø, metric	0,5 - 3,5 mm	251
TMSC	UN 60°	VHM-Gewindefräser geradegenutet, Innengewinde, 1,5 x Ø Solid carbide thread mills straight fluted, internal thread, 1,5 x Ø	0,3175 - 5,6444 mm	252
TMSC	UN 60°	VHM-Gewindefräser geradegenutet, Innengewinde, 1,5 x Ø, fein Solid carbide thread mills straight fluted, internal thread, 1,5 x Ø, fine	0,7938 - 2,1167 mm 0,7938 - 4,2333 mm	253
TMSC	UN 60°	VHM-Gewindefräser geradegenutet, Innengewinde, 2 x Ø Solid carbide thread mills straight fluted, internal thread, 2 x Ø	0,6350 - 3,1750 mm	254
TMHE	UN 60°	VHM-Gewindefräser spiralgenutet, Innengewinde, 1,5 x Ø, Solid carbide thread mills helical fluted, internal thread, 1,5 x Ø	0,3175 - 5,6444 mm	255
TMHE	UN 60°	VHM-Gewindefräser spiralgenutet, Innen- und Außengewinde, 1,5 x Ø Solid carbide thread mills helical fluted, internal and external thread, 1,5 x Ø	0,7938 - 2,1167 mm 0,7938 - 4,2333 mm	256
TMHE	UN 60°	VHM-Gewindefräser spiralgenutet, Innengewinde, 2 x Ø Solid carbide thread mills helical fluted, internal thread, 2 x Ø	0,4536 - 3,6286 mm	257
TMHE	UN 60°	VHM-Gewindefräser spiralgenutet, Innengewinde, 2,5 x Ø Solid carbide thread mills helical fluted, internal thread, 2,5 x Ø	0,4536 - 3,6286 mm	258
TMHE	UN 60°	VHM-Gewindefräser spiralgenutet, Innengewinde, 2 x Ø, mit 45° Senkfase Solid carbide thread mills helical fluted, internal thread, 2 x Ø, with 45° chamfer	0,4536 - 3,6286 mm	259
TMSC	BSW 55°	VHM-Gewindefräser geradegenutet, Innen- und Außengewinde Solid carbide thread mills straight fluted, internal and external thread	0,5292 - 5,6444 mm	260
TBR	ISO 60°	VHM-Gewindewirbler geradegenutet, Innengewinde, 2 x / 3 x Ø, metrisch Solid carbide thread whirling tool, straight fluted, internal thread, 2 x / 3x Ø, metric	0,25 - 1,5 mm 0,25 - 1,5 mm	261
TBRL	UN 60°	VHM-Gewindefräser spiralgenutet, Innengewinde, 3 x Ø Solid carbide thread mills helical fluted, internal thread, 3 x Ø	0,3175 - 1,9538 mm	262
TBR	ISO/ UN 60°	Gewindewirbler, Teilprofil, Innen- und Außengewinde, Metrisch / Zoll, lange Ausführung Solid carbide thread whirling tool, partial profile, internal and external, metric / UN, long version	versch. / various	263



# Gewindewerkzeuge für Außen- und Innengewinde Fortsetzung

## Threading tools for external and internal threads Continuation

Best.-Nr. Order no.	Gewinde Thread	Artikelbeschreibung Article description	Steigung Pitch	Seite Page
		Technische Informationen Gewindedrehen Technical Information Thread Turning		264
11-16NR	ISO 60°	VHM-Gewindedrehplatten, rechts, Innengewinde, metrisch Solid carbide thread turning inserts, right, internal thread, metric	0,35 - 3,0 mm	265
22-27NR / 22-27UNR-L	ISO 60°	VHM-Gewindedrehplatten, links, Innengewinde, metrisch Solid carbide thread turning inserts, left, internal thread, metric	3,5 - 8,0 mm	266
11-16 NL	ISO 60°	VHM-Gewindedrehplatten, links, Innengewinde, metrisch Solid carbide thread turning inserts, left, internal thread, metric	0,35 - 3,0 mm	267
22-27NL / 22-27UNR-L	ISO 60°	VHM-Gewindedrehplatten, links, Innengewinde, metrisch Solid carbide thread turning inserts, left, internal thread, metric	3,5 - 8,0 mm	268
11-16ER	ISO 60°	VHM-Gewindedrehplatten, rechts, Außengewinde, metrisch Solid carbide thread turning inserts, right, external thread, metric	0,35 - 3,0 mm	269
22-27ER / 22-27UER-L	ISO 60°	VHM-Gewindedrehplatten, rechts, Außengewinde, metrisch Solid carbide thread turning inserts, right, external thread, metric	3,5 - 8,0 mm	270
11-16EL	ISO 60°	VHM-Gewindedrehplatten, links, Außengewinde, metrisch Solid carbide thread turning inserts, left, external thread, metric	0,35 - 3,0 mm	271
22-27EL / 22-27UER-L	ISO 60°	VHM-Gewindedrehplatten, links, Außengewinde, metrisch Solid carbide thread turning inserts, left, external thread, metric	3,5 - 8,0 mm	272
16-27ER / 16-27NR	ISO 60°	VHM-Gewindedrehplatten, mehrzahnig, rechts, Außen- und Innengewinde, metrisch Solid carbide thread turning inserts, multi-tooth, right, external + internal thread, metric	1,0 - 3,0 mm	273
16-27EL / 16-27NL	ISO 60°	VHM-Gewindedrehplatten, mehrzahnig, links, Außen- und Innengewinde, metrisch Solid carbide thread turning inserts, multi-tooth, links, external + internal thread, metric	1,0 - 3,0 mm	274
11-16NR	UN	VHM-Gewindedrehplatten, rechts, Innengewinde, UN Zoll Solid carbide thread turning inserts, right, internal thread, UN inch		275
16-27NR / 22-27UNR-L	UN	VHM-Gewindedrehplatten, rechts, Innengewinde, UN Zoll Solid carbide thread turning inserts, right, internal thread, UN inch		276
11-16NL	UN	VHM-Gewindedrehplatten, links, Innengewinde, UN Zoll Solid carbide thread turning inserts, left, internal thread, UN inch		277
16-27NL / 22-27UNR-L	UN	VHM-Gewindedrehplatten, links, Innengewinde, UN Zoll Solid carbide thread turning inserts, left, internal thread, UN inch		278
11-16ER	UN	VHM-Gewindedrehplatten, rechts, Außengewinde, UN Zoll Solid carbide thread turning inserts, right, external thread, UN inch		279
16-27ER / 22-27UER-L	UN	VHM-Gewindedrehplatten, rechts, Außengewinde, UN Zoll Solid carbide thread turning inserts, right, external thread, UN inch		280
11-16EL	UN	VHM-Gewindedrehplatten, links, Außengewinde, UN Zoll Solid carbide thread turning inserts, left, external thread, UN inch		281
16-27EL / 22-27UER-L	UN	VHM-Gewindedrehplatten, links, Außengewinde, UN Zoll Solid carbide thread turning inserts, left, external thread, UN inch		282
16-27ER / 16- 27NR	UN	VHM-Gewindedrehplatten, mehrzahnig, rechts, Außen- und Innengewinde, UN Zoll Solid carbide thread turning inserts, multi-tooth, right, external and internal thread, UN inch		283
16-27EL / 16- 27NL	UN	VHM-Gewindedrehplatten, mehrzahnig, links, Außen- und Innengewinde, UN Zoll Solid carbide thread turning inserts, multi-tooth, links, external and internal thread, UN inch		284
11-16NR	BSW	VHM-Gewindedrehplatten, rechts, Innengewinde, BSW Zoll Solid carbide thread turning inserts, right, internal thread, BSW inch		285
16-27NR / 22-27UENR-L	BSW	VHM-Gewindedrehplatten, rechts, Innengewinde, BSW Zoll Solid carbide thread turning inserts, right, internal thread, BSW inch		286
11-16NL	BSW	VHM-Gewindedrehplatten, links, Innengewinde, BSW Zoll Solid carbide thread turning inserts, left, internal thread, BSW inch		287
16-27NL / 22-27UENR-L	BSW	VHM-Gewindedrehplatten, links, Innengewinde, BSW Zoll Solid carbide thread turning inserts, left, internal thread, BSW inch		288

## Gewindewerkzeuge für Außen- und Innengewinde Fortsetzung

### Threading tools for external and internal threads Continuation

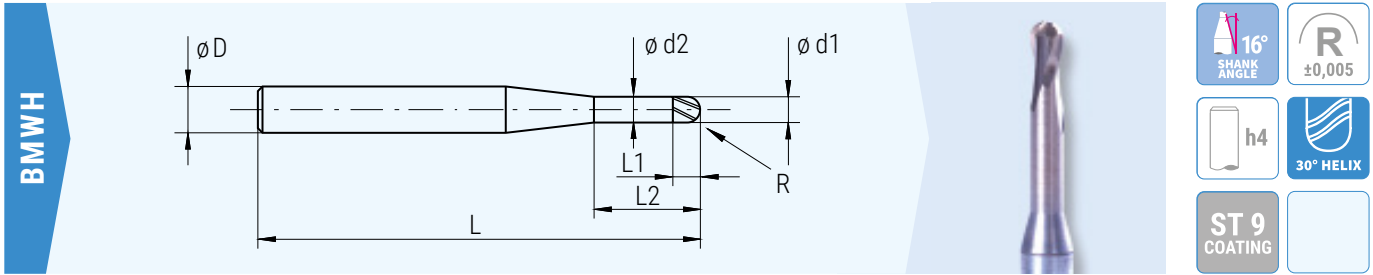
Art.Nr. Order no.	Gewinde Thread	Artikelbeschreibung Article description	Steigung Pitch	Seite Page
11-16ER	BSW	VHM-Gewindedrehplatten, rechts, Außengewinde, BSW Zoll Solid carbide thread turning inserts, right, external thread, BSW inch		289
16-27ER / 22-27UENR-L	BSW	VHM-Gewindedrehplatten, rechts, Außengewinde, BSW Zoll Solid carbide thread turning inserts, right, external thread, BSW inch		290
11-16EL	BSW	VHM-Gewindedrehplatten, links, Außengewinde, BSW Zoll Solid carbide thread turning inserts, left, external thread, BSW inch		291
16N-27EL / 22-27UENR-L	BSW	VHM-Gewindedrehplatten, links, Außengewinde, BSW Zoll Solid carbide thread turning inserts, left, external thread, BSW inch		292
16-27ER / 16-27NR	DIN 405	VHM-Gewindedrehplatten, rechts, Außen- und Innengewinde rund, DIN 405 Solid carbide thread turning inserts, right, external and internal thread round, DIN 405		293
16-27EL / 16-27NL	DIN 405	VHM-Gewindedrehplatten, links, Außen- und Innengewinde rund, DIN 405 Solid carbide thread turning inserts, left, external and internal thread round, DIN 405		294
11-27ER-NR / 22-27UENR-L	60°	VHM-Gewindedrehplatten, rechts, Außen- und Innengewinde, Teilprofil 60°, metrisch - Zoll, Solid carbide thread turning inserts, right, external + internal, partial profile 60°, metric - inch		295
11-27EL-NL / 22-27UENR-L	60°	VHM-Gewindedrehplatten, links, Außen- und Innengewinde, Teilprofil 60°, metrisch - Zoll, Solid carbide thread turning inserts, left, external + internal, partial profile 60°, metric - inch		296
11-27ER-NR / 22-27UENR-L	60°	VHM-Gewindedrehplatten, rechts, Außen- und Innengewinde, Teilprofil 55°, metrisch - Zoll, Solid carbide thread turning inserts, right, external + internal, partial profile 55°, metric - inch		297
11-27EL-NL / 22-27UENR-L	60°	VHM-Gewindedrehplatten, links, Außen- und Innengewinde, Teilprofil 55°, metrisch - Zoll, Solid carbide thread turning inserts, left, external + internal, partial profile 55°, metric - inch		298
16TBR	60°	VHM-Gewindewirbelplatten, rechts, Innengewinde, UN Zoll und Teilprofil 60° metrisch - Zoll Solid carbide whirling inserts, right, internal thread, UN inch and partial profile 60° metric - inch		299
POTBR		Halter für Gewindewirbelplatten Tool holder for whirling inserts		300
YE / YI		Unterlegplatten für Gewindedrehhalter Spacers for tool holders		301
PO 08-32		Plattenhalter zum Außengewindedrehen Tool holder for external thread turning		302
PO 10-50		Plattenhalter zum Innengewindedrehen Tool holder for internal thread turning		303

## Informationen zu den Schneidstoffen PKD / CVD / MKD / CBN – INDEX

### Information on the cutting materials PCD / CVD / MKD / CBN – INDEX

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High hardness cutting materials	306
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Schnittwertempfehlungen für CVD-Schaftfräser Cutting parameter recommendations for CVD end mills	307
Schnittwertempfehlungen für MKD-Schaftfräser Cutting parameter recommendations for MCD end mills	308
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Index A - Z Gewindewerkzeuge für Außen- und Innengewinde Index A - Z Threading tools for external and internal threads	310

**VHM-Kugelfräser** 2-Schneider,  $\phi$  0,2 - 2,0 mm, Schaft  $\phi$  3 mm **MINI**  
**Solid carbide ballnose end mills** 2 flutes,  $\phi$  0,2 - 2,0 mm, shank  $\phi$  3 mm **MINI**



16° SHANK ANGLE  
 $\pm 0,005$   
 h4  
 30° HELIX  
 ST 9 COATING

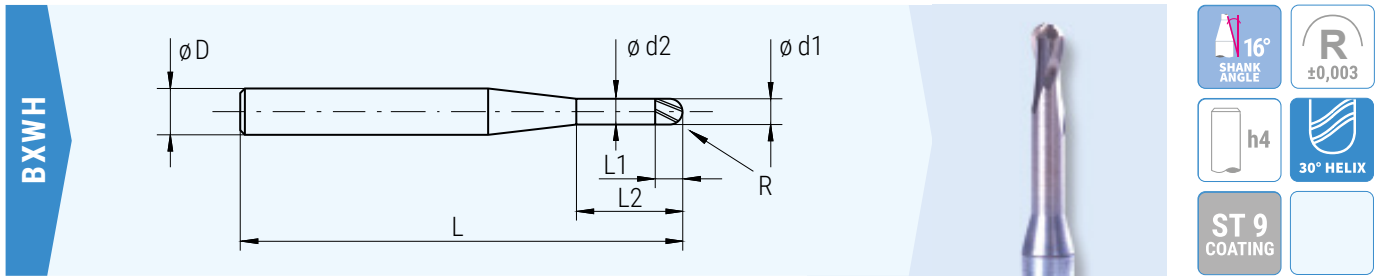
<math>< 700 \text{ N/mm}^2</math>   <math>700-1100 \text{ N/mm}^2</math>   <math>1100-1300 \text{ N/mm}^2</math>   30-45 HRC   45-55 HRC   55-60 HRC

Best.-Nr. / Order no.	d1	L1	L2	d2	R	L	D	Z
BMW H 002 - 002 R 010 *	0,2	0,2	-	-	0,10	40	3	2
BMW H 003 - 003 R 015 *	0,3	0,3	-	-	0,15	40	3	2
BMW H 003 - 010 R 015 *			1,0	0,24				
BMW H 004 - 004 R 020 *	0,4	0,4	-	-	0,20	40	3	2
BMW H 004 - 015 R 020 *			1,5	0,34				
BMW H 005 - 005 R 025 *	0,5	0,5	-	-	0,25	40	3	2
BMW H 005 - 025 R 025 *			2,5	-				
BMW H 005 - 040 R 025 *			4,0	0,44				
BMW H 005 - 075 R 025 *			7,5	-				
BMW H 006 - 006 R 030 *	0,6	0,6	-	-	0,30	40	3	2
BMW H 006 - 030 R 030 *			3,0	-				
BMW H 006 - 050 R 030 *			5,0	0,52				
BMW H 006 - 090 R 030 *			9,0					
BMW H 008 - 008 R 040 *	0,8	0,8	-	-	0,40	40	3	2
BMW H 008 - 040 R 040 *			4,0	-				
BMW H 008 - 070 R 040 *			7,0	0,72				
BMW H 008 - 120 R 040 *			12,0	-				
BMW H 010 - 010 R 050 *	1,0	1,0	-	-	0,50	40	3	2
BMW H 010 - 050 R 050 *			5,0	-				
BMW H 010 - 085 R 050 *			8,5	0,92				
BMW H 010 - 150 R 050 *			15,0	-				
BMW H 012 - 012 R 060 *	1,2	1,2	-	-	0,60	40	3	2
BMW H 012 - 060 R 060 *			6,0	1,12				
BMW H 012 - 100 R 060 *			10,0	-				
BMW H 015 - 075 R 075 *	1,5	1,5	7,5	-	0,75	50	3	2
BMW H 015 - 120 R 075 *			12,0	1,38				
BMW H 015 - 200 R 075 *			20,0	-				
BMW H 020 - 100 R 100 *	2,0	2,0	10,0	-	1,00	50	3	2
BMW H 020 - 160 R 100 *			16,0	1,88				
BMW H 020 - 200 R 100 *			20,0	-				

\* Auslaufend - Wird ersetzt durch eine neue Generation, Serie BXWH (Seite 28)

\* Discontinued - Will be replaced by a new generation, series BXWH (page 28)

**VHM-Kugelfräser** 2-Schneider,  $\varnothing$  0,2 - 2,0 mm, Schaft  $\varnothing$  3 mm **MINI**  
**Solid carbide ballnose end mills** 2 flutes,  $\varnothing$  0,2 - 2,0 mm, shank  $\varnothing$  3 mm **MINI**



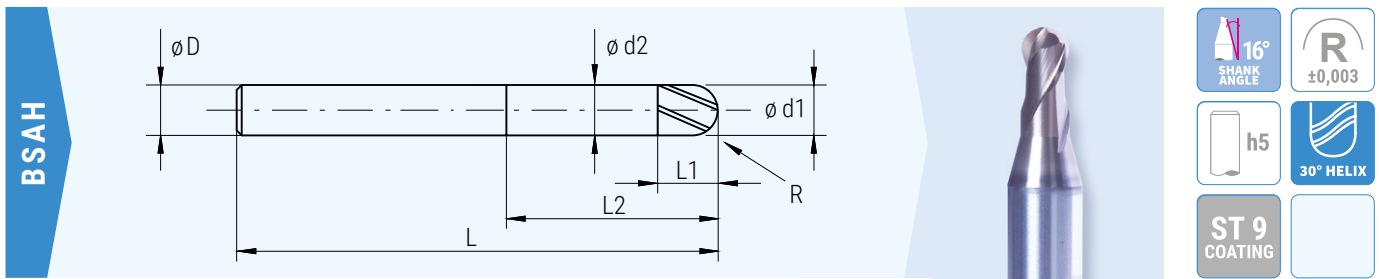
16° SHANK ANGLE  
 R ±0,003  
 h4  
 30° HELIX  
 ST 9 COATING

<700 N/mm<sup>2</sup>   700-1100 N/mm<sup>2</sup>   1100-1300 N/mm<sup>2</sup>   30-45 HRC   45-55 HRC   55-60 HRC                             

Best.-Nr. / Order no.	d1	L1	L2	d2	R	L	D	Z
BXWH002-003R010	0,2	0,16	0,3	0,18	0,10	38	3	2
BXWH003-005R015	0,3	0,24	0,5	0,28	0,15	38	3	2
BXWH003-010R015			1,0					
BXWH004-005R020	0,4	0,32	0,5	0,38	0,20	38	3	2
BXWH004-015R020			1,5					
BXWH005-010R025	0,5	0,48	1,0	0,48	0,25	38	3	2
BXWH005-025R025			2,5					
BXWH005-040R025			4,0					
BXWH006-010R030	0,6	0,48	1,0	0,58	0,30	38	3	2
BXWH006-030R030			3,0					
BXWH006-050R030			5,0					
BXWH006-060R030			6,0					
BXWH008-020R040	0,8	0,64	2,0	0,78	0,40	38	3	2
BXWH008-040R040			4,0					
BXWH008-060R040			6,0					
BXWH010-020R050	1,0	0,80	2,0	0,97	0,50	38	3	2
BXWH010-050R050			5,0					
BXWH010-080R050			8,0					
BXWH015-040R075	1,5	1,20	4,0	1,46	0,75	38	3	2
BXWH015-080R075			8,0					
BXWH020-040R100	2,0	1,60	4,0	1,96	1,00	38	3	2
BXWH020-080R100			8,0					

Weitere Werkzeugabmessungen auf Anfrage verfügbar.  
 Other tool dimensions available on request.

**VHM-Kugelfräser in Hochpräzisionsversion** 2-Schneider,  $\phi$  0,5 - 6,0 mm, Schaft  $\phi$  4 - 6 mm **MINI**  
**Solid carbide ballnose end mills, high-precision version** 2 flutes,  $\phi$  0,5 - 6,0 mm, shank  $\phi$  4 - 6 mm **MINI**

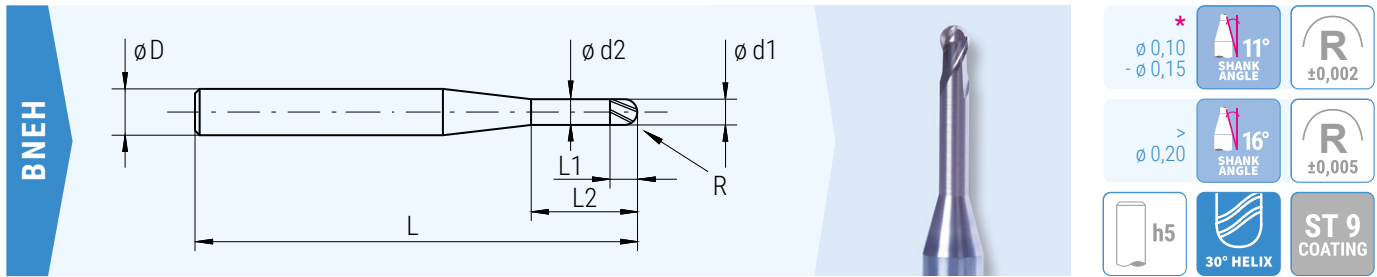


Material compatibility options: <700 N/mm<sup>2</sup>, 700-1100 N/mm<sup>2</sup>, 1100-1300 N/mm<sup>2</sup>, 30-45 HRC, 45-55 HRC, 55-60 HRC, 60-65 HRC, INOX, and others.

Best.-Nr. / Order no.	d1	L1	L2	d2	R	L	D	Z
BSAH 005 - 010 R 025	0,5	0,4	1,0	0,44	0,25	45	4	2
BSAH 005 - 025 R 025			2,5					
BSAH 010 - 025 R 050	1,0	0,8	2,5	0,92	0,50	45	4	2
BSAH 010 - 060 R 050			6,0					
BSAH 015 - 030 R 075	1,5	1,2	3,0	1,38	0,75	45	4	2
BSAH 015 - 080 R 075			8,0					
BSAH 020 - 030 R 100	2,0	1,6	3,0	1,88	1,00	45	4	2
BSAH 020 - 100 R 100			10,0					
BSAH 030 - 060 R 150	3,0	2,4	6,0	2,80	1,50	60	6	2
BSAH 030 - 160 R 150			16,0					
BSAH 040 - 080 R 200	4,0	3,2	8,0	3,80	2,00	70	6	2
BSAH 040 - 200 R 200			20,0					
BSAH 050 - 100 R 250	5,0	4,0	10,0	4,80	2,50	70	6	2
BSAH 050 - 250 R 250			25,0					
BSAH 060 - 100 R 300	6,0	4,8	10,0	5,80	3,00	80	6	2
BSAH 060 - 300 R 300			30,0					

**VHM-Kugelfräser** mit negativem Spanwinkel zum Hartfräsen bis 70 HRC, 2-Schneider,  $\varnothing$  0,1 - 6,0 mm, Schaft 4 und 6 mm **MINI MICRO**

**Solid carbide ballnose end mills** negative rake angle for hard milling up to 70 HRC, 2 flutes,  $\varnothing$  0,1 - 6,0 mm, shank 4 and 6 mm **MINI MICRO**



- $\varnothing$  0,10 -  $\varnothing$  0,15  
11° SHANK ANGLE  
R  $\pm 0,002$
- $\varnothing$  > 0,20  
16° SHANK ANGLE  
R  $\pm 0,005$
- h5
- 30° HELIX
- ST 9 COATING

<700 N/mm <sup>2</sup>	700-1100 N/mm <sup>2</sup>	1100-1300 N/mm <sup>2</sup>	30-45 HRC	45-55 HRC	55-60 HRC	60-65 HRC	65-70 HRC									
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Best.-Nr. / Order no.	d1	L1	L2	d2	R	L	D	Z							
BNEH 001 - 003 R 005 *	0,10	0,08	0,3	0,095	0,05	45	4	2							
BNEH 001 - 005 R 005 *			0,5												
BNEH 0015 - 003 R 0075 *	0,15	0,12	0,3	0,135	0,075	45	4	2							
BNEH 0015 - 005 R 0075 *			0,5												
BNEH 002 - 003 R 010	0,20	0,16	0,3	0,19	0,10	45	4	2							
BNEH 002 - 005 R 010			0,5												
BNEH 002 - 0075 R 010			0,75												
BNEH 002 - 010 R 010			1,0												
BNEH 002 - 015 R 010			1,5												
BNEH 002 - 020 R 010			2,0												
BNEH 002 - 025 R 010			2,5												
BNEH 002 - 030 R 010			3,0												
BNEH 003 - 005 R 015			0,30						0,24	0,5	0,29	0,15	45	4	2
BNEH 003 - 0075 R 015										0,75					
BNEH 003 - 010 R 015	1,0														
BNEH 003 - 015 R 015	1,5														
BNEH 003 - 020 R 015	2,0														
BNEH 003 - 025 R 015	2,5														
BNEH 003 - 030 R 015	3,0														
BNEH 004 - 005 R 020	0,40	0,32	0,5	0,39	0,20	45	4	2							
BNEH 004 - 0075 R 020			0,75												
BNEH 004 - 010 R 020			1,0												
BNEH 004 - 015 R 020			1,5												
BNEH 004 - 020 R 020			2,0												
BNEH 004 - 025 R 020			2,5												
BNEH 004 - 030 R 020			3,0												
BNEH 004 - 040 R 020			4,0												
BNEH 004 - 050 R 020	5,0														
BNEH 005 - 010 R 025	0,50	0,40	1,0	0,49	0,25	45	4	2							
BNEH 005 - 015 R 025			1,5												
BNEH 005 - 020 R 025			2,0												
BNEH 005 - 030 R 025			3,0												
BNEH 005 - 040 R 025			4,0												
BNEH 005 - 050 R 025			5,0												
BNEH 005 - 060 R 025			6,0												
BNEH 005 - 080 R 025			8,0												
BNEH 005 - 100 R 025			10,0												

Weitere Werkzeugabmessungen im Bereich  $d1=0,10$  mm bis  $d1= 6,00$  mm auf Anfrage verfügbar.  
Other tool dimensions in the range  $d1=0.10$  mm to  $d1=6.00$  mm available on request.

Weitere Abmessungen auf Folgeseite »  
Further dimensions on next page »

Best.-Nr. / Order no.	d1	L1	L2	d2	R	L	D	Z
BNEH 006 - 010 R 030	0,60	0,48	1,0	0,59	0,30	45	4	2
BNEH 006 - 015 R 030			1,5					
BNEH 006 - 020 R 030			2,0					
BNEH 006 - 030 R 030			3,0					
BNEH 006 - 040 R 030			4,0					
BNEH 006 - 050 R 030			5,0					
BNEH 006 - 060 R 030			6,0					
BNEH 006 - 080 R 030			8,0					
BNEH 006 - 100 R 030			10,0					
BNEH 006 - 120 R 030			12,0					
BNEH 008 - 020 R 040			0,80					
BNEH 008 - 030 R 040	3,0							
BNEH 008 - 040 R 040	4,0							
BNEH 008 - 050 R 040	5,0							
BNEH 008 - 060 R 040	6,0							
BNEH 008 - 080 R 040	8,0							
BNEH 008 - 100 R 040	10,0							
BNEH 010 - 020 R 050	1,00	0,80	2,0	0,98	0,50	45	4	2
BNEH 010 - 025 R 050			2,5					
BNEH 010 - 030 R 050			3,0					
BNEH 010 - 040 R 050			4,0					
BNEH 010 - 050 R 050			5,0					
BNEH 010 - 060 R 050			6,0					
BNEH 010 - 080 R 050			8,0					
BNEH 010 - 100 R 050			10,0					
BNEH 010 - 120 R 050			12,0					
BNEH 010 - 160 R 050			16,0					
BNEH 010 - 200 R 050			20,0					
BNEH 012 - 040 R 060	1,20	0,96	4,0	1,19	0,60	45	4	2
BNEH 012 - 060 R 060			6,0					
BNEH 012 - 080 R 060			8,0					
BNEH 012 - 100 R 060			10,0					
BNEH 012 - 120 R 060			12,0					
BNEH 012 - 160 R 060			16,0					
BNEH 014 - 060 R 070	1,40	1,12	6,0	1,37	0,70	45	4	2
BNEH 014 - 080 R 070			8,0					
BNEH 014 - 160 R 070			16,0					
BNEH 015 - 030 R 075	1,50	1,20	3,0	1,47	0,75	45	4	2
BNEH 015 - 040 R 075			4,0					
BNEH 015 - 060 R 075			6,0					
BNEH 015 - 080 R 075			8,0					
BNEH 015 - 100 R 075			10,0					
BNEH 015 - 120 R 075			12,0					
BNEH 015 - 160 R 075			16,0					
BNEH 015 - 200 R 075			20,0					
BNEH 015 - 300 R 075	30,0							
BNEH 016 - 080 R 080	1,60	1,28	8,0	1,58	0,80	45	4	2
BNEH 016 - 120 R 080			12,0					
BNEH 016 - 160 R 080			16,0					
BNEH 016 - 200 R 080			20,0					

Weitere Werkzeugabmessungen im Bereich d1=0,10 mm bis d1= 6,00 mm auf Anfrage verfügbar.  
Other tool dimensions in the range d1=0.10 mm to d1=6.00 mm available on request.

Weitere Abmessungen auf Folgeseite »  
Further dimensions on next page »

Best.-Nr. / Order no.	d1	L1	L2	d2	R	L	D	Z							
BNEH 020 - 030 R 100	2,0	1,60	3,0	1,98	1,00	45	4	2							
BNEH 020 - 040 R 100			4,0												
BNEH 020 - 060 R 100			6,0												
BNEH 020 - 080 R 100			8,0												
BNEH 020 - 100 R 100			10,0												
BNEH 020 - 120 R 100			12,0												
BNEH 020 - 160 R 100			16,0												
BNEH 020 - 200 R 100			20,0												
BNEH 020 - 250 R 100			25,0												
BNEH 020 - 300 R 100			30,0												
BNEH 020 - 350 R 100			35,0												
BNEH 020 - 400 R 100			40,0												
BNEH 025 - 080 R 125			2,5						2,00	8,0	2,45	1,25	45	4	2
BNEH 025 - 150 R 125										15,0			50		
BNEH 025 - 200 R 125	20,0	55													
BNEH 025 - 250 R 125	25,0	65													
BNEH 030 - 060 R 150	3,0	2,40	6,0	2,95	1,50	60	6	2							
BNEH 030 - 080 R 150			8,0												
BNEH 030 - 100 R 150			10,0												
BNEH 030 - 120 R 150			12,0												
BNEH 030 - 160 R 150			16,0												
BNEH 030 - 200 R 150			20,0												
BNEH 030 - 250 R 150			25,0						70						
BNEH 030 - 300 R 150			30,0												
BNEH 030 - 350 R 150			35,0						80						
BNEH 030 - 400 R 150			40,0												
BNEH 040 - 080 R 200	4,0	3,20	8,0	3,95	2,00	70	6	2							
BNEH 040 - 100 R 200			10,0												
BNEH 040 - 120 R 200			12,0												
BNEH 040 - 160 R 200			16,0												
BNEH 040 - 200 R 200			20,0												
BNEH 040 - 250 R 200			25,0												
BNEH 040 - 300 R 200			30,0												
BNEH 040 - 350 R 200			35,0						80						
BNEH 040 - 400 R 200			40,0						90						
BNEH 040 - 450 R 200			45,0												
BNEH 050 - 100 R 250			5,0						4,00	10,0	4,95	2,50	70	6	2
BNEH 050 - 200 R 250	20,0														
BNEH 050 - 250 R 250	25,0														
BNEH 050 - 300 R 250	30,0	80													
BNEH 060 - 100 R 300	6,0	4,80	10,0	5,95	3,00	80	6	2							
BNEH 060 - 200 R 300			20,0												
BNEH 060 - 300 R 300			30,0												
BNEH 060 - 400 R 300			40,0						90						
BNEH 060 - 500 R 300			50,0						120						
BNEH 060 - 600 R 300			60,0												

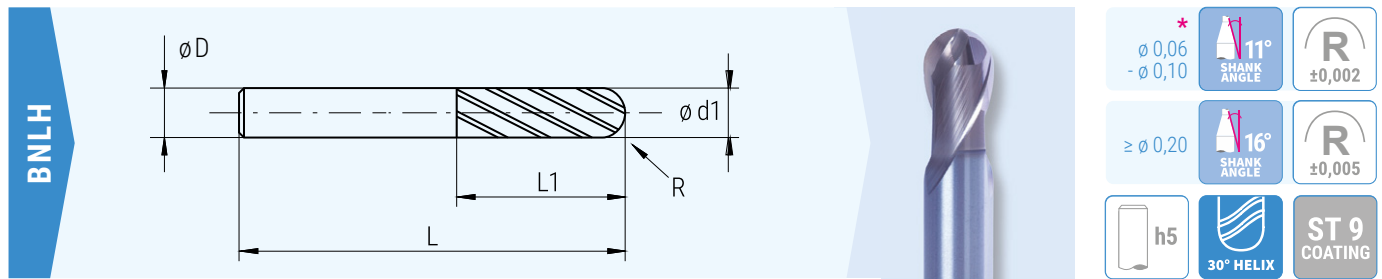
Weitere Werkzeugabmessungen im Bereich d1=0,10 mm bis d1= 6,00 mm auf Anfrage verfügbar.

Other tool dimensions in the range d1=0.10 mm to d1=6.00 mm available on request.



**VHM-Kugelfräser** mit langer Schneide, negativer Spanwinkel, bis 70 HRC, 2-Schneider,  $\phi$  0,06 - 12,0 mm, Schaft  $\phi$  4 - 12 mm **MINI MICRO**

**Solid carbide ballnose end mills** long cutting edge, negative rake angle, up to 70 HRC, 2 flutes,  $\phi$  0,06 - 12,0 mm, shank  $\phi$  4 - 12 mm **MINI MICRO**



Material hardness ranges: <math><700</math> N/mm<sup>2</sup>, 700-1100 N/mm<sup>2</sup>, 1100-1300 N/mm<sup>2</sup>, 30-45 HRC, 45-55 HRC, 55-60 HRC, 60-65 HRC, 65-70 HRC.

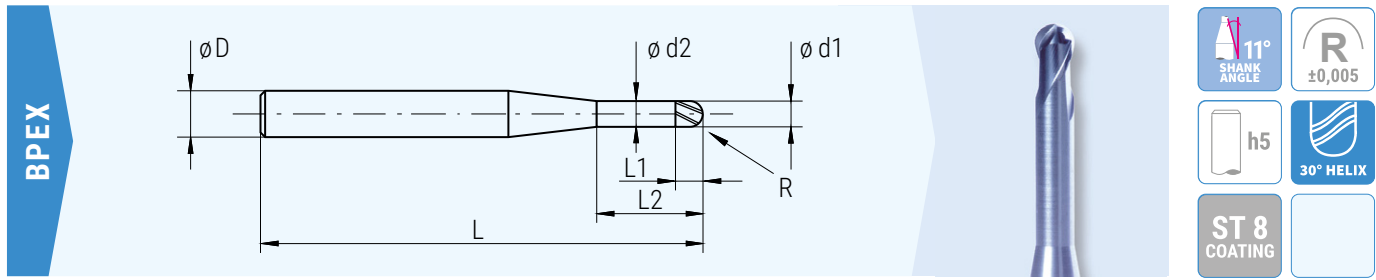
Best.-Nr. / Order no.	d1	L1	R	L	D	Z
BNLH 0006 - 0006 R 003	0,06	0,06	0,03	50	4	2
BNLH 0008 - 0008 R 004	0,08	0,08	0,04	50	4	2
BNLH 001 - 001 R 005	0,10	0,10	0,05	50	4	2
BNLH 002 - 003 R 010	0,20	0,30	0,10	50	4	2
BNLH 003 - 003 R 015	0,30	0,30	0,15	50	4	2
BNLH 003 - 0045 R 015		0,45				
BNLH 004 - 004 R 020	0,40	0,40	0,20	50	4	2
BNLH 004 - 006 R 020		0,60				
BNLH 005 - 005 R 025	0,50	0,50	0,25	50	4	2
BNLH 005 - 0075 R 025		0,75				
BNLH 010 - 010 R 050	1,00	1,00	0,50	50	4	2
BNLH 010 - 015 R 050		1,50				
BNLH 015 - 015 R 075	1,50	1,50	0,75	50	4	2
BNLH 015 - 020 R 075		2,00				
BNLH 020 - 020 R 100	2,00	2,00	1,00	50	4	2
BNLH 020 - 030 R 100		3,00				
BNLH 030 - 030 R 150	3,00	3,00	1,50	50	6	2
BNLH 040 - 040 R 200	4,00	4,00	2,00	50	6	2
BNLH 050 - 050 R 250	5,00	5,00	2,50	50	6	2
BNLH 060 - 060 R 300	6,00	6,00	3,00	50	6	2
BNLH 060 - 120 R 300		12,00		80		
BNLH 080 - 080 R 400	8,00	8,00	4,00	60	8	2
BNLH 080 - 140 R 400		14,00		90		
BNLH 100 - 100 R 500	10,00	10,00	5,00	70	10	2
BNLH 100 - 180 R 500		18,00		100		
BNLH 120 - 120 R 600	12,00	12,00	6,00	75	12	2
BNLH 120 - 220 R 600		22,00		110		

Weitere Werkzeugabmessungen im Bereich  $d1=0,10$  mm bis  $d1= 6,00$  mm auf Anfrage verfügbar.

Other tool dimensions in the range  $d1=0.10$  mm to  $d1=6.00$  mm available on request.

**VHM-Kugelfräser** mit positivem Spanwinkel, bis 55 HRC, 2-Schneider,  $\phi$  0,2 - 6,0 mm, Schaft  $\phi$  4 und 6 mm **MINI**

**Solid carbide ballnose end mills** positive rake angle, up to 55 HRC, 2 flutes,  $\phi$  0,2 - 6,0 mm, shank  $\phi$  4 and 6 mm **MINI**



- 11° SHANK ANGLE
- R ±0,005
- h5
- 30° HELIX
- ST 8 COATING

<700 N/mm <sup>2</sup>	700-1100 N/mm <sup>2</sup>	1100-1300 N/mm <sup>2</sup>	30-45 HRC	45-55 HRC	55-60 HRC	INOX	AL	CU CuZn Gold PL	TI			
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Best.-Nr. / Order no.	d1	L1	L2	d2	R	L	D	Z
BPEX 002 - 005 R 010	0,2	0,16	0,5	0,19	0,10	45	4	2
BPEX 002 - 010 R 010			1,0					
BPEX 002 - 020 R 010			2,0					
BPEX 002 - 030 R 010			3,0					
BPEX 003 - 005 R 015	0,3	0,24	0,5	0,29	0,15	45	4	2
BPEX 003 - 010 R 015			1,0					
BPEX 003 - 015 R 015			1,5					
BPEX 003 - 020 R 015			2,0					
BPEX 003 - 030 R 015			3,0					
BPEX 003 - 040 R 015			4,0					
BPEX 004 - 005 R 020	0,4	0,32	0,5	0,39	0,20	45	4	2
BPEX 004 - 010 R 020			1,0					
BPEX 004 - 015 R 020			1,5					
BPEX 004 - 020 R 020			2,0					
BPEX 004 - 030 R 020			3,0					
BPEX 004 - 040 R 020			4,0					
BPEX 004 - 050 R 020			5,0					
BPEX 004 - 060 R 020			6,0					
BPEX 005 - 010 R 025	0,5	0,40	1,0	0,49	0,25	45	4	2
BPEX 005 - 020 R 025			2,0					
BPEX 005 - 030 R 025			3,0					
BPEX 005 - 040 R 025			4,0					
BPEX 005 - 050 R 025			5,0					
BPEX 005 - 060 R 025			6,0					
BPEX 005 - 080 R 025			8,0					
BPEX 005 - 100 R 025			10,0					
BPEX 006 - 010 R 030	0,6	0,48	1,0	0,59	0,30	45	4	2
BPEX 006 - 020 R 030			2,0					
BPEX 006 - 030 R 030			3,0					
BPEX 006 - 040 R 030			4,0					
BPEX 006 - 050 R 030			5,0					
BPEX 006 - 060 R 030			6,0					
BPEX 006 - 080 R 030			8,0					
BPEX 006 - 100 R 030			10,0					
BPEX 006 - 120 R 030			12,0					

Weitere Werkzeugabmessungen im Bereich d1=0,10 mm bis d1= 6,00 mm auf Anfrage verfügbar.  
Other tool dimensions in the range d1=0.10 mm to d1=6.00 mm available on request.

Weitere Abmessungen auf Folgeseite »  
Further dimensions on next page »

Best.-Nr. / Order no.	d1	L1	L2	d2	R	L	D	Z	
BPEX 008 - 020 R 040	0,8	0,64	2,0	0,79	0,40	45	4	2	
BPEX 008 - 030 R 040			3,0						
BPEX 008 - 040 R 040			4,0						
BPEX 008 - 050 R 040			5,0						
BPEX 008 - 060 R 040			6,0						
BPEX 008 - 080 R 040			8,0						
BPEX 008 - 100 R 040			10,0						50
BPEX 010 - 020 R 050	1,0	0,80	2,0	0,98	0,50	45	4	2	
BPEX 010 - 025 R 050			2,5						
BPEX 010 - 030 R 050			3,0						
BPEX 010 - 040 R 050			4,0						
BPEX 010 - 050 R 050			5,0						
BPEX 010 - 060 R 050			6,0						
BPEX 010 - 080 R 050			8,0						
BPEX 010 - 100 R 050			10,0						
BPEX 010 - 120 R 050			12,0						
BPEX 010 - 160 R 050			16,0						50
BPEX 010 - 200 R 050	20,0	55							
BPEX 012 - 040 R 060	1,2	0,96	4,0	1,19	0,60	45	4	2	
BPEX 012 - 060 R 060			6,0						
BPEX 012 - 080 R 060			8,0						
BPEX 012 - 100 R 060			10,0						
BPEX 012 - 120 R 060			12,0						
BPEX 012 - 160 R 060			16,0						50
BPEX 014 - 060 R 070	1,4	1,12	6,0	1,37	0,70	45	4	2	
BPEX 014 - 080 R 070			8,0						
BPEX 014 - 160 R 070			16,0						50
BPEX 015 - 030 R 075	1,5	1,20	3,0	1,47	0,75	45	4	2	
BPEX 015 - 040 R 075			4,0						
BPEX 015 - 060 R 075			6,0						
BPEX 015 - 080 R 075			8,0						
BPEX 015 - 100 R 075			10,0						
BPEX 015 - 120 R 075			12,0						
BPEX 015 - 160 R 075			16,0						50
BPEX 015 - 200 R 075			20,0						55
BPEX 015 - 300 R 075			30,0						70
BPEX 016 - 080 R 080	1,6	1,28	8,0	1,58	0,80	45	4	2	
BPEX 016 - 120 R 080			12,0						
BPEX 016 - 160 R 080			16,0						50
BPEX 016 - 200 R 080			20,0						55
BPEX 020 - 030 R 100	2,0	1,60	3,0	1,98	1,00	45	4	2	
BPEX 020 - 040 R 100			4,0						
BPEX 020 - 060 R 100			6,0						
BPEX 020 - 080 R 100			8,0						
BPEX 020 - 100 R 100			10,0						
BPEX 020 - 120 R 100			12,0						
BPEX 020 - 160 R 100			16,0						50
BPEX 020 - 200 R 100			20,0						55
BPEX 020 - 250 R 100			25,0						65
BPEX 020 - 300 R 100			30,0						70
BPEX 020 - 350 R 100			35,0						80
BPEX 020 - 400 R 100			40,0						

Weitere Werkzeugabmessungen im Bereich d1=0,10 mm bis d1= 6,00 mm auf Anfrage verfügbar.  
Other tool dimensions in the range d1=0.10 mm to d1=6.00 mm available on request.

Weitere Abmessungen auf Folgeseite »  
Further dimensions on next page »

Best.-Nr. / Order no.	d1	L1	L2	d2	R	L	D	Z
BPEX 025 - 080 R 125	2,5	2,00	8,0	2,45	1,25	45	4	2
BPEX 025 - 100 R 125			10,0					
BPEX 025 - 150 R 125			15,0					
BPEX 025 - 200 R 125			20,0					
BPEX 025 - 250 R 125			25,0					
BPEX 030 - 060 R 150	3,0	2,40	6,0	2,95	1,50	60	6	2
BPEX 030 - 080 R 150			8,0					
BPEX 030 - 100 R 150			10,0					
BPEX 030 - 120 R 150			12,0					
BPEX 030 - 160 R 150			16,0					
BPEX 030 - 200 R 150			20,0					
BPEX 030 - 250 R 150			25,0					
BPEX 030 - 300 R 150			30,0					
BPEX 030 - 350 R 150			35,0					
BPEX 030 - 400 R 150			40,0					
BPEX 040 - 080 R 200	4,0	3,20	8,0	3,95	2,00	70	6	2
BPEX 040 - 100 R 200			10,0					
BPEX 040 - 120 R 200			12,0					
BPEX 040 - 160 R 200			16,0					
BPEX 040 - 200 R 200			20,0					
BPEX 040 - 250 R 200			25,0					
BPEX 040 - 300 R 200			30,0					
BPEX 040 - 350 R 200			35,0					
BPEX 040 - 400 R 200			40,0					
BPEX 040 - 500 R 200			50,0					
BPEX 050 - 100 R 250	5,0	4,00	10,0	4,95	2,50	70	6	2
BPEX 050 - 200 R 250			20,0					
BPEX 050 - 300 R 250			30,0					
BPEX 050 - 400 R 250			40,0					
BPEX 060 - 100 R 300	6,0	4,80	10,0	5,95	3,00	80	6	2
BPEX 060 - 200 R 300			20,0					
BPEX 060 - 300 R 300			30,0					
BPEX 060 - 400 R 300			40,0					
BPEX 060 - 500 R 300			50,0					
BPEX 060 - 600 R 300			60,0					

Weitere Werkzeugabmessungen im Bereich d1=0,10 mm bis d1= 6,00 mm auf Anfrage verfügbar.

Other tool dimensions in the range d1=0.10 mm to d1=6.00 mm available on request.

**VHM-Kugelfräser** in kurzer Ausführung, zum Hartfräsen bis 70 HRC, 4-Schneider,  $\varnothing$  2,0 - 12,0 mm, Schaft  $\varnothing$  4 - 12 mm

**Solid carbide ballnose end mills** short version, for hard milling up to 70 HRC, 4 flutes,  $\varnothing$  2,0 - 12,0 mm, shank  $\varnothing$  4 - 12 mm

HFBK

$\varnothing$  2-3  
**R**  
 $\pm 0,005$

$\varnothing$  4-6  
**R**  
 $\pm 0,007$

$\varnothing$  8-12  
**R**  
 $\pm 0,01$

ST 9 COATING

<700  
N/mm<sup>2</sup>

700-1100  
N/mm<sup>2</sup>

1100-1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

55-60  
HRC

60-65  
HRC

65-70  
HRC

INOX

Best.-Nr. / Order no.	d1	L1	R	L	D	Z
HFBK 020 - 030 R 100	2,0	3,0	1,00	40	4	4
HFBK 030 - 045 R 150	3,0	4,5	1,50	40	4	4
HFBK 040 - 060 R 200	4,0	6,0	2,00	45	6	4
HFBK 060 - 090 R 300	6,0	9,0	3,00	50	6	4
HFBK 080 - 120 R 400	8,0	12,0	4,00	60	8	4
HFBK 100 - 150 R 500	10,0	15,0	5,00	60	10	4
HFBK 120 - 180 R 600	12,0	18,0	6,00	60	12	4

**VHM-Kugelfräser** in langer Ausführung, zum Hartfräsen bis 70 HRC, 4-Schneider,  $\varnothing$  2,0 - 12,0 mm, Schaft  $\varnothing$  6 - 12 mm

**Solid carbide ballnose end mills** long version, for hard milling up to 70 HRC, 4 flutes,  $\varnothing$  2,0 - 12,0 mm, shank  $\varnothing$  6 - 12 mm

HFBL

$\varnothing$  2-3  
**R**  
 $\pm 0,005$

$\varnothing$  4-6  
**R**  
 $\pm 0,007$

$\varnothing$  8-12  
**R**  
 $\pm 0,01$

ST 9 COATING

<700  
N/mm<sup>2</sup>

700-1100  
N/mm<sup>2</sup>

1100-1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

55-60  
HRC

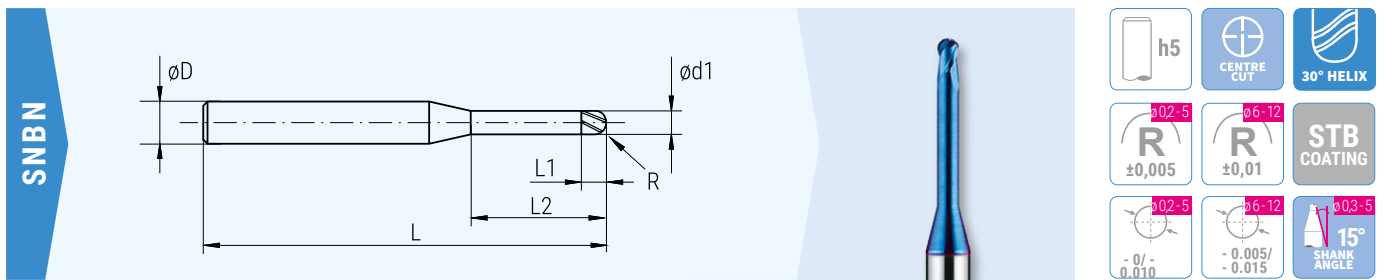
60-65  
HRC

65-70  
HRC

INOX

Best.-Nr. / Order no.	d1	L1	R	L	D	Z
HFBL 020 - 030 R 100	2,0	3,0	1,00	50	6	4
HFBL 030 - 045 R 150	3,0	4,5	1,50	60	6	4
HFBL 040 - 060 R 200	4,0	6,0	2,00	70	6	4
HFBL 060 - 090 R 300	6,0	9,0	3,00	80	6	4
HFBL 080 - 120 R 400	8,0	12,0	4,00	90	8	4
HFBL 100 - 150 R 500	10,0	15,0	5,00	100	10	4
HFBL 120 - 180 R 600	12,0	18,0	6,00	110	12	4

**Neo Line: VHM-Kugelfräser** für allgemeinen Einsatz bis zu 55 HRC. Schrupp -, Vorschlicht - und Schlicht - Einsatz mit hohen Schnittwerten  
**Neo Line: Solid carbide ball nose end mills** for general use up to 55 HRC. Roughing, pre - finishing and finishing with high cutting values



<700 N/mm<sup>2</sup>
700 - 1100 N/mm<sup>2</sup>
1100 - 1300 N/mm<sup>2</sup>
30 - 45 HRC
45 - 55 HRC
55 - 60 HRC

h5
CENTRE CUT
30° HELIX
R ±0,005
R ±0,01
STB COATING
R ±0,005
R ±0,01
15° SHANK ANGLE

Best. - Nr. / Order no.	d1	R	L1	L2	L	D	Z
SNBN - 2003 - 010 - S04 - STB	0,3	0,15	0,3	1,0	40	4	2
SNBN - 2003 - 015 - S04 - STB				1,5			
SNBN - 2004 - 010 - S04 - STB	0,4	0,20	0,4	1,0	40	4	2
SNBN - 2004 - 020 - S04 - STB				2,0			
SNBN - 2004 - 030 - S04 - STB				3,0			
SNBN - 2004 - 040 - S04 - STB				4,0			
SNBN - 2004 - 050 - S04 - STB				5,0			
SNBN - 2004 - 060 - S04 - STB				6,0			
SNBN - 2005 - 010 - S04 - STB				0,5			
SNBN - 2005 - 020 - S04 - STB	2,0						
SNBN - 2005 - 030 - S04 - STB	3,0						
SNBN - 2005 - 040 - S04 - STB	4,0						
SNBN - 2005 - 050 - S04 - STB	5,0						
SNBN - 2005 - 060 - S04 - STB	6,0						
SNBN - 2006 - 020 - S04 - STB	0,6	0,30	0,6	2,0	45	4	2
SNBN - 2006 - 030 - S04 - STB				3,0			
SNBN - 2006 - 040 - S04 - STB				4,0			
SNBN - 2006 - 060 - S04 - STB				6,0			
SNBN - 2006 - 080 - S04 - STB				8,0			
SNBN - 2006 - 100 - S04 - STB				10,0			
SNBN - 2008 - 020 - S04 - STB	0,8	0,40	0,8	2,0	45	4	2
SNBN - 2008 - 030 - S04 - STB				3,0			
SNBN - 2008 - 040 - S04 - STB				4,0			
SNBN - 2008 - 060 - S04 - STB				6,0			
SNBN - 2008 - 080 - S04 - STB				8,0			
SNBN - 2008 - 100 - S04 - STB				10,0			
SNBN - 2010 - 040 - S04 - STB	1,0	0,50	1,0	4,0	45	4	2
SNBN - 2010 - 060 - S04 - STB				6,0			
SNBN - 2010 - 080 - S04 - STB				8,0			
SNBN - 2010 - 100 - S04 - STB				10,0			
SNBN - 2010 - 120 - S04 - STB				12,0			
SNBN - 2010 - 140 - S04 - STB				14,0			
SNBN - 2010 - 160 - S04 - STB	16,0						
SNBN - 2012 - 060 - S04 - STB	1,2	0,60	1,2	6,0	45	4	2
SNBN - 2012 - 080 - S04 - STB				8,0			
SNBN - 2012 - 100 - S04 - STB				10,0			
SNBN - 2012 - 120 - S04 - STB				12,0			
SNBN - 2012 - 160 - S04 - STB				16,0			
SNBN - 2015 - 060 - S04 - STB				1,5			
SNBN - 2015 - 080 - S04 - STB	8,0						
SNBN - 2015 - 100 - S04 - STB	10,0						

Best. - Nr. / Order no.	d1	R	L1	L2	L	D	Z	
SNBN - 2015 - 120 - S04 - STB	1,5	0,75	1,5	12,0	50	4	2	
SNBN - 2015 - 140 - S04 - STB				14,0				
SNBN - 2015 - 160 - S04 - STB				16,0				
SNBN - 2020 - 060 - S04 - STB	2,0	1,00	2,0	6,0	45	4	2	
SNBN - 2020 - 080 - S04 - STB				8,0				
SNBN - 2020 - 100 - S04 - STB				10,0				
SNBN - 2020 - 120 - S04 - STB				12,0				
SNBN - 2020 - 140 - S04 - STB				14,0				
SNBN - 2020 - 160 - S04 - STB				16,0				
SNBN - 2020 - 180 - S04 - STB				18,0				
SNBN - 2020 - 200 - S04 - STB	20,0							
SNBN - 2025 - 080 - S04 - STB	2,5	1,25	2,5	8,0	45	4	2	
SNBN - 2025 - 100 - S04 - STB				10,0	50			
SNBN - 2025 - 120 - S04 - STB				12,0				
SNBN - 2025 - 160 - S04 - STB				16,0				
SNBN - 2025 - 200 - S04 - STB				20,0				60
SNBN - 2030 - 100 - STB	3,0	1,50	3,0	10,0	50	6	2	
SNBN - 2030 - 120 - STB				12,0				
SNBN - 2030 - 160 - STB				16,0	60			
SNBN - 2030 - 200 - STB				20,0				
SNBN - 2030 - 250 - STB				25,0				65
SNBN - 2030 - 300 - STB				30,0				70
SNBN - 2040 - 100 - STB	4,0	2,00	4,0	10,0	50	6	2	
SNBN - 2040 - 120 - STB				12,0				
SNBN - 2040 - 160 - STB				16,0	60			
SNBN - 2040 - 200 - STB				20,0				
SNBN - 2040 - 250 - STB				25,0				65
SNBN - 2040 - 300 - STB				30,0				70
SNBN - 2040 - 350 - STB				35,0	75			
SNBN - 2040 - 400 - STB				40,0	80			
SNBN - 2050 - 200 - STB	5,0	2,50	6,0	20,0	60	6	2	
SNBN - 2050 - 250 - STB				25,0				70
SNBN - 2050 - 300 - STB				30,0				75
SNBN - 2050 - 400 - STB				40,0				80
SNBN - 2050 - 500 - STB				50,0				90
SNBN - 2060 - 150 - STB	6,0	3,00	10,0	15,0	55	6	2	
SNBN - 2080 - 250 - STB	8,0	4,00	12,0	25,0	60	8	2	
SNBN - 2100 - 300 - STB	10,0	5,00	16,0	30,0	70	10	2	
SNBN - 2120 - 300 - STB	12,0	6,00	18,0	30,0	75	12	2	
SNBN - 2120 - 600 - STB			22,0	60,0	110			

**Neo Line: VHM-Kugelfräser** für allgemeinen Einsatz bis zu 55 HRC. Schrupp -, Vorschlicht - und Schlicht - Einsatz mit hohen Schnittwerten  
**Neo Line: Solid carbide ball nose end mills** for general use up to 55 HRC. Roughing, pre - finishing and finishing with high cutting values

SNBS

h5

CENTRE CUT

30° HELIX

STB COATING

15° SHANK ANGLE

02-5

R ±0,005

R ±0,01

R ±0,015

<700 N/mm<sup>2</sup>

700 - 1100 N/mm<sup>2</sup>

1100 - 1300 N/mm<sup>2</sup>

30 - 45 HRC

45 - 55 HRC

55 - 60 HRC

Best. - Nr. / Order no.	d1	R	L1	L	D	Z
SNBS - 2002 - S04 - STB	0,2	0,10	0,4	40	4	2
SNBS - 2003 - S04 - STB	0,3	0,15	0,6	40	4	2
SNBS - 2004 - S04 - STB	0,4	0,20	0,8	40	4	2
SNBS - 2005 - S04 - STB	0,5	0,25	1,0	45	4	2
SNBS - 2006 - S04 - STB	0,6	0,30	1,2	45	4	2
SNBS - 2008 - S04 - STB	0,8	0,40	1,6	45	4	2
SNBS - 2010 - S04 - STB	1,0	0,50	2,5	50	4	2
SNBS - 2012 - S04 - STB	1,2	0,60	3,0	50	4	2
SNBS - 2015 - S04 - STB	1,5	0,75	4,0	50	4	2
SNBS - 2020 - STB	2,0	1,00	5,0	50	6	2
SNBS - 2025 - STB	2,5	1,25	5,0	50	6	2
SNBS - 2030 - STB	3,0	1,50	6,0	60	6	2
SNBS - 2040 - STB	4,0	2,00	8,0	70	6	2
SNBS - 2050 - STB	5,0	2,50	12,0	80	6	2
SNBS - 2060 - 600 - STB	6,0	3,00	10,0	60	6	2
SNBS - 2060 - STB			12,0	80		
SNBS - 2080 - 600 - STB	8,0	4,00	12,0	60	8	2
SNBS - 2080 - STB			14,0	100		
SNBS - 2100 - 750 - STB	10,0	5,00	15,0	75	10	2
SNBS - 2100 - STB			18,0	100		
SNBS - 2120 - STB	12,0	6,00	22,0	110	12	2
SNBS - 2160 - STB	16,0	8,00	30,0	110	16	2



**Hard Line: VHM-Kugelfräser** bis zu 65 HRC. Schrupp-, Vorschlicht-, Schlicht-Einsatz mit hohen Schnittwerten und Standwegen

**Hard Line: Solid carbide ball nose end mill** up to 65 HRC. Roughing, pre-finishing and finishing, high cutting values and long tool life

SHBN

h5

$\varnothing 0.25$   
**R**  
 $\pm 0,005$

$\varnothing 6-12$   
**R**  
 $\pm 0,01$

**STH**  
 COATING

$\varnothing 0.25$   
 $-0.000/  
-0.010$

$\varnothing 6-12$   
 $-0.005/  
-0.015$

30° HELIX

CENTRE CUT

$\varnothing 0.25$   

 15° SHANK ANGLE

<math><700</math>  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

55-60  
HRC

60-65  
HRC

65-70  
HRC

INOX

AL

CU CuZn  
Gold PL

TI

CFK  
GFK

PLASTIC

GRAPHIT

Best. - Nr. / Order no.	d1	R	L1	L2	L	D	Z
SHBN - 2002 - 005 - S04 - STH	0,2	0,10	0,2	0,5	40	4	2
SHBN - 2002 - 010 - S04 - STH				1,0			
SHBN - 2002 - 015 - S04 - STH				1,5			
SHBN - 2002 - 020 - S04 - STH				2,0			
SHBN - 2002 - 025 - S04 - STH				2,5			
SHBN - 2002 - 030 - S04 - STH				3,0			
SHBN - 2003 - 010 - S04 - STH	0,3	0,15	0,3	1,0	40	4	2
SHBN - 2003 - 015 - S04 - STH				1,5			
SHBN - 2003 - 020 - S04 - STH				2,0			
SHBN - 2003 - 025 - S04 - STH				2,5			
SHBN - 2003 - 030 - S04 - STH	3,0						
SHBN - 2004 - 010 - S04 - STH	0,4	0,20	0,4	1,0	40	4	2
SHBN - 2004 - 015 - S04 - STH				1,5			
SHBN - 2004 - 020 - S04 - STH				2,0			
SHBN - 2004 - 025 - S04 - STH				2,5			
SHBN - 2004 - 030 - S04 - STH				3,0			
SHBN - 2004 - 040 - S04 - STH				4,0			
SHBN - 2004 - 050 - S04 - STH	5,0						
SHBN - 2005 - 010 - S04 - STH	0,5	0,25	0,5	1,0	45	4	2
SHBN - 2005 - 015 - S04 - STH				1,5			
SHBN - 2005 - 020 - S04 - STH				2,0			
SHBN - 2005 - 030 - S04 - STH				3,0			
SHBN - 2005 - 040 - S04 - STH				4,0			
SHBN - 2005 - 050 - S04 - STH				5,0			
SHBN - 2005 - 060 - S04 - STH				6,0			
SHBN - 2005 - 080 - S04 - STH				8,0			
SHBN - 2005 - 100 - S04 - STH	10,0						
SHBN - 2006 - 010 - S04 - STH	0,6	0,30	0,6	1,0	45	4	2
SHBN - 2006 - 020 - S04 - STH				2,0			
SHBN - 2006 - 030 - S04 - STH				3,0			
SHBN - 2006 - 040 - S04 - STH				4,0			
SHBN - 2006 - 050 - S04 - STH				5,0			
SHBN - 2006 - 060 - S04 - STH				6,0			
SHBN - 2006 - 080 - S04 - STH				8,0			
SHBN - 2006 - 100 - S04 - STH				10,0			
SHBN - 2006 - 120 - S04 - STH				12,0			

Weitere Abmessungen auf Folgeseite »  
Further dimensions on next page »

Best. - Nr. / Order no.	d1	R	L1	L2	L	D	Z	
SHBN - 2008 - 020 - S04 - STH	0,8	0,40	0,8	2,0	45	4	2	
SHBN - 2008 - 030 - S04 - STH				3,0				
SHBN - 2008 - 040 - S04 - STH				4,0				
SHBN - 2008 - 050 - S04 - STH				5,0				
SHBN - 2008 - 060 - S04 - STH				6,0				
SHBN - 2008 - 080 - S04 - STH				8,0				
SHBN - 2008 - 100 - S04 - STH				10,0				
SHBN - 2010 - 020 - S04 - STH	1,0	0,50	1,0	2,0	45	4	2	
SHBN - 2010 - 030 - S04 - STH				3,0				
SHBN - 2010 - 040 - S04 - STH				4,0				
SHBN - 2010 - 050 - S04 - STH				5,0				
SHBN - 2010 - 060 - S04 - STH				6,0	50			
SHBN - 2010 - 080 - S04 - STH				8,0				
SHBN - 2010 - 100 - S04 - STH				10,0				
SHBN - 2010 - 120 - S04 - STH				12,0				
SHBN - 2010 - 140 - S04 - STH				14,0				
SHBN - 2010 - 160 - S04 - STH				16,0				
SHBN - 2010 - 180 - S04 - STH				18,0				
SHBN - 2010 - 200 - S04 - STH				20,0				60
SHBN - 2010 - 020 - S06 - STH				1,0				0,50
SHBN - 2010 - 030 - S06 - STH	3,0	50						
SHBN - 2010 - 040 - S06 - STH	4,0	45						
SHBN - 2010 - 050 - S06 - STH	5,0	50						
SHBN - 2010 - 060 - S06 - STH	6,0							
SHBN - 2010 - 080 - S06 - STH	8,0							
SHBN - 2010 - 100 - S06 - STH	10,0							
SHBN - 2010 - 120 - S06 - STH	12,0							
SHBN - 2010 - 140 - S06 - STH	14,0							
SHBN - 2010 - 160 - S06 - STH	16,0	60						
SHBN - 2010 - 180 - S06 - STH	18,0							
SHBN - 2010 - 200 - S06 - STH	20,0							
SHBN - 2012 - 040 - S04 - STH	1,2	0,60	1,2	4,0	45	4	2	
SHBN - 2012 - 060 - S04 - STH				6,0				
SHBN - 2012 - 080 - S04 - STH				8,0				
SHBN - 2012 - 100 - S04 - STH				10,0	50			
SHBN - 2012 - 120 - S04 - STH				12,0				
SHBN - 2012 - 160 - S04 - STH				16,0				
SHBN - 2012 - 200 - S04 - STH				20,0				60
SHBN - 2012 - 040 - S06 - STH	1,2	0,60	1,2	4,0	45	6	2	
SHBN - 2012 - 060 - S06 - STH				6,0				
SHBN - 2012 - 080 - S06 - STH				8,0				
SHBN - 2012 - 100 - S06 - STH				10,0	50			
SHBN - 2012 - 120 - S06 - STH				12,0				
SHBN - 2012 - 160 - S06 - STH				16,0				
SHBN - 2012 - 200 - S06 - STH				20,0				60
SHBN - 2014 - 060 - S04 - STH	1,4	0,70	1,4	6,0	45	4	2	
SHBN - 2014 - 080 - S04 - STH				8,0				
SHBN - 2014 - 120 - S04 - STH				12,0	50			
SHBN - 2014 - 160 - S04 - STH				16,0				
SHBN - 2015 - 030 - S04 - STH	1,5	0,75	1,5	3,0	45	4	2	
SHBN - 2015 - 040 - S04 - STH				4,0				
SHBN - 2015 - 060 - S04 - STH				6,0	50			
SHBN - 2015 - 080 - S04 - STH				8,0				

Weitere Abmessungen auf Folgeseite » / Further dimensions on next page »

Best. - Nr. / Order no.	d1	R	L1	L2	L	D	Z	
SHBN - 2015 - 100 - S04 - STH	1,5	0,75	1,5	10,0	50	4	2	
SHBN - 2015 - 120 - S04 - STH				12,0	60			
SHBN - 2015 - 140 - S04 - STH				14,0	70			
SHBN - 2015 - 160 - S04 - STH				16,0				
SHBN - 2015 - 180 - S04 - STH				18,0	50			
SHBN - 2015 - 200 - S04 - STH				20,0				
SHBN - 2015 - 220 - S04 - STH				22,0	60			
SHBN - 2015 - 250 - S04 - STH				25,0				
SHBN - 2015 - 300 - S04 - STH				30,0	70			
SHBN - 2015 - 030 - S06 - STH				1,5	0,75			1,5
SHBN - 2015 - 040 - S06 - STH	4,0							
SHBN - 2015 - 060 - S06 - STH	6,0							
SHBN - 2015 - 080 - S06 - STH	8,0	50						
SHBN - 2015 - 100 - S06 - STH	10,0							
SHBN - 2015 - 120 - S06 - STH	12,0	60						
SHBN - 2015 - 140 - S06 - STH	14,0							
SHBN - 2015 - 160 - S06 - STH	16,0	50						
SHBN - 2015 - 180 - S06 - STH	18,0							
SHBN - 2015 - 200 - S06 - STH	20,0							
SHBN - 2015 - 220 - S06 - STH	22,0	60						
SHBN - 2015 - 250 - S06 - STH	25,0	65						
SHBN - 2015 - 300 - S06 - STH	30,0	70						
SHBN - 2016 - 060 - S04 - STH	1,6	0,80	1,6			6,0	45	
SHBN - 2016 - 080 - S04 - STH				8,0				
SHBN - 2016 - 120 - S04 - STH				12,0				
SHBN - 2016 - 160 - S04 - STH				16,0	50			
SHBN - 2016 - 200 - S04 - STH				20,0				
SHBN - 2018 - 060 - S04 - STH	1,8	0,90	1,8	6,0	45	4	2	
SHBN - 2018 - 080 - S04 - STH				8,0				
SHBN - 2018 - 120 - S04 - STH				12,0				
SHBN - 2018 - 160 - S04 - STH				16,0	50			
SHBN - 2018 - 200 - S04 - STH				20,0				
SHBN - 2020 - 040 - S04 - STH	2,0	1,00	2,0	4,0	50	4	2	
SHBN - 2020 - 060 - S04 - STH				6,0				45
SHBN - 2020 - 080 - S04 - STH				8,0				
SHBN - 2020 - 100 - S04 - STH				10,0				
SHBN - 2020 - 120 - S04 - STH				12,0				
SHBN - 2020 - 140 - S04 - STH				14,0				
SHBN - 2020 - 160 - S04 - STH				16,0				
SHBN - 2020 - 180 - S04 - STH				18,0				
SHBN - 2020 - 200 - S04 - STH				20,0				
SHBN - 2020 - 220 - S04 - STH				22,0				60
SHBN - 2020 - 250 - S04 - STH				25,0				
SHBN - 2020 - 300 - S04 - STH				30,0				70
SHBN - 2020 - 350 - S04 - STH				35,0				
SHBN - 2020 - 400 - S04 - STH				40,0				80
SHBN - 2020 - 040 - S06 - STH	2,0	1,00	2,0	4,0	50	6	2	
SHBN - 2020 - 060 - S06 - STH				6,0				
SHBN - 2020 - 080 - S06 - STH				8,0				
SHBN - 2020 - 100 - S06 - STH				10,0				
SHBN - 2020 - 120 - S06 - STH				12,0				

[Weitere Abmessungen auf Folgeseite »](#)  
[Further dimensions on next page »](#)

Best. - Nr. / Order no.	d1	R	L1	L2	L	D	Z	
SHBN - 2020 - 140 - S06 - STH	2,0	1,00	2,0	14,0	50	6	2	
SHBN - 2020 - 160 - S06 - STH				16,0	60			
SHBN - 2020 - 180 - S06 - STH				18,0				
SHBN - 2020 - 200 - S06 - STH				20,0				
SHBN - 2020 - 220 - S06 - STH				22,0				65
SHBN - 2020 - 250 - S06 - STH				25,0				
SHBN - 2020 - 300 - S06 - STH				30,0				70
SHBN - 2020 - 350 - S06 - STH				35,0				75
SHBN - 2020 - 400 - S06 - STH				40,0				80
SHBN - 2025 - 080 - S04 - STH				2,5				1,25
SHBN - 2025 - 100 - S04 - STH	10,0							
SHBN - 2025 - 120 - S04 - STH	12,0	50						
SHBN - 2025 - 160 - S04 - STH	16,0							
SHBN - 2025 - 200 - S04 - STH	20,0	60						
SHBN - 2025 - 250 - S04 - STH	25,0							
SHBN - 2025 - 100 - S06 - STH	10,0	50	60					
SHBN - 2025 - 080 - S06 - STH	8,0							
SHBN - 2025 - 120 - S06 - STH	12,0							
SHBN - 2025 - 160 - S06 - STH	16,0							
SHBN - 2030 - 060 - STH	3,0			1,50	3,0	6,0	50	6
SHBN - 2030 - 080 - STH		8,0						
SHBN - 2030 - 100 - STH		10,0						
SHBN - 2030 - 120 - STH		12,0						
SHBN - 2030 - 160 - STH		16,0						
SHBN - 2030 - 200 - STH		20,0	60					
SHBN - 2030 - 250 - STH		25,0	65					
SHBN - 2030 - 300 - STH		30,0	70					
SHBN - 2030 - 350 - STH		35,0	75					
SHBN - 2030 - 400 - STH		40,0	80					
SHBN - 2040 - 080 - STH	4,0	2,00	4,0	8,0	50	6	2	
SHBN - 2040 - 100 - STH				10,0				
SHBN - 2040 - 120 - STH				12,0				
SHBN - 2040 - 160 - STH				16,0				60
SHBN - 2040 - 200 - STH				20,0				
SHBN - 2040 - 250 - STH				25,0				65
SHBN - 2040 - 300 - STH				30,0				70
SHBN - 2040 - 350 - STH				35,0				75
SHBN - 2040 - 400 - STH				40,0				80
SHBN - 2040 - 450 - STH				45,0				90
SHBN - 2050 - 160 - STH	5,0	2,50	6,0	16,0	60	6	2	
SHBN - 2050 - 200 - STH				20,0				
SHBN - 2050 - 250 - STH				25,0				70
SHBN - 2050 - 300 - STH				30,0				75
SHBN - 2050 - 400 - STH				40,0				80
SHBN - 2050 - 450 - STH				45,0				90
SHBN - 2050 - 500 - STH				50,0				100
SHBN - 2060 - 150 - STH	6,0	3,00	10,0	15,0	55	6	2	
SHBN - 2060 - 300 - STH				30,0				110
SHBN - 2080 - 250 - STH	8,0	4,00	12,0	25,0	60	8	2	
SHBN - 2100 - 300 - STH	10,0	5,00	16,0	30,0	70	10	2	
SHBN - 2120 - 300 - STH	12,0	6,00	18,0	30,0	75	12	2	

**Hard Line: VHM-Kugelfräser** bis zu 65 HRC, Schrupp-, Vorschlicht- und Schlicht-Einsatz mit hohen Schnittwerten und Standwegen

**Hard Line: Solid carbide ball nose end mill** up to 65 HRC, Roughing, pre-finishing and finishing application with high cutting values and tool life

SHBS

h5

R  
±0,005

R  
±0,01

R  
±0,015

STH  
COATING

±0,025  
-0.000/  
-0.010

±0,025  
-0.005/  
-0.015

±0,025  
-0.010/  
-0.020

30° HELIX

CENTRE  
CUT

15°  
SHANK  
ANGLE

<700  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

55-60  
HRC

60-65  
HRC

65-70  
HRC

INOX

AL

CU CuZn  
Gold PL

TI

CFK  
GFK

PLASTIC

GRAPHIT

Best. - Nr. / Order no.	d1	R	L1	L	D	Z
SHBS - 2002 - S04 - STH	0,2	0,10	0,4	40	4	2
SHBS - 2003 - S04 - STH	0,3	0,15	0,6	40	4	2
SHBS - 2004 - S04 - STH	0,4	0,20	0,8	40	4	2
SHBS - 2005 - S04 - STH	0,5	0,25	1,0	45	4	2
SHBS - 2006 - S04 - STH	0,6	0,30	1,2	45	4	2
SHBS - 2008 - S04 - STH	0,8	0,40	2,0	45	4	2
SHBS - 2010 - S04 - STH	1,0	0,50	2,5	50	4	2
SHBS - 2010 - S06 - STH					6	
SHBS - 2015 - S04 - STH	1,5	0,75	4,0	50	4	2
SHBS - 2015 - S06 - STH					6	
SHBS - 2020 - S04 - STH	2,0	1,00	5,0	50	4	2
SHBS - 2020 - S06 - STH					6	
SHBS - 2025 - S04 - STH	2,5	1,25	6,0	50	4	2
SHBS - 2025 - S06 - STH				75		
SHBS - 2030 - S06 - STH	3,0	1,50	8,0	60	6	2
SHBS - 2040 - S06 - STH	4,0	2,00	8,0	70	6	2
SHBS - 2050 - S06 - STH	5,0	2,50	10,0	75	6	2
SHBS - 2060 - 060 - STH	6,0	3,00	10,0	60	6	2
SHBS - 2060 - 080 - STH			12,0	80		
SHBS - 2080 - 060 - STH	8,0	4,00	8,0	60	8	2
SHBS - 2080 - 090 - STH			14,0	90		
SHBS - 2100 - 70 - STH	10,0	5,00	10,0	70	10	2
SHBS - 2100 - 080 - STH <span style="color: red; font-weight: bold;">NEW!</span>			18,0	80		
SHBS - 2100 - 100 - STH			100			
SHBS - 2120 - 110 - STH	12,0	6,00	22,0	110	12	2
SHBS - 2120 - 70 - STH			12,0	70		
SHBS - 2160 - 130 - STH	16,0	8,00	30,0	130	16	2

## X Line: Hi-Performance Kugelfräser 4-schneidig für schruppen bis feinstschlichten in Stählen bis 62HRC, zurückgesetztes Zentrum

X Line: High-performance ball nose end mill 4 cutting edges for roughing to ultra-fine finishing, in steels up to 62HRC, recessed center

3X408

h5

R  
±0,01

38°/40°  
HELIX

ST 7  
COATING

11°  
SHANK  
ANGLE

16°  
SHANK  
ANGLE

<700  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

45-55  
HRC

55-60  
HRC

60-65  
HRC

INOX

CU CuZn  
Gold PL

TI

Best.-Nr. / Order no.	d1	d2	R	L1	L2	L	D	Z
3X408010	1	1,0	0,5	1,5	3	40	4	4
3X408020	2	1,9	1,0	3,0	6	40	4	4
3X408030	3	2,9	1,5	4,5	9	45	6	4
3X408040	4	3,7	2,0	6,0	13	58	6	4
3X408050	5	4,7	2,5	7,5	17	58	6	4
3X408060	6	5,7	3,0	9,0	20	58	6	4
3X408080	8	7,6	4,0	12,0	26	64	8	4
3X408100	10	9,5	5,0	15,0	33	75	10	4
3X408120	12	1,5	6,0	18,0	39	84	12	4

## X Line: Hi-Performance Kugelfräser 4-schneidig für schruppen bis feinstschlichten in Stählen bis 62HRC, zurückgesetztes Zentrum

X Line: High-performance ball nose end mill 4 cutting edges for roughing to ultra-fine finishing, in steels up to 62HRC, recessed center

5X408

h5

R  
±0,01

38°/40°  
HELIX

ST 7  
COATING

16°  
SHANK  
ANGLE

<700  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

45-55  
HRC

55-60  
HRC

60-65  
HRC

INOX

CU CuZn  
Gold PL

TI

Best.-Nr. / Order no.	d1	d2	R	L1	L2	L	D	Z
5X408060	6	5,7	3	9	32	70	6	4
5X408080	8	7,6	4	12	42	80	8	4
5X408100	10	9,5	5	15	53	95	10	4
5X408120	12	11,5	6	18	63	110	12	4

## X Line: Hi-Performance Kugelfräser 4-schneidig für schruppen bis feinstschlichten in Stählen bis 62HRC, Vollradius

X Line: High-performance ball nose end mill 4 cutting edges for roughing to ultra-fine finishing, in steels up to 62HRC, full radius

3X409

h5

R  
 $\pm 0,01$

38°/40°  
HELIX

ST 7  
COATING

11°  
SHANK  
ANGLE

16°  
SHANK  
ANGLE

CENTRE  
CUT

<math><700</math>  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

45-55  
HRC

55-60  
HRC

60-65  
HRC

INOX

CU CuZn  
Gold PL

TI

Best.-Nr. / Order no.	d1	d2	R	L1	L2	L	D	Z
3X409010	1	1,0	0,5	1,5	3	40	4	4
3X409020	2	1,9	1,0	3,0	6	40	4	4
3X409030	3	2,9	1,5	4,5	9	45	6	4
3X409040	4	3,7	2,0	6,0	13	58	6	4
3X409050	5	4,7	2,5	7,5	17	58	6	4
3X409060	6	5,7	3,0	9,0	20	58	6	4
3X409080	8	7,6	4,0	12,0	26	64	8	4
3X409100	10	9,5	5,0	15,0	33	75	10	4
3X409120	12	11,5	6,0	18,0	39	84	12	4

## X Line: Hi-Performance Kugelfräser 4-schneidig für schruppen bis feinstschlichten in Stählen bis 62HRC, Vollradius

X Line: High-performance ball nose end mill 4 cutting edges for roughing to ultra-fine finishing, in steels up to 62HRC, full radius

5X409

h5

R  
 $\pm 0,01$

38°/40°  
HELIX

ST 7  
COATING

16°  
SHANK  
ANGLE

ø 2:12

CENTRE  
CUT

<math><700</math>  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

45-55  
HRC

55-60  
HRC

60-65  
HRC

INOX

CU CuZn  
Gold PL

TI

Best.-Nr. / Order no.	d1	d2	R	L1	L2	L	D	Z
5X409060	6	5,7	3	9	32	70	6	4
5X409080	8	7,6	4	12	42	80	8	4
5X409100	10	9,5	5	15	53	95	10	4
5X409120	12	11,5	6	18	63	110	12	4

## X Line: Hi-Performance Kugelfräser 4-schneidig für schruppen bis feinstschichten in Stählen bis 62HRC, Vollradius

X Line: High-performance ball nose end mill 4 cutting edges for roughing to ultra-fine finishing, in steels up to 62HRC, full radius

8X409

h5

R  
±0,01

38°/40°  
HELIX

ST 7  
COATING

16°  
SHANK  
ANGLE

±0,012

CENTRE  
CUT

<math><700</math>  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

45-55  
HRC

55-60  
HRC

60-65  
HRC

INOX

CU CuZn  
Gold PL

TI

Best.-Nr. / Order no.	d1	d2	R	L1	L2	L	D	Z
8X409040K09	4	3,9	2,0	6,0	34	70	6	4
8X409050K09	5	4,9	2,5	7,5	42	80	8	4
8X409060K09	6	5,9	3,0	9,0	50	90	8	4
8X409080K09	8	7,9	4,0	12,0	66	105	10	4

## X Line: Hi-Performance Kugelfräser 6-schneidig für vorschlichten bis feinstschichten in Stählen bis 62HRC, Vollradius

X Line: High-performance ball nose end mill 6 cutting edges for pre-finish to ultra-fine finishing, in steels up to 62HRC, full radius

3X609

h5

R  
±0,01

20° HELIX

ST 7  
COATING

16°  
SHANK  
ANGLE

±0,012

CENTRE  
CUT

<math><700</math>  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

45-55  
HRC

55-60  
HRC

60-65  
HRC

INOX

CU CuZn  
Gold PL

TI

Best.-Nr. / Order no.	d1	d2	R	L1	L2	L	D	Z
3X609040	4	3,7	2,0	6,0	13	58	6	6
3X609050	5	4,7	2,5	7,5	17	58	6	6
3X609060	6	5,7	3,0	9,0	20	58	6	6
3X609080	8	7,6	4,0	12,0	26	64	8	6
3X609100	10	9,5	5,0	15,0	33	75	10	6
3X609120	12	11,5	6,0	18,0	39	84	12	6



**VHM-Schaftfräser** 2-Schneider,  $\varnothing$  0,2 - 0,4 mm, Schaft  $\varnothing$  3 mm **MINI**  
**Solid carbide end mill** 2 flutes,  $\varnothing$  0,2 - 0,4 mm, shank  $\varnothing$  3 mm **MINI**

SHWH

16°  
SHANK ANGLE

h5

CENTRE CUT

30° HELIX

ST 9  
COATING

<700  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

55-60  
HRC

AL

CU CuZn  
Gold PL

Best.-Nr. / Order no.	d1	L1	L2	d2	L	D	Z
SHWH 002 - 003 *	0,2	0,30	-	-	40	3	2
SHWH 003 - 0045 *	0,3	0,45	-	0,2	40	3	2
SHWH 004 - 006 *	0,4	0,60	-	0,3	40	3	2
SHWH 004 - 015 *			1,5				

\* Auslaufend - Wird ersetzt durch eine neue Generation, Serie SXWH (siehe unten)

\* Discontinued - Will be replaced by a new generation, series SXWH (see below)

**VHM-Schaftfräser** 2-Schneider,  $\varnothing$  0,2 - 0,4 mm, Schaft  $\varnothing$  3 mm **MINI**  
**Solid carbide end mill** 2 flutes,  $\varnothing$  0,2 - 0,4 mm, shank  $\varnothing$  3 mm **MINI**

SXWH

16°  
SHANK ANGLE

h4

CENTRE CUT

30° HELIX

ST 9  
COATING

<700  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

55-60  
HRC

AL

CU CuZn  
Gold PL

Best.-Nr. / Order no.	d1	L1	L2	d2	L	D	Z
SXWH001-003	0,1	0,1	0,3	0,09	38	3	2
SXWH002-010	0,2	0,3	1,0	0,18	38	3	2
SXWH003-010	0,3	0,4	1,0	0,28	38	3	2
SXWH004-015	0,4	0,6	1,5	0,38	38	3	2

Weitere Werkzeugabmessungen auf Anfrage verfügbar.

Other tool dimensions available on request.

**VHM-Schaftfräser / VHM-Torusfräser** 2-Schneider,  $\phi$  0,2 - 2,0 mm, Schaft  $\phi$  3 mm **MINI**

**Solid carbide end mill / Solid carbide end mill with corner radius** 2 flutes,  $\phi$  0,2 - 2,0 mm, shank  $\phi$  3 mm **MINI**

CNWH

16°  
SHANK  
ANGLE

h5

CENTRE  
CUT

30° HELIX

ST 9  
COATING

ER

ER  
 $\pm 0,005$

<700  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

55-60  
HRC

AL

CU CuZn  
Gold PL

Best.-Nr. / Order no.	d1	L1	L2	d2	ER	L	D	Z
CNWH 005 - 007 CR 005 *	0,5	0,7	-	0,4	0,05	40	3	2
CNWH 005 - 040 CR 005 *			4,0					
CNWH 005 - 075 CR 005 *			7,5					
CNWH 006 - 009 CR 005 *	0,6	0,9	-	0,5	0,05	40	3	2
CNWH 006 - 050 CR 005 *			5,0					
CNWH 006 - 090 CR 005 *			9,0					
CNWH 008 - 012 CR 005 *	0,8	1,2	-	0,7	0,05	40	3	2
CNWH 008 - 040 CR 005 *			4,0					
CNWH 008 - 070 CR 005 *			7,0					
CHWH 008 - 120 CR 005 *			12,0					
CNWH 010 - 015 CR 010 *	1,0	1,5	-	0,9	0,10	40	3	2
CNWH 010 - 085 CR 010 *			8,5					
CNWH 012 - 018 CR 010 *	1,2	1,8	-	1,1	0,10	40	3	2
CNWH 012 - 060 CR 010 *			6,0					
CNWH 015 - 075 CR 015 *	1,5	2,2	7,5	1,3	0,15	40	3	2
CNWH 015 - 120 CR 015 *			12,0			60		
CNWH 015 - 160 CR 015 *			16,0					
CNWH 020 - 160 CR 015 *	2,0	2,2	16,0	1,8	0,15	60	3	2
CNWH 020 - 200 CR 015 *			20,0					

\* Auslaufend - Wird ersetzt durch eine neue Generation, Serie CXWH (Seite 51)

\* discontinued - Will be replaced by a new generation, series CXWH (page 51)

**VHM-Schaftfräser / VHM-Torusfräser** 2-Schneider,  $\varnothing$  0,2 - 2,0 mm, Schaft  $\varnothing$  3 mm **MINI**

**Solid carbide end mill / Solid carbide end mill with corner radius** 2 flutes,  $\varnothing$  0,2 - 2,0 mm, shank  $\varnothing$  3 mm **MINI**

CXWH

16°  
SHANK  
ANGLE

h4

CENTRE  
CUT

30° HELIX

ST 9  
COATING

ER  
 $\pm 0,003$

<math><700</math>  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

55-60  
HRC

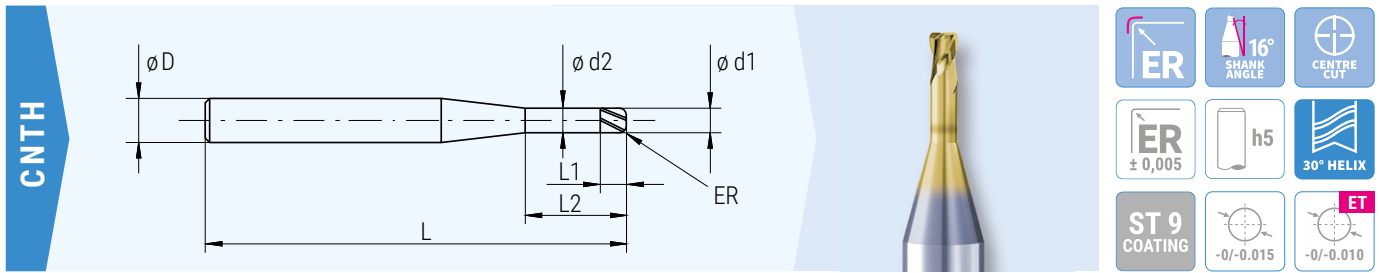
AL

CU CuZn  
Gold PL

Best.-Nr. / Order no.	d1	L1	L2	d2	ER	L	D	Z
CXWH005 - 020 CR 005	0,5	0,5	2,0	0,49	0,05	38	3	2
CXWH006 - 020 CR 005	0,6	0,6	2,0	0,59	0,05	38	3	2
CXWH006 - 030 CR 005			3,0					
CXWH006 - 040 CR 005			4,0					
CXWH008 - 040 CR 005	0,8	0,8	4,0	0,79	0,05	38	3	2
CXWH010 - 020 CR 010	1,0	1,0	2,0	0,96	0,10	38	3	2
CXWH010 - 060 CR 010			6,0		0,10			
CXWH010 - 060 CR 020			0,20					
CXWH015 - 060 CR 020	1,5	1,5	6,0	1,46	0,20	38	3	2
CXWH020 - 060 CR 010	2,0	2,0	6,0	1,93	0,10	38	3	2
CXWH020 - 060 CR 020					0,20			

Weitere Werkzeugabmessungen auf Anfrage verfügbar.  
Other tool dimensions available on request.

**VHM-Torusfräser** mit kurzer Schneide, zum Hartfräsen bis 65 HRC, 2-Schneider  
**Solid carbide torus end mill** short cutting edge for hard milling up to 65 HRC, 2 flutes



<700 N/mm <sup>2</sup>	700- 1100 N/mm <sup>2</sup>	1100- 1300 N/mm <sup>2</sup>	30-45 HRC	45-55 HRC	55-60 HRC	60-65 HRC	65-70 HRC	INOX			CU CuZn Gold PL			
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Best.-Nr. / Order no.	d1	L1	L2	ER	d2	L	D	Z
CNTH 002 - 005 CR 005 ET	0,2	0,20	0,5	0,05	0,17	50	4	2
CNTH 002 - 010 CR 005 ET			1,0					
CNTH 002 - 015 CR 005 ET			1,5					
CNTH 002 - 020 CR 005 ET			2,0					
CNTH 003 - 010 CR 005 ET	0,3	0,30	1,0	0,05	0,27	50	4	2
CNTH 003 - 015 CR 005 ET			1,5					
CNTH 003 - 020 CR 005 ET			2,0					
CNTH 003 - 025 CR 005 ET			2,5					
CNTH 003 - 030 CR 005 ET			3,0					
CNTH 004 - 010 CR 005 ET	0,4	0,40	1,0	0,05	0,38	50	4	2
CNTH 004 - 015 CR 005 ET			1,5					
CNTH 004 - 020 CR 005 ET			2,0					
CNTH 004 - 030 CR 005 ET			3,0					
CNTH 004 - 040 CR 005 ET			4,0					
CNTH 004 - 010 CR 010	0,4	0,40	1,0	0,10	0,38	50	4	2
CNTH 004 - 015 CR 010			1,5					
CNTH 004 - 020 CR 010			2,0					
CNTH 004 - 030 CR 010			3,0					
CNTH 004 - 040 CR 010			4,0					
CNTH 005 - 010 CR 005	0,5	0,50	1,0	0,05	0,48	50	4	2
CNTH 005 - 020 CR 005			2,0					
CNTH 005 - 030 CR 005			3,0					
CNTH 005 - 040 CR 005			4,0					
CNTH 005 - 050 CR 005			5,0					
CNTH 005 - 010 CR 010	0,5	0,50	1,0	0,10	0,48	50	4	2
CNTH 005 - 020 CR 010			2,0					
CNTH 005 - 030 CR 010			3,0					
CNTH 005 - 040 CR 010			4,0					
CNTH 005 - 050 CR 010			5,0					
CNTH 005 - 060 CR 010			6,0					
CNTH 006 - 020 CR 005	0,6	0,60	2,0	0,05	0,58	50	4	2
CNTH 006 - 030 CR 005			3,0					
CNTH 006 - 040 CR 005			4,0					
CNTH 006 - 060 CR 005			6,0					
CNTH 006 - 080 CR 005			8,0					

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Best.-Nr. / Order no.	d1	L1	L2	ER	d2	L	D	Z
CNTH 006 - 020 CR 010	0,6	0,60	2,0	0,10	0,58	50	4	2
CNTH 006 - 020 CR 010 ET								
CNTH 006 - 030 CR 010								
CNTH 006 - 030 CR 010 ET								
CNTH 006 - 040 CR 010								
CNTH 006 - 040 CR 010 ET								
CNTH 006 - 060 CR 010								
CNTH 006 - 080 CR 010								
CNTH 006 - 020 CR 020	0,6	0,60	2,0	0,20	0,58	50	4	2
CNTH 006 - 030 CR 020								
CNTH 006 - 040 CR 020								
CNTH 006 - 060 CR 020								
CNTH 006 - 080 CR 020								
CNTH 007 - 040 CR 010			0,7					
CNTH 007 - 060 CR 010								
CNTH 007 - 040 CR 020	0,7	0,70	4,0	0,20	0,68	50	4	2
CNTH 007 - 060 CR 020								
CNTH 008 - 040 CR 005	0,8	0,80	4,0	0,05	0,78	50	4	2
CNTH 008 - 060 CR 005								
CNTH 008 - 080 CR 005								
CNTH 008 - 040 CR 010	0,8	0,80	4,0	0,10	0,78	50	4	2
CNTH 008 - 060 CR 010								
CNTH 008 - 080 CR 010								
CNTH 008 - 040 CR 020	0,8	0,80	4,0	0,20	0,78	50	4	2
CNTH 008 - 060 CR 020								
CNTH 008 - 080 CR 020								
CNTH 010 - 020 CR 005	1,0	1,00	2,0	0,05	0,95	50	4	2
CNTH 010 - 030 CR 005								
CNTH 010 - 040 CR 005								
CNTH 010 - 050 CR 005								
CNTH 010 - 060 CR 005								
CNTH 010 - 080 CR 005								
CNTH 010 - 100 CR 005								
CNTH 010 - 120 CR 005			55			4	2	
CNTH 010 - 160 CR 005			60			4	2	
CNTH 010 - 200 CR 005								
CNTH 010 - 020 CR 010			1,0			1,00	2,0	0,10
CNTH 010 - 020 CR 010 ET								
CNTH 010 - 030 CR 010								
CNTH 010 - 040 CR 010								
CNTH 010 - 040 CR 010 ET								
CNTH 010 - 050 CR 010								
CNTH 010 - 060 CR 010								
CNTH 010 - 060 CR 010 ET								
CNTH 010 - 080 CR 010								
CNTH 010 - 100 CR 010								
CNTH 010 - 120 CR 010	55							
CNTH 010 - 160 CR 010	60							
CNTH 010 - 200 CR 010								

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Best.-Nr. / Order no.	d1	L1	L2	ER	d2	L	D	Z
CNTH 010 - 020 CR 020	1,0	1,00	2,0	0,20	0,95	50	4	2
CNTH 010 - 020 CR 020 ET								
CNTH 010 - 030 CR 020								
CNTH 010 - 040 CR 020								
CNTH 010 - 040 CR 020 ET								
CNTH 010 - 050 CR 020								
CNTH 010 - 060 CR 020								
CNTH 010 - 060 CR 020 ET								
CNTH 010 - 080 CR 020								
CNTH 010 - 100 CR 020								
CNTH 010 - 120 CR 020								
CNTH 010 - 160 CR 020								
CNTH 010 - 200 CR 020								
CNTH 010 - 020 CR 030			1,0					
CNTH 010 - 020 CR 030 ET								
CNTH 010 - 030 CR 030								
CNTH 010 - 040 CR 030								
CNTH 010 - 040 CR 030 ET								
CNTH 010 - 050 CR 030								
CNTH 010 - 060 CR 030								
CNTH 010 - 060 CR 030 ET								
CNTH 010 - 080 CR 030								
CNTH 010 - 100 CR 030								
CNTH 010 - 120 CR 030	1,0	1,00	12,0	0,30	0,95	55	4	2
CNTH 010 - 160 CR 030			16,0			60		
CNTH 010 - 200 CR 030			20,0					
CNTH 012 - 060 CR 020	1,2	1,20	6,0	0,20	1,14	50	4	2
CNTH 012 - 120 CR 020			12,0			55		
CNTH 012 - 200 CR 020			20,0			60		
CNTH 012 - 060 CR 030	1,2	1,20	6,0	0,30	1,14	50	4	2
CNTH 012 - 120 CR 030			12,0			55		
CNTH 012 - 200 CR 030			20,0			60		
CNTH 015 - 040 CR 005	1,5	1,50	4,0	0,05	1,45	50	4	2
CNTH 015 - 060 CR 005			6,0					
CNTH 015 - 080 CR 005			8,0					
CNTH 015 - 100 CR 005			10,0					
CNTH 015 - 040 CR 010	1,5	1,50	4,0	0,10	1,45	50	4	2
CNTH 015 - 060 CR 010			6,0					
CNTH 015 - 080 CR 010			8,0					
CNTH 015 - 100 CR 010			10,0					
CNTH 015 - 120 CR 010			12,0					
CNTH 015 - 160 CR 010			16,0					
CNTH 015 - 200 CR 010			20,0					
CNTH 015 - 040 CR 020			1,5					
CNTH 015 - 060 CR 020	6,0							
CNTH 015 - 080 CR 020	8,0							
CNTH 015 - 100 CR 020	10,0							
CNTH 015 - 120 CR 020	12,0							
CNTH 015 - 160 CR 020	16,0							
CNTH 015 - 200 CR 020	20,0							
CNTH 015 - 200 CR 020			20,0			60		

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Best.-Nr. / Order no.	d1	L1	L2	ER	d2	L	D	Z
CNTH 015 - 040 CR 030	1,5	1,50	4,0	0,30	1,45	50	4	2
CNTH 015 - 060 CR 030			6,0					
CNTH 015 - 080 CR 030			8,0					
CNTH 015 - 100 CR 030			10,0					
CNTH 015 - 120 CR 030			12,0					
CNTH 015 - 160 CR 030			16,0					
CNTH 015 - 200 CR 030			20,0					
CNTH 015 - 040 CR 050	1,5	1,50	4,0	0,50	1,45	50	4	2
CNTH 015 - 060 CR 050			6,0					
CNTH 015 - 080 CR 050	1,5	1,50	8,0	0,50	1,45	50	4	2
CNTH 015 - 100 CR 050			10,0					
CNTH 015 - 120 CR 050			12,0					
CNTH 015 - 160 CR 050			16,0					
CNTH 015 - 200 CR 050			20,0					
CNTH 020 - 040 CR 005	2,0	2,00	4,0	0,05	1,92	50	4	2
CNTH 020 - 060 CR 005			6,0					
CNTH 020 - 080 CR 005			8,0					
CNTH 020 - 100 CR 005			10,0					
CNTH 020 - 040 CR 010	2,0	2,00	4,0	0,10	1,92	50	4	2
CNTH 020 - 040 CR 010 ET								
CNTH 020 - 060 CR 010			6,0					
CNTH 020 - 060 CR 010 ET								
CNTH 020 - 080 CR 010			8,0					
CNTH 020 - 080 CR 010 ET								
CNTH 020 - 100 CR 010			10,0					
CNTH 020 - 100 CR 010 ET								
CNTH 020 - 120 CR 010			12,0					
CNTH 020 - 120 CR 010 ET								
CNTH 020 - 160 CR 010			16,0					
CNTH 020 - 200 CR 010			20,0					
CNTH 020 - 260 CR 010			26,0					
CNTH 020 - 300 CR 010	30,0							
CNTH 020 - 040 CR 020	2,0	2,00	4,0	0,20	1,92	50	4	2
CNTH 020 - 040 CR 020 ET								
CNTH 020 - 060 CR 020			6,0					
CNTH 020 - 060 CR 020 ET								
CNTH 020 - 080 CR 020			8,0					
CNTH 020 - 080 CR 020 ET								
CNTH 020 - 100 CR 020			10,0					
CNTH 020 - 100 CR 020 ET								
CNTH 020 - 120 CR 020			12,0					
CNTH 020 - 120 CR 020 ET								
CNTH 020 - 160 CR 020			16,0					
CNTH 020 - 200 CR 020			20,0					
CNTH 020 - 260 CR 020			26,0					
CNTH 020 - 300 CR 020	30,0							

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Best.-Nr. / Order no.	d1	L1	L2	ER	d2	L	D	Z	
CNTH 020 - 040 CR 030	2,0	2,00	4,0	0,30	1,92	50	4	2	
CNTH 020 - 040 CR 030 ET									
CNTH 020 - 060 CR 030			6,0						
CNTH 020 - 060 CR 030 ET									
CNTH 020 - 080 CR 030			8,0						
CNTH 020 - 080 CR 030 ET									
CNTH 020 - 100 CR 030			10,0						
CNTH 020 - 100 CR 030 ET									
CNTH 020 - 120 CR 030			12,0						55
CNTH 020 - 120 CR 030 ET									
CNTH 020 - 160 CR 030			16,0						
CNTH 020 - 200 CR 030			20,0						
CNTH 020 - 260 CR 030			26,0						70
CNTH 020 - 300 CR 030			30,0						
CNTH 020 - 040 CR 050			2,0						2,00
CNTH 020 - 040 CR 050 ET									
CNTH 020 - 060 CR 050	6,0								
CNTH 020 - 060 CR 050 ET									
CNTH 020 - 080 CR 050	8,0								
CNTH 020 - 080 CR 050 ET									
CNTH 020 - 100 CR 050	10,0								
CNTH 020 - 100 CR 050 ET									
CNTH 020 - 120 CR 050	12,0	55							
CNTH 020 - 120 CR 050 ET									
CNTH 020 - 160 CR 050	16,0			60					
CNTH 020 - 200 CR 050	20,0								
CNTH 020 - 260 CR 050	26,0	70							
CNTH 020 - 300 CR 050	30,0								
CNTH 025 - 100 CR 010	2,5	2,50		10,0	0,10	2,42	50	4	
CNTH 025 - 200 CR 010			20,0	60					
CNTH 025 - 300 CR 010			30,0	70					
CNTH 025 - 100 CR 020	2,5	2,50	10,0	0,20	2,42	50	4	2	
CNTH 025 - 200 CR 020			20,0			60			
CNTH 025 - 300 CR 020			30,0			70			
CNTH 025 - 100 CR 030	2,5	2,50	10,0	0,30	2,42	50	4	2	
CNTH 025 - 200 CR 030			20,0			60			
CNTH 025 - 300 CR 030			30,0			70			
CNTH 025 - 100 CR 050	2,5	2,50	10,0	0,50	2,42	50	4	2	
CNTH 025 - 200 CR 050			20,0			60			
CNTH 025 - 300 CR 050			30,0			70			
CNTH 030 - 060 CR 010	3,0	3,00	6,0	0,10	2,92	55	6	2	
CNTH 030 - 060 CR 010 ET									
CNTH 030 - 120 CR 010			12,0						
CNTH 030 - 160 CR 010			16,0						
CNTH 030 - 160 CR 010 ET									
CNTH 030 - 180 CR 010			18,0			60			
CNTH 030 - 200 CR 010			20,0						
CNTH 030 - 260 CR 010			26,0						70
CNTH 030 - 300 CR 010			30,0						
CNTH 030 - 360 CR 010			36,0			80			

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Best.-Nr. / Order no.	d1	L1	L2	ER	d2	L	D	Z	
CNTH 030 - 060 CR 020	3,0	3,00	6,0	0,20	2,92	55	6	2	
CNTH 030 - 060 CR 020 ET									
CNTH 030 - 120 CR 020			12,0						
CNTH 030 - 160 CR 020			16,0						
CNTH 030 - 160 CR 020 ET									
CNTH 030 - 180 CR 020			18,0						
CNTH 030 - 200 CR 020			20,0						
CNTH 030 - 260 CR 020			26,0						
CNTH 030 - 300 CR 020			30,0						
CNTH 030 - 360 CR 020			36,0						
CNTH 030 - 060 CR 030			3,0			3,00			6,0
CNTH 030 - 060 CR 030 ET									
CNTH 030 - 120 CR 030	12,0								
CNTH 030 - 160 CR 030	16,0								
CNTH 030 - 160 CR 030 ET									
CNTH 030 - 180 CR 030	18,0								
CNTH 030 - 200 CR 030	20,0								
CNTH 030 - 260 CR 030	26,0								
CNTH 030 - 300 CR 030	30,0								
CNTH 030 - 360 CR 030	36,0								
CNTH 030 - 060 CR 050	3,0	3,00		6,0	0,50		2,92	55	6
CNTH 030 - 060 CR 050 ET									
CNTH 030 - 120 CR 050			12,0						
CNTH 030 - 160 CR 050	3,0	3,00	16,0	0,50	2,92	60	6	2	
CNTH 030 - 160 CR 050 ET									
CNTH 030 - 180 CR 050			18,0						
CNTH 030 - 200 CR 050			20,0						
CNTH 030 - 260 CR 050			26,0						
CNTH 030 - 300 CR 050			30,0						
CNTH 030 - 360 CR 050			36,0						
CNTH 030 - 060 CR 100	3,0	3,00	6,0	1,00	2,92	55	6	2	
CNTH 030 - 060 CR 100 ET									
CNTH 030 - 120 CR 100			12,0						
CNTH 030 - 160 CR 100			16,0						
CNTH 030 - 160 CR 100 ET									
CNTH 030 - 180 CR 100			18,0						
CNTH 030 - 200 CR 100			20,0						
CNTH 030 - 260 CR 100			26,0						
CNTH 030 - 300 CR 100			30,0						
CNTH 030 - 360 CR 100			36,0						
CNTH 040 - 080 CR 010			4,0			4,00			8,0
CNTH 040 - 080 CR 010 ET									
CNTH 040 - 120 CR 010	12,0								
CNTH 040 - 160 CR 010	16,0								
CNTH 040 - 200 CR 010	20,0								
CNTH 040 - 200 CR 010 ET									
CNTH 040 - 240 CR 010	24,0								
CNTH 040 - 320 CR 010	32,0								
CNTH 040 - 480 CR 010	48,0								

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Best.-Nr. / Order no.	d1	L1	L2	ER	d2	L	D	Z
CNTH 040 - 080 CR 020	4,0	4,00	8,0	0,20	3,82	65	6	2
CNTH 040 - 080 CR 020 ET								
CNTH 040 - 120 CR 020			12,0					
CNTH 040 - 160 CR 020			16,0					
CNTH 040 - 200 CR 020			20,0					
CNTH 040 - 200 CR 020 ET								
CNTH 040 - 240 CR 020			24,0					
CNTH 040 - 320 CR 020			32,0					
CNTH 040 - 480 CR 020			48,0					
CNTH 040 - 080 CR 030			4,0					
CNTH 040 - 080 CR 030 ET								
CNTH 040 - 120 CR 030	12,0							
CNTH 040 - 160 CR 030	16,0							
CNTH 040 - 200 CR 030	20,0							
CNTH 040 - 200 CR 030 ET								
CNTH 040 - 240 CR 030	24,0							
CNTH 040 - 320 CR 030	32,0							
CNTH 040 - 480 CR 030	48,0							
CNTH 040 - 080 CR 050	4,0	4,00		8,0	0,50	3,82	65	6
CNTH 040 - 080 CR 050 ET								
CNTH 040 - 120 CR 050			12,0					
CNTH 040 - 160 CR 050			16,0					
CNTH 040 - 200 CR 050			20,0					
CNTH 040 - 200 CR 050 ET								
CNTH 040 - 240 CR 050			24,0					
CNTH 040 - 320 CR 050			32,0					
CNTH 040 - 480 CR 050			48,0					
CNTH 040 - 080 CR 100			4,0	4,00				
CNTH 040 - 080 CR 100 ET								
CNTH 040 - 120 CR 100	12,0							
CNTH 040 - 160 CR 100	16,0							
CNTH 040 - 200 CR 100	20,0							
CNTH 040 - 200 CR 100 ET								
CNTH 040 - 240 CR 100	24,0							
CNTH 040 - 320 CR 100	32,0							
CNTH 040 - 480 CR 100	48,0							
CNTH 050 - 200 CR 020	5,0	5,00			20,0	0,20	4,82	70
CNTH 050 - 400 CR 020			40,0			90		
CNTH 050 - 200 CR 030	5,0	5,00	20,0	0,30	4,82	70	6	2
CNTH 050 - 400 CR 030			40,0			90		
CNTH 050 - 200 CR 050	5,0	5,00	20,0	0,50	4,82	70	6	2
CNTH 050 - 400 CR 050			40,0			90		
CNTH 050 - 200 CR 100	5,0	5,00	20,0	1,00	4,82	70	6	2
CNTH 050 - 400 CR 100			40,0			90		
CNTH 060 - 120 CR 010	6,0	6,00	12,0	0,10	5,82	65	6	2
CNTH 060 - 120 CR 010 ET								
CNTH 060 - 200 CR 010			20,0			70		
CNTH 060 - 300 CR 010			30,0			100		
CNTH 060 - 300 CR 010 ET								
CNTH 060 - 600 CR 010			60,0			120		

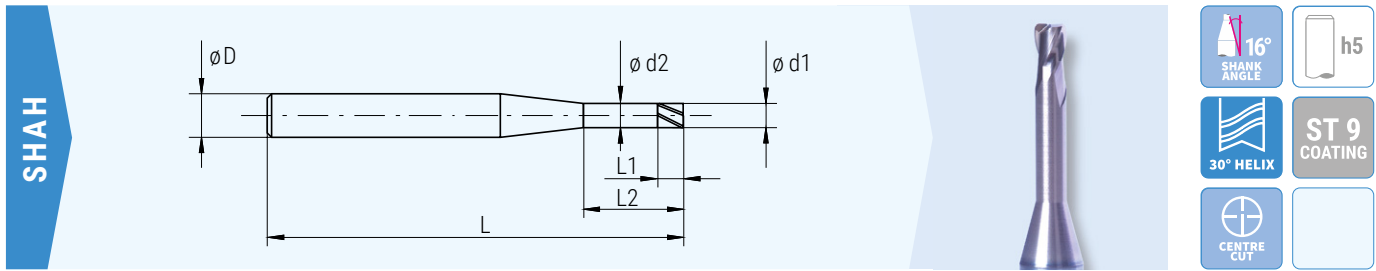
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Best.-Nr. / Order no.	d1	L1	L2	ER	d2	L	D	Z
CNTH 060 - 120 CR 020	6,0	6,00	12,0	0,20	5,82	65	6	2
CNTH 060 - 120 CR 020 ET			20,0			70		
CNTH 060 - 200 CR 020			30,0			100		
CNTH 060 - 300 CR 020			60,0			120		
CNTH 060 - 300 CR 020 ET								
CNTH 060 - 600 CR 020								
CNTH 060 - 120 CR 030	6,0	6,00	12,0	0,30	5,82	65	6	2
CNTH 060 - 120 CR 030 ET			20,0			70		
CNTH 060 - 200 CR 030			30,0			100		
CNTH 060 - 300 CR 030			60,0			120		
CNTH 060 - 300 CR 030 ET								
CNTH 060 - 600 CR 030								
CNTH 060 - 120 CR 050	6,0	6,00	12,0	0,50	5,82	65	6	2
CNTH 060 - 120 CR 050 ET			20,0			70		
CNTH 060 - 200 CR 050			30,0			100		
CNTH 060 - 300 CR 050			60,0			120		
CNTH 060 - 300 CR 050 ET								
CNTH 060 - 600 CR 050								
CNTH 060 - 120 CR 100	6,0	6,00	12,0	1,00	5,82	65	6	2
CNTH 060 - 120 CR 100 ET			20,0			70		
CNTH 060 - 200 CR 100			30,0			100		
CNTH 060 - 300 CR 100			60,0			120		
CNTH 060 - 300 CR 100 ET								
CNTH 060 - 600 CR 100								

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**VHM-Schaftfräser** 2-Schneider,  $\phi$  0,2 - 0,4 mm, Schaft  $\phi$  4 mm **MINI**

**Solid carbide end mills** 2 flutes,  $\phi$  0,2 - 0,4 mm, shank  $\phi$  4 mm **MINI**



<700 N/mm <sup>2</sup>	700-1100 N/mm <sup>2</sup>	1100-1300 N/mm <sup>2</sup>	30-45 HRC	45-55 HRC	55-60 HRC			INOX	AL	CU CuZn Gold PL	TI			
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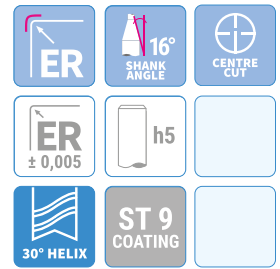
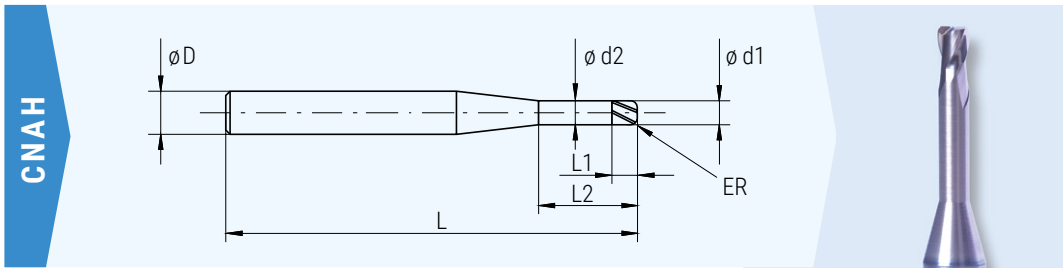
Best.-Nr. / Order no.	d1	L1	L2	d2	L	D	Z
SHAH 002 - 005	0,2	0,3	0,5	0,18	45	4	2
SHAH 002 - 010			1,0				
SHAH 002 - 015			1,5				
SHAH 003 - 010	0,3	0,4	1,0	0,28	45	4	2
SHAH 003 - 020			2,0				
SHAH 003 - 030			3,0				
SHAH 004 - 020	0,4	0,6	2,0	0,38	45	4	2
SHAH 004 - 030			3,0				
SHAH 004 - 040			4,0				
SHAH 004 - 050			5,0				

Weitere Werkzeugabmessungen im Bereich d1=0,10 mm bis d1= 6,0 mm auf Anfrage verfügbar.

Other tool dimensions in the range d1=0.1 mm to d1=6.0 mm available on request.

# VHM-Torusfräser 2-Schneider, ø 0,5 - 6,0 mm, Schaft ø 4 und 6 mm **MINI**

## Solid carbide end mill with corner radius 2 flutes, ø 0,5 - 6,0 mm, shank ø 4 and 6 mm **MINI**



Material compatibility buttons: <700 N/mm<sup>2</sup>, 700-1100 N/mm<sup>2</sup>, 1100-1300 N/mm<sup>2</sup>, 30-45 HRC, 45-55 HRC, 55-60 HRC, INOX, AL, CU CuZn Gold PL, TI.

Best.-Nr. / Order no.	d1	L1	L2	d2	ER	L	D	Z
CNAH 005 - 020 CR 005	0,5	0,7	2,0	0,46	0,05	45	4	2
CNAH 005 - 040 CR 005			4,0					
CNAH 005 - 060 CR 005			6,0					
CNAH 005 - 080 CR 005			8,0					
CNAH 005 - 100 CR 005			10,0					
CNAH 006 - 040 CR 005	0,6	0,9	4,0	0,56	0,05	45	4	2
CNAH 006 - 080 CR 005			8,0					
CNAH 006 - 100 CR 005 *			10,0					
CNAH 008 - 040 CR 010	0,8	1,2	4,0	0,76	0,10	45	4	2
CNAH 008 - 080 CR 010			8,0					
CNAH 008 - 100 CR 010			10,0					
CNAH 010 - 040 CR 010	1,0	1,5	4,0	0,90	0,10	45	4	2
CNAH 010 - 060 CR 010			6,0					
CNAH 010 - 080 CR 010			8,0					
CNAH 010 - 100 CR 010			10,0					
CNAH 010 - 120 CR 010			12,0					
CNAH 010 - 160 CR 010			16,0					
CNAH 010 - 200 CR 010			20,0					
CNAH 010 - 040 CR 025	1,0	1,5	4,0	0,90	0,25	45	4	2
CNAH 010 - 060 CR 025			6,0					
CNAH 010 - 080 CR 025			8,0					
CNAH 010 - 100 CR 025			10,0					
CNAH 010 - 120 CR 025			12,0					
CNAH 010 - 160 CR 025			16,0					
CNAH 010 - 200 CR 025	20,0							
CNAH 012 - 060 CR 010	1,2	1,8	6,0	1,08	0,10	45	4	2
CNAH 012 - 100 CR 010			10,0					
CNAH 012 - 160 CR 010			16,0					
CNAH 012 - 060 CR 025	1,2	1,8	6,0	1,08	0,25	45	4	2
CNAH 012 - 100 CR 025			10,0					
CNAH 012 - 160 CR 025			16,0					
CNAH 014 - 060 CR 015	1,4	2,1	6,0	1,28	0,15	45	4	2
CNAH 014 - 120 CR 015			12,0					
CNAH 014 - 160 CR 015			16,0					

\* Auslaufend / \* discontinued

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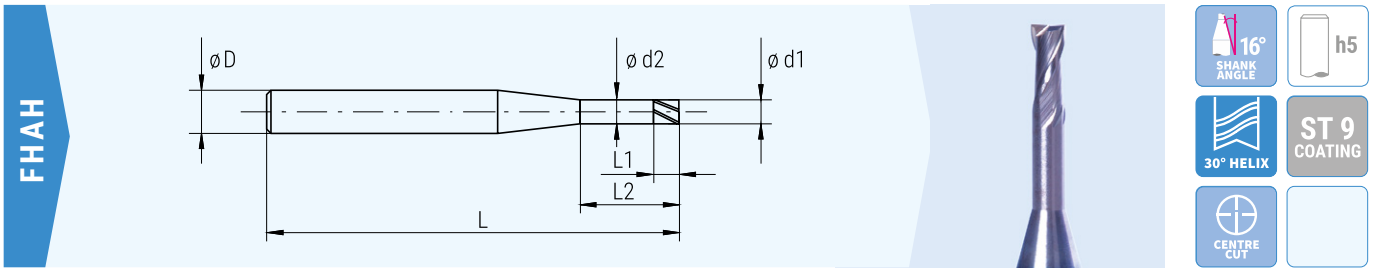
Best.-Nr. / Order no.	d1	L1	L2	d2	ER	L	D	Z
CNAH 015 - 060 CR 015	1,5	2,2	6,0	1,4	0,15	45	4	2
CNAH 015 - 080 CR 015			8,0					
CNAH 015 - 100 CR 015			10,0					
CNAH 015 - 120 CR 015			12,0					
CNAH 015 - 160 CR 015			16,0					
CNAH 015 - 200 CR 015			20,0					
CNAH 015 - 300 CR 015			30,0					
CNAH 015 - 060 CR 050	1,5	2,2	6,0	1,4	0,50	45	4	2
CNAH 015 - 080 CR 050			8,0					
CNAH 015 - 100 CR 050			10,0					
CNAH 015 - 120 CR 050			12,0					
CNAH 015 - 160 CR 050			16,0					
CNAH 015 - 200 CR 050			20,0					
CNAH 015 - 300 CR 050			30,0					
CNAH 018 - 080 CR 020	1,8	2,7	8,0	1,7	0,20	45	4	2
CNAH 018 - 120 CR 020			12,0					
CNAH 018 - 160 CR 020			16,0					
CNAH 018 - 200 CR 020 *			20,0					
CNAH 020 - 060 CR 020	2,0	3,0	6,0	1,84	0,20	45	4	2
CNAH 020 - 080 CR 020			8,0					
CNAH 020 - 120 CR 020			12,0					
CNAH 020 - 160 CR 020			16,0					
CNAH 020 - 200 CR 020			20,0					
CNAH 020 - 250 CR 020			25,0					
CNAH 020 - 300 CR 020			30,0					
CNAH 020 - 060 CR 050	2,0	3,0	6,0	1,84	0,50	45	4	2
CNAH 020 - 080 CR 050			8,0					
CNAH 020 - 120 CR 050			12,0					
CNAH 020 - 160 CR 050			16,0					
CNAH 020 - 200 CR 050			20,0					
CNAH 020 - 250 CR 050			25,0					
CNAH 020 - 300 CR 050			30,0					
CNAH 025 - 100 CR 020	2,5	3,0	10,0	2,34	0,20	45	4	2
CNAH 025 - 160 CR 020			16,0					
CNAH 025 - 200 CR 020			20,0					
CNAH 025 - 300 CR 020			30,0					
CNAH 025 - 100 CR 050	2,5	3,0	10,0	2,34	0,50	45	4	2
CNAH 025 - 160 CR 050			16,0					
CNAH 025 - 200 CR 050			20,0					
CNAH 025 - 300 CR 050			30,0					
CNAH 030 - 080 CR 020	3,0	3,0	8,0	2,84	0,20	50	6	2
CNAH 030 - 120 CR 020			12,0					
CNAH 030 - 160 CR 020			16,0					
CNAH 030 - 200 CR 020			20,0					
CNAH 030 - 250 CR 020			25,0					
CNAH 030 - 300 CR 020			30,0					
CNAH 030 - 350 CR 020 *			35,0					
CNAH 030 - 400 CR 020			40,0					

\* Auslaufend / \* discontinued

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Best.-Nr. / Order no.	d1	L1	L2	d2	ER	L	D	Z					
CNAH 030 - 080 CR 050	3,0	3,0	8,0	2,84	0,50	50	6	2					
CNAH 030 - 120 CR 050			12,0			60							
CNAH 030 - 160 CR 050			16,0			70							
CNAH 030 - 200 CR 050			20,0										
CNAH 030 - 250 CR 050			25,0										
CNAH 030 - 300 CR 050			30,0										
CNAH 030 - 080 CR 100	3,0	3,0	8,0	2,84	1,00	50	6	2					
CNAH 030 - 120 CR 100			12,0			60							
CNAH 030 - 160 CR 100			16,0			70							
CNAH 030 - 200 CR 100			20,0										
CNAH 030 - 250 CR 100			25,0										
CNAH 030 - 300 CR 100			30,0										
CNAH 040 - 040 CR 020	4,0	4,0	4,0	3,84	0,20	50	6	2					
CNAH 040 - 120 CR 020			12,0			60							
CNAH 040 - 160 CR 020			16,0			70							
CNAH 040 - 200 CR 020			20,0			80							
CNAH 040 - 250 CR 020			25,0			90							
CNAH 040 - 300 CR 020			30,0			100							
CNAH 040 - 350 CR 020			35,0										
CNAH 040 - 400 CR 020			40,0										
CNAH 040 - 450 CR 020			45,0										
CNAH 040 - 500 CR 020	50,0												
CNAH 040 - 120 CR 050	4,0	4,0	12,0	3,84	0,50	50	6	2					
CNAH 040 - 160 CR 050			16,0			60							
CNAH 040 - 200 CR 050			20,0			70							
CNAH 040 - 250 CR 050			25,0			80							
CNAH 040 - 300 CR 050			30,0			100							
CNAH 040 - 400 CR 050			40,0										
CNAH 040 - 500 CR 050			50,0										
CNAH 040 - 120 CR 100	4,0	4,0	12,0	3,84	1,00	50	6	2					
CNAH 040 - 160 CR 100			16,0			60							
CNAH 040 - 200 CR 100			20,0			70							
CNAH 040 - 250 CR 100			25,0										
CNAH 040 - 300 CR 100			30,0										
CNAH 050 - 050 CR 020	5,0	5,0	5,0	4,84	0,20	50	6	2					
CNAH 050 - 160 CR 020			16,0			60							
CNAH 050 - 250 CR 020			25,0			80							
CNAH 050 - 400 CR 020			40,0										
CNAH 050 - 160 CR 050	5,0	5,0	16,0	4,84	0,50	60	6	2					
CNAH 050 - 250 CR 050			25,0			80							
CNAH 050 - 400 CR 050			40,0										
CNAH 050 - 160 CR 100	5,0	5,0	16,0	4,84	1,00	60	6	2					
CNAH 050 - 250 CR 100			25,0			80							
CNAH 050 - 400 CR 100			40,0										
CNAH 060 - 060 CR 020	6,0	6,0	6,0	5,84	0,20	50	6	2					
CNAH 060 - 200 CR 020			20,0			80							
CNAH 060 - 300 CR 020			30,0			120							
CNAH 060 - 500 CR 020			50,0										
CNAH 060 - 200 CR 050	6,0	6,0	20,0	5,84	0,50	80	6	2					
CNAH 060 - 300 CR 050			30,0			120							
CNAH 060 - 500 CR 050			50,0										
CNAH 060 - 200 CR 100	6,0	6,0	20,0	5,84	1,00	80	6	2					
CNAH 060 - 300 CR 100			30,0			120							
CNAH 060 - 500 CR 100			50,0										

**VHM-Schaftfräser** 2-Schneider,  $\phi$  0,5 - 2,0 mm, Schaft  $\phi$  4 mm **MINI**  
**Solid carbide end mills** 2 flutes,  $\phi$  0,5 - 2,0 mm, shank  $\phi$  4 mm **MINI**



16° SHANK ANGLE  
 h5  
 30° HELIX  
 ST 9 COATING  
 CENTRE CUT

<700 N/mm<sup>2</sup>   700-1100 N/mm<sup>2</sup>   1100-1300 N/mm<sup>2</sup>   30-45 HRC   45-55 HRC   55-60 HRC   60-65 HRC   INOX   AL   CU CuZn Gold PL

Best.-Nr. / Order no.	d1	L1	L2	d2	L	D	Z
FHAH 050 - 020	0,5	0,7	2,0	0,48	45	4	2
FHAH 050 - 040			4,0				
FHAH 050 - 060			6,0				
FHAH 060 - 020	0,6	0,9	2,0	0,58	45	4	2
FHAH 060 - 040			4,0				
FHAH 060 - 060			6,0				
FHAH 070 - 020	0,7	1,0	2,0	0,68	45	4	2
FHAH 070 - 040			4,0				
FHAH 070 - 060			6,0				
FHAH 080 - 040	0,8	1,2	4,0	0,78	45	4	2
FHAH 080 - 060			6,0				
FHAH 080 - 080			8,0				
FHAH 090 - 040	0,9	1,3	4,0	0,88	45	4	2
FHAH 090 - 060			6,0				
FHAH 090 - 080			8,0				
FHAH 100 - 040	1,0	1,5	4,0	0,95	45	4	2
FHAH 100 - 060			6,0				
FHAH 100 - 080			8,0				
FHAH 100 - 100			10,0				
FHAH 100 - 120			12,0				
FHAH 120 - 060	1,2	1,8	6,0	1,14	45	4	2
FHAH 120 - 080			8,0				
FHAH 120 - 100			10,0				
FHAH 120 - 120			12,0				

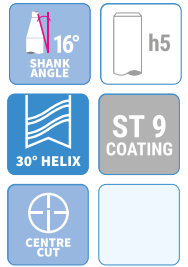
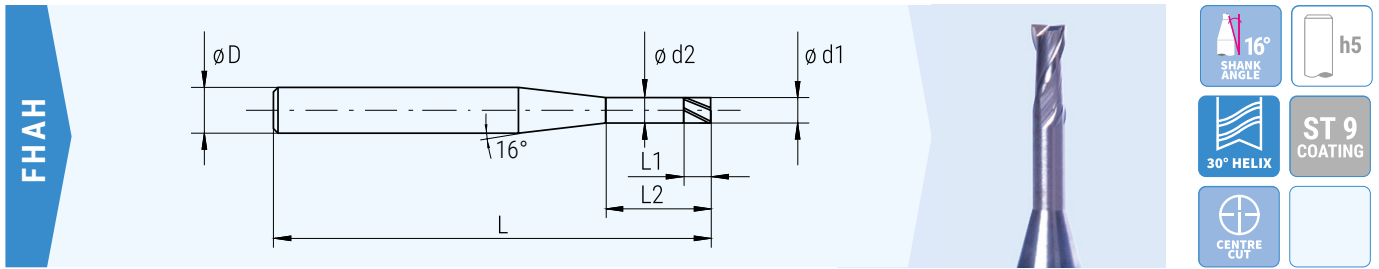
Weitere Werkzeugabmessungen im Bereich d1=0,10 mm bis d1= 6,00 mm auf Anfrage verfügbar.  
 Other tool dimensions in the range d1=0.10 mm to d1=6.00 mm available on request.

Weitere Abmessungen auf Folgeseite »  
 Further dimensions on next page »



**VHM-Schaftfräser** 2-Schneider, ø 0,5 - 2,0 mm, Schaft ø 4 mm **MINI**

**Solid carbide end mills** 2 flutes, ø 0,5 - 2,0 mm, shank ø 4 mm **MINI**



<700 N/mm <sup>2</sup>	700-1100 N/mm <sup>2</sup>	1100-1300 N/mm <sup>2</sup>	30-45 HRC	45-55 HRC	55-60 HRC	60-65 HRC		INOX	AL	CU CuZn Gold PL				
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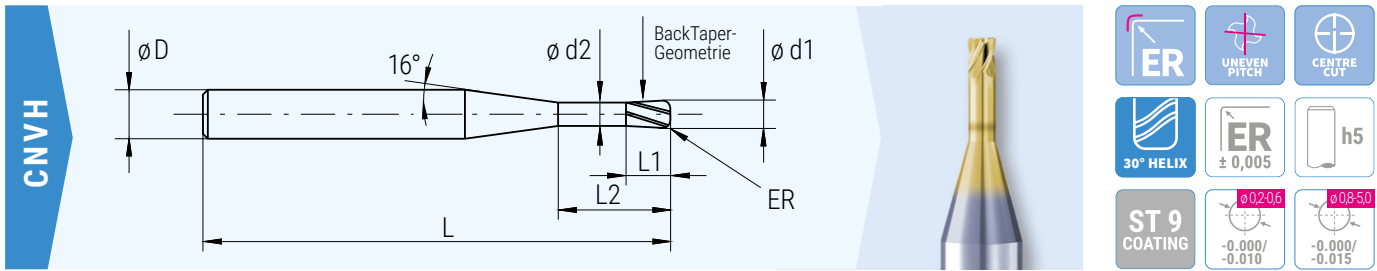
Best.-Nr. / Order no.	d1	L1	L2	d2	L	D	Z
FHAH 140 - 060	1,4	2,1	6,0	1,34	45	4	2
FHAH 140 - 080			8,0				
FHAH 140 - 100			10,0				
FHAH 140 - 120			12,0				
FHAH 150 - 060	1,5	2,3	6,0	1,44	45	4	2
FHAH 150 - 100			10,0				
FHAH 150 - 120			12,0				
FHAH 150 - 160			16,0		50		
FHAH 150 - 200			20,0		55		
FHAH 160 - 060	1,6	2,4	6,0	1,51	45	4	2
FHAH 160 - 100			10,0				
FHAH 160 - 120			12,0				
FHAH 160 - 160			16,0		50		
FHAH 160 - 200			20,0		55		
FHAH 180 - 060	1,8	2,7	6,0	1,71	45	4	2
FHAH 180 - 100			10,0				
FHAH 180 - 120			12,0				
FHAH 180 - 160			16,0		50		
FHAH 180 - 200			20,0		55		
FHAH 200 - 060	2,0	3,0	6,0	1,91	45	4	2
FHAH 200 - 100			10,0				
FHAH 200 - 120			12,0				
FHAH 200 - 160			16,0		50		
FHAH 200 - 200			20,0		55		
FHAH 200 - 250			25,0		60		

Weitere Werkzeugabmessungen im Bereich d1=0,10 mm bis d1= 6,00 mm auf Anfrage verfügbar.

Other tool dimensions in the range d1=0.10 mm to d1=6.00 mm available on request.

# 4-Schneider in kurzen und langen Varianten mit ungleicher Teilung und Back Taper Geometrie. Geeignet für Werkstoffe bis 65 HRC

## 4 flute end mill in short and long variants with unequal pitch and back taper geometry. Suitable for materials up to 65 HRC



<700 N/mm <sup>2</sup>	700- 1100 N/mm <sup>2</sup>	1100- 1300 N/mm <sup>2</sup>	30-45 HRC	45-55 HRC	55-60 HRC	60-65 HRC	65-70 HRC				CU CuZn Gold PL			
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Best.-Nr. / Order no.	d1	L1	L2	ER	d2	L	D	Z
CNVH 002 - 003 CR 002			0,3					
CNVH 002 - 005 CR 002			0,5					
CNVH 002 - 010 CR 002	0,2	0,12	1,0	0,02	0,185	50	4	4
CNVH 002 - 015 CR 002			1,5					
CNVH 002 - 020 CR 002			2,0					
CNVH 002 - 003 CR 005	0,2	0,12	0,3	0,05	0,185	50	4	4
CNVH 003 - 003 CR 002			0,3					
CNVH 003 - 005 CR 002			0,5					
CNVH 003 - 010 CR 002	0,3	0,18	1,0	0,02	0,280	50	4	4
CNVH 003 - 015 CR 002			1,5					
CNVH 003 - 020 CR 002			2,0					
CNVH 003 - 003 CR 005	0,3	0,18	0,3	0,05	0,280	50	4	4
CNVH 003 - 005 CR 005			0,5					
CNVH 004 - 005 CR 002			0,5					
CNVH 004 - 010 CR 002	0,4	0,24	1,0	0,02	0,385	50	4	4
CNVH 004 - 020 CR 002			2,0					
CNVH 004 - 005 CR 005			0,5					
CNVH 004 - 010 CR 005	0,4	0,24	1,0	0,05	0,385	50	4	4
CNVH 004 - 015 CR 005			1,5					
CNVH 004 - 020 CR 005			2,0					
CNVH 004 - 010 CR 010	0,4	0,24	1,0	0,10	0,385	50	4	4
CNVH 004 - 020 CR 010			2,0					
CNVH 005 - 010 CR 002	0,5	0,30	1,0	0,02	0,485	50	4	4
CNVH 005 - 020 CR 002			2,0					
CNVH 005 - 010 CR 005	0,5	0,30	1,0	0,05	0,485	50	4	4
CNVH 005 - 020 CR 005			2,0					
CNVH 005 - 010 CR 010	0,5	0,30	1,0	0,10	0,485	50	4	4
CNVH 005 - 020 CR 010			2,0					
CNVH 006 - 020 CR 005	0,6	0,36	2,0	0,05	0,585	50	4	4
CNVH 006 - 040 CR 005			4,0					
CNVH 006 - 020 CR 010	0,6	0,36	2,0	0,10	0,585	50	4	4
CNVH 006 - 040 CR 010			4,0					
CNVH 008 - 020 CR 002			2,0					
CNVH 008 - 030 CR 002			3,0					
CNVH 008 - 040 CR 002	0,8	0,48	4,0	0,02	0,780	50	4	4
CNVH 008 - 060 CR 002			6,0					
CNVH 008 - 080 CR 002			8,0					
CNVH 008 - 020 CR 005			2,0					
CNVH 008 - 030 CR 005	0,8	0,48	3,0	0,05	0,780	50	4	4
CNVH 008 - 040 CR 005			4,0					
CNVH 008 - 060 CR 005			6,0					

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Best.-Nr. / Order no.	d1	L1	L2	ER	d2	L	D	Z
CNVH 008 - 020 CR 010	0,8	0,48	2,0	0,10	0,780	50	4	4
CNVH 008 - 030 CR 010			3,0					
CNVH 008 - 040 CR 010			4,0					
CNVH 008 - 060 CR 010			6,0					
CNVH 008 - 020 CR 020	0,8	0,48	2,0	0,20	0,78	50	4	4
CNVH 008 - 030 CR 020			3,0					
CNVH 008 - 040 CR 020			4,0					
CNVH 008 - 060 CR 020			6,0					
CNVH 010 - 020 CR 002	1,0	0,80	2,0	0,02	0,95	50	4	4
CNVH 010 - 030 CR 002			3,0					
CNVH 010 - 040 CR 002			4,0					
CNVH 010 - 050 CR 002			5,0					
CNVH 010 - 060 CR 002			6,0					
CNVH 010 - 080 CR 002			8,0					
CNVH 010 - 100 CR 002			10,0					
CNVH 010 - 120 CR 002	12,0							
CNVH 010 - 020 CR 005	1,0	0,80	2,0	0,05	0,95	50	4	4
CNVH 010 - 030 CR 005			3,0					
CNVH 010 - 040 CR 005			4,0					
CNVH 010 - 050 CR 005			5,0					
CNVH 010 - 060 CR 005			6,0					
CNVH 010 - 080 CR 005			8,0					
CNVH 010 - 100 CR 005			10,0					
CNVH 010 - 120 CR 005	12,0							
CNVH 010 - 020 CR 010	1,0	0,80	2,0	0,10	0,95	50	4	4
CNVH 010 - 030 CR 010			3,0					
CNVH 010 - 040 CR 010			4,0					
CNVH 010 - 050 CR 010			5,0					
CNVH 010 - 060 CR 010			6,0					
CNVH 010 - 080 CR 010			8,0					
CNVH 010 - 100 CR 010			10,0					
CNVH 010 - 120 CR 010	12,0							
CNVH 010 - 020 CR 020	1,0	0,80	2,0	0,20	0,95	50	4	4
CNVH 010 - 030 CR 020			3,0					
CNVH 010 - 040 CR 020			4,0					
CNVH 010 - 050 CR 020			5,0					
CNVH 010 - 060 CR 020			6,0					
CNVH 010 - 080 CR 020			8,0					
CNVH 010 - 100 CR 020			10,0					
CNVH 010 - 120 CR 020	12,0							
CNVH 010 - 020 CR 030	1,0	0,80	2,0	0,30	0,95	50	4	4
CNVH 010 - 030 CR 030			3,0					
CNVH 010 - 040 CR 030			4,0					
CNVH 010 - 050 CR 030			5,0					
CNVH 010 - 060 CR 030			6,0					
CNVH 010 - 080 CR 030			8,0					
CNVH 010 - 100 CR 030			10,0					
CNVH 010 - 120 CR 030	12,0							
CNVH 010 - 160 CR 030	16,0							
CNVH 012 - 040 CR 010	1,2	0,96	4,0	0,10	1,14	50	4	4
CNVH 012 - 060 CR 010			6,0					
CNVH 012 - 100 CR 010			10,0					
CNVH 012 - 040 CR 020	1,2	0,96	4,0	0,20	1,14	50	4	4
CNVH 012 - 060 CR 020			6,0					
CNVH 012 - 100 CR 020			10,0					
CNVH 012 - 040 CR 030	1,2	0,96	4,0	0,30	1,14	50	4	4
CNVH 012 - 060 CR 030			6,0					
CNVH 012 - 100 CR 030			10,0					

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Best.-Nr. / Order no.	d1	L1	L2	ER	d2	L	D	Z
CNVH 015 - 030 CR 005	1,5	1,20	3,0	0,05	1,45	50	4	4
CNVH 015 - 040 CR 005			4,0					
CNVH 015 - 060 CR 005			6,0					
CNVH 015 - 080 CR 005			8,0					
CNVH 015 - 120 CR 005			12,0					
CNVH 015 - 160 CR 005			16,0					
CNVH 015 - 030 CR 010	1,5	1,20	3,0	0,10	1,45	50	4	4
CNVH 015 - 040 CR 010			4,0					
CNVH 015 - 060 CR 010			6,0					
CNVH 015 - 080 CR 010	1,5	1,20	8,0	0,10	1,45	50	4	4
CNVH 015 - 100 CR 010			10,0					
CNVH 015 - 120 CR 010			12,0			55		
CNVH 015 - 160 CR 010			16,0			60		
CNVH 015 - 180 CR 010			18,0					
CNVH 015 - 030 CR 020			3,0					
CNVH 015 - 040 CR 020	4,0	0,20	1,45	50	4	4		
CNVH 015 - 060 CR 020	6,0							
CNVH 015 - 080 CR 020	8,0							
CNVH 015 - 100 CR 020	10,0			55				
CNVH 015 - 120 CR 020	12,0							
CNVH 015 - 160 CR 020	16,0							
CNVH 015 - 180 CR 020	18,0	60						
CNVH 015 - 030 CR 030	1,5	1,20	3,0	0,30	1,45	50	4	4
CNVH 015 - 040 CR 030			4,0					
CNVH 015 - 060 CR 030			6,0					
CNVH 015 - 080 CR 030			8,0					
CNVH 015 - 100 CR 030			10,0			55		
CNVH 015 - 120 CR 030			12,0					
CNVH 015 - 160 CR 030			16,0					
CNVH 015 - 180 CR 030			18,0					
CNVH 015 - 030 CR 050	1,5	1,20	3,0	0,50	1,45	50	4	4
CNVH 015 - 040 CR 050			4,0					
CNVH 015 - 060 CR 050			6,0					
CNVH 015 - 080 CR 050			8,0					
CNVH 015 - 100 CR 050			10,0			55		
CNVH 015 - 120 CR 050			12,0					
CNVH 015 - 160 CR 050			16,0					
CNVH 015 - 180 CR 050			18,0			60		
CNVH 018 - 080 CR 020	1,8	1,44	8,0	0,20	1,72	50	4	4
CNVH 018 - 100 CR 020			10,0					
CNVH 018 - 120 CR 020			12,0			55		
CNVH 018 - 140 CR 020			14,0			60		
CNVH 018 - 160 CR 020			16,0					
CNVH 020 - 040 CR 002	2,0	1,60	4,0	0,02	1,92	50	4	4
CNVH 020 - 060 CR 002			6,0					
CNVH 020 - 080 CR 002	2,0	1,60	8,0	0,02	1,92	50	4	4
CNVH 020 - 100 CR 002			10,0					
CNVH 020 - 120 CR 002			12,0			55		
CNVH 020 - 160 CR 002			16,0			60		
CNVH 020 - 200 CR 002			20,0					
CNVH 020 - 040 CR 005	2,0	1,60	4,0	0,05	1,92	50	4	4
CNVH 020 - 060 CR 005			6,0					
CNVH 020 - 080 CR 005			8,0					
CNVH 020 - 100 CR 005			10,0			55		
CNVH 020 - 120 CR 005			12,0					
CNVH 020 - 160 CR 005			16,0					
CNVH 020 - 200 CR 005			20,0					

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Best.-Nr. / Order no.	d1	L1	L2	ER	d2	L	D	Z
CNVH 020 - 040 CR 010	2,0	1,60	4,0	0,10	1,92	50	4	4
CNVH 020 - 060 CR 010			6,0					
CNVH 020 - 080 CR 010			8,0					
CNVH 020 - 100 CR 010			10,0					
CNVH 020 - 120 CR 010			12,0					
CNVH 020 - 160 CR 010			16,0					
CNVH 020 - 200 CR 010			20,0					
CNVH 020 - 240 CR 010			24,0					
CNVH 020 - 040 CR 020	2,0	1,60	4,0	0,20	1,92	50	4	4
CNVH 020 - 060 CR 020			6,0					
CNVH 020 - 080 CR 020			8,0					
CNVH 020 - 100 CR 020			10,0					
CNVH 020 - 120 CR 020			12,0					
CNVH 020 - 160 CR 020			16,0					
CNVH 020 - 200 CR 020			20,0					
CNVH 020 - 240 CR 020			24,0					
CNVH 020 - 040 CR 030	2,0	1,60	4,0	0,30	1,92	50	4	4
CNVH 020 - 060 CR 030			6,0					
CNVH 020 - 080 CR 030			8,0					
CNVH 020 - 100 CR 030			10,0					
CNVH 020 - 120 CR 030			12,0					
CNVH 020 - 160 CR 030			16,0					
CNVH 020 - 200 CR 030			20,0					
CNVH 020 - 240 CR 030			24,0					
CNVH 020 - 040 CR 050	2,0	1,60	4,0	0,50	1,92	50	4	4
CNVH 020 - 060 CR 050			6,0					
CNVH 020 - 080 CR 050			8,0					
CNVH 020 - 100 CR 050			10,0					
CNVH 020 - 120 CR 050			12,0					
CNVH 020 - 160 CR 050			16,0					
CNVH 020 - 200 CR 050			20,0					
CNVH 020 - 240 CR 050			24,0					
CNVH 020 - 260 CR 050			26,0					
CNVH 020 - 300 CR 050			30,0					
CNVH 025 - 060 CR 010	2,5	2,00	6,0	0,10	2,42	50	4	4
CNVH 025 - 080 CR 010			8,0					
CNVH 025 - 100 CR 010			10,0					
CNVH 025 - 160 CR 010			16,0					
CNVH 025 - 200 CR 010			20,0					
CNVH 025 - 300 CR 010	30,0							
CNVH 025 - 060 CR 020	2,5	2,00	6,0	0,20	2,42	50	4	4
CNVH 025 - 080 CR 020			8,0					
CNVH 025 - 100 CR 020			10,0					
CNVH 025 - 160 CR 020			16,0					
CNVH 025 - 200 CR 020			20,0					
CNVH 025 - 300 CR 020	30,0							
CNVH 025 - 060 CR 030	2,5	2,00	6,0	0,30	2,42	50	4	4
CNVH 025 - 080 CR 030			8,0					
CNVH 025 - 100 CR 030			10,0					
CNVH 025 - 160 CR 030			16,0					
CNVH 025 - 200 CR 030			20,0					
CNVH 025 - 300 CR 030	30,0							
CNVH 025 - 060 CR 050	2,5	2,00	6,0	0,50	2,42	50	4	4
CNVH 025 - 080 CR 050			8,0					
CNVH 025 - 100 CR 050			10,0					
CNVH 025 - 160 CR 050			16,0					
CNVH 025 - 200 CR 050			20,0					
CNVH 025 - 300 CR 050	30,0							

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Best.-Nr. / Order no.	d1	L1	L2	ER	d2	L	D	Z
CNVH 030 - 040 CR 005	3,0	2,40	4,0	0,05	2,92	55	6	4
CNVH 030 - 060 CR 005			6,0					
CNVH 030 - 080 CR 005			8,0					
CNVH 030 - 100 CR 005			10,0					
CNVH 030 - 120 CR 005			12,0					
CNVH 030 - 160 CR 005			16,0					
CNVH 030 - 200 CR 005			20,0					
CNVH 030 - 040 CR 010	3,0	2,40	4,0	0,10	2,92	55	6	4
CNVH 030 - 060 CR 010			6,0					
CNVH 030 - 080 CR 010			8,0					
CNVH 030 - 100 CR 010			10,0					
CNVH 030 - 120 CR 010			12,0					
CNVH 030 - 160 CR 010			16,0			60		
CNVH 030 - 180 CR 010			18,0					
CNVH 030 - 200 CR 010			20,0					
CNVH 030 - 240 CR 010			24,0			70		
CNVH 030 - 260 CR 010			26,0					
CNVH 030 - 300 CR 010	30,0							
CNVH 030 - 040 CR 020	3,0	2,40	4,0	0,20	2,92	55	6	4
CNVH 030 - 060 CR 020			6,0					
CNVH 030 - 080 CR 020			8,0					
CNVH 030 - 100 CR 020			10,0					
CNVH 030 - 120 CR 020			12,0					
CNVH 030 - 160 CR 020			16,0			60		
CNVH 030 - 180 CR 020			18,0					
CNVH 030 - 200 CR 020			20,0					
CNVH 030 - 240 CR 020			24,0			70		
CNVH 030 - 260 CR 020			26,0					
CNVH 030 - 300 CR 020			30,0					
CNVH 030 - 360 CR 020			36,0			80		
CNVH 030 - 040 CR 030	3,0	2,40	4,0	0,30	2,92	55	6	4
CNVH 030 - 060 CR 030			6,0					
CNVH 030 - 080 CR 030			8,0					
CNVH 030 - 100 CR 030			10,0					
CNVH 030 - 120 CR 030			12,0					
CNVH 030 - 140 CR 030			14,0					
CNVH 030 - 160 CR 030			16,0			60		
CNVH 030 - 200 CR 030			20,0					
CNVH 030 - 240 CR 030			24,0			70		
CNVH 030 - 260 CR 030			26,0					
CNVH 030 - 300 CR 030	30,0							
CNVH 030 - 360 CR 030	36,0	80						
CNVH 030 - 040 CR 050	3,0	2,40	4,0	0,50	2,92	55	6	4
CNVH 030 - 060 CR 050			6,0					
CNVH 030 - 080 CR 050			8,0					
CNVH 030 - 100 CR 050			10,0					
CNVH 030 - 120 CR 050			12,0					
CNVH 030 - 160 CR 050			16,0			60		
CNVH 030 - 200 CR 050			20,0					
CNVH 030 - 240 CR 050			24,0			70		
CNVH 030 - 260 CR 050			26,0					
CNVH 030 - 300 CR 050			30,0					
CNVH 030 - 360 CR 050	36,0	80						

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Best.-Nr. / Order no.	d1	L1	L2	ER	d2	L	D	Z
CNVH 030 - 060 CR 100	3,0	2,40	6,0	1,00	2,92	55	6	4
CNVH 030 - 080 CR 100			8,0					
CNVH 030 - 100 CR 100			10,0					
CNVH 030 - 120 CR 100			12,0					
CNVH 030 - 160 CR 100			16,0					
CNVH 030 - 200 CR 100			20,0					
CNVH 030 - 240 CR 100			24,0					
CNVH 030 - 260 CR 100			26,0					
CNVH 030 - 300 CR 100			30,0					
CNVH 030 - 360 CR 100			36,0					
CNVH 040 - 080 CR 005			4,0					
CNVH 040 - 120 CR 005	12,0							
CNVH 040 - 160 CR 005	16,0							
CNVH 040 - 200 CR 005	20,0							
CNVH 040 - 240 CR 005	24,0							
CNVH 040 - 320 CR 005	32,0							
CNVH 040 - 080 CR 010	4,0	3,20	8,0	0,10	3,82	65	6	4
CNVH 040 - 120 CR 010			12,0					
CNVH 040 - 160 CR 010			16,0					
CNVH 040 - 200 CR 010			20,0					
CNVH 040 - 240 CR 010			24,0					
CNVH 040 - 320 CR 010	4,0	3,20	32,0	0,10	3,82	80	6	4
CNVH 040 - 480 CR 010			48,0			100		
CNVH 040 - 080 CR 020	4,0	3,20	8,0	0,20	3,82	65	6	4
CNVH 040 - 120 CR 020			12,0					
CNVH 040 - 160 CR 020			16,0					
CNVH 040 - 200 CR 020			20,0					
CNVH 040 - 240 CR 020			24,0					
CNVH 040 - 320 CR 020			32,0					
CNVH 040 - 480 CR 020			48,0					
CNVH 040 - 080 CR 030	4,0	3,20	8,0	0,30	3,82	65	6	4
CNVH 040 - 120 CR 030			12,0					
CNVH 040 - 140 CR 030			14,0					
CNVH 040 - 160 CR 030			16,0					
CNVH 040 - 200 CR 030			20,0					
CNVH 040 - 240 CR 030			24,0					
CNVH 040 - 320 CR 030			32,0					
CNVH 040 - 480 CR 030			48,0					
CNVH 040 - 080 CR 050	4,0	3,20	8,0	0,50	3,82	65	6	4
CNVH 040 - 120 CR 050			12,0					
CNVH 040 - 160 CR 050			16,0					
CNVH 040 - 200 CR 050			20,0					
CNVH 040 - 240 CR 050			24,0					
CNVH 040 - 320 CR 050			32,0					
CNVH 040 - 400 CR 050			40,0					
CNVH 040 - 480 CR 050			48,0					
CNVH 040 - 080 CR 100	4,0	3,20	8,0	1,00	3,82	65	6	4
CNVH 040 - 120 CR 100			12,0					
CNVH 040 - 160 CR 100			16,0					
CNVH 040 - 200 CR 100			20,0					
CNVH 040 - 240 CR 100			24,0					
CNVH 040 - 320 CR 100			32,0					
CNVH 040 - 480 CR 100			48,0					
CNVH 050 - 160 CR 005	5,0	4,00	16,0	0,05	4,82	65	6	4
CNVH 050 - 200 CR 005			20,0					
CNVH 050 - 400 CR 005			40,0					
CNVH 050 - 160 CR 010	5,0	4,00	16,0	0,10	4,82	65	6	4
CNVH 050 - 200 CR 010			20,0					
CNVH 050 - 400 CR 010			40,0					

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Best.-Nr. / Order no.	d1	L1	L2	ER	d2	L	D	Z
CNVH 050 - 160 CR 020	5,0	4,00	16,0	0,20	4,82	65	6	4
CNVH 050 - 200 CR 020			20,0			70		
CNVH 050 - 400 CR 020			40,0			100		
CNVH 050 - 160 CR 030	5,0	4,00	16,0	0,30	4,82	65	6	4
CNVH 050 - 200 CR 030			20,0			70		
CNVH 050 - 400 CR 030			40,0			100		
CNVH 050 - 160 CR 050	5,0	4,00	16,0	0,50	4,82	65	6	4
CNVH 050 - 200 CR 050			20,0			70		
CNVH 050 - 400 CR 050			40,0			100		
CNVH 050 - 160 CR 100	5,0	4,00	16,0	1,00	4,82	65	6	4
CNVH 050 - 200 CR 100			20,0			70		
CNVH 050 - 400 CR 100			40,0			100		
CNVH 060 - 120 CR 005	6,0	4,80	12,0	0,05	5,82	65	6	4
CNVH 060 - 160 CR 005			16,0			70		
CNVH 060 - 200 CR 005			20,0			100		
CNVH 060 - 240 CR 005			24,0			120		
CNVH 060 - 300 CR 005			30,0					
CNVH 060 - 480 CR 005	48,0							
CNVH 060 - 120 CR 010	6,0	4,80	12,0	0,10	5,82	65	6	4
CNVH 060 - 160 CR 010			16,0			70		
CNVH 060 - 180 CR 010			18,0			100		
CNVH 060 - 200 CR 010			20,0			120		
CNVH 060 - 240 CR 010			24,0					
CNVH 060 - 300 CR 010	30,0							
CNVH 060 - 480 CR 010	48,0							
CNVH 060 - 120 CR 020	6,0	4,80	12,0	0,20	5,82	65	6	4
CNVH 060 - 160 CR 020			16,0			70		
CNVH 060 - 180 CR 020			18,0			100		
CNVH 060 - 200 CR 020			20,0			120		
CNVH 060 - 240 CR 020			24,0					
CNVH 060 - 300 CR 020	30,0							
CNVH 060 - 480 CR 020	48,0							
CNVH 060 - 120 CR 030	6,0	4,80	12,0	0,30	5,82	65	6	4
CNVH 060 - 160 CR 030			16,0			70		
CNVH 060 - 180 CR 030			18,0			100		
CNVH 060 - 200 CR 030			20,0			120		
CNVH 060 - 240 CR 030			24,0					
CNVH 060 - 300 CR 030	30,0							
CNVH 060 - 480 CR 030	48,0							
CNVH 060 - 120 CR 050	6,0	4,80	12,0	0,50	5,82	65	6	4
CNVH 060 - 160 CR 050			16,0			70		
CNVH 060 - 180 CR 050			18,0			100		
CNVH 060 - 200 CR 050			20,0			120		
CNVH 060 - 240 CR 050			24,0					
CNVH 060 - 300 CR 050	30,0							
CNVH 060 - 400 CR 050	40,0							
CNVH 060 - 480 CR 050	48,0							
CNVH 060 - 120 CR 100	6,0	4,80	12,0	1,00	5,82	65	6	4
CNVH 060 - 160 CR 100			16,0			70		
CNVH 060 - 180 CR 100			18,0			100		
CNVH 060 - 200 CR 100			20,0			120		
CNVH 060 - 240 CR 100			24,0					
CNVH 060 - 300 CR 100	30,0							
CNVH 060 - 400 CR 100	40,0							
CNVH 060 - 480 CR 100	48,0							



**VHM-Rippenfräser mit konischer Halsfreilegung** 4-Schneider,  $\phi$  1,0 - 6,0 mm, Schaft  $\phi$  4 - 8 mm  
**Solid carbide radius end mill with clearance length** 4 flutes,  $\phi$  1,0 - 6,0 mm, shank  $\phi$  4 - 8 mm

PRP4 / PRP9

45° HELIX

ER  
± 0,01

VAR. DRALL-  
WINKEL

ST 9  
COATING

0,4°  
0,9°

h5

<700  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

55-60  
HRC

60-65  
HRC

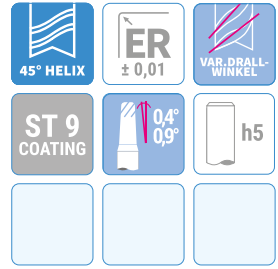
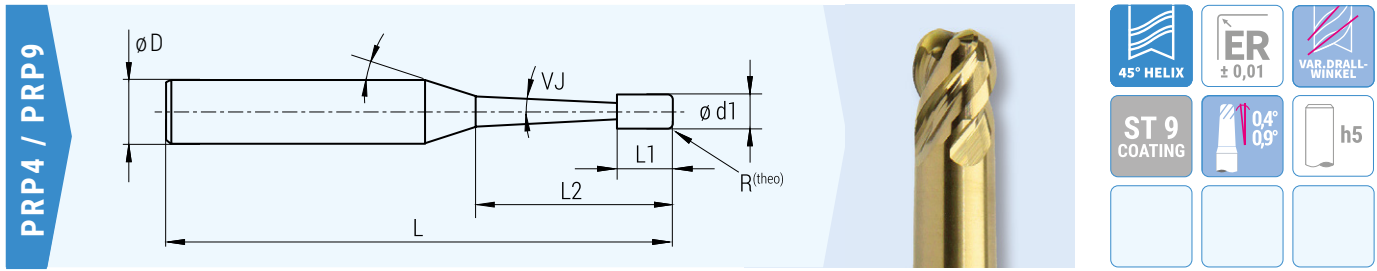
GUSS

Best.-Nr. / Order no.	d1	L1	L2	L	VJ	D	ER	Z	
PRP9 - 100 - 060R020	1,00	1,00	6,0	50	0,9°	4	0,2	4	
PRP9 - 100 - 100R020			10,0						
PRP9 - 100 - 150R020			15,0						
PRP9 - 100 - 200R020			20,0						60
PRP9 - 100 - 250R020			25,0						
PRP9 - 100 - 300R020			30,0						70
PRP9 - 125 - 060R020	1,25	1,25	6,0	50	0,9°	4	0,2	4	
PRP9 - 125 - 100R020			10,0						
PRP9 - 125 - 150R020			15,0						
PRP9 - 125 - 200R020			20,0						60
PRP9 - 125 - 300R020			30,0						
PRP9 - 150 - 060R030			1,50						1,50
PRP9 - 150 - 100R030	10,0								
PRP9 - 150 - 150R030	15,0								
PRP9 - 150 - 200R030	20,0	60							
PRP9 - 150 - 250R030	25,0								
PRP9 - 150 - 300R030	30,0	70							
PRP9 - 175 - 060R030	1,75	1,75	6,0	50	0,9°	4	0,3	4	
PRP9 - 175 - 100R030			10,0						
PRP9 - 175 - 150R030			15,0						
PRP9 - 175 - 200R030			20,0						60
PRP9 - 175 - 300R030			30,0						
PRP4 - 200 - 200R050			2,00						2,00
PRP4 - 200 - 260R050	26,0								
PRP4 - 200 - 300R050	30,0	70							
PRP4 - 200 - 360R050	36,0								
PRP4 - 200 - 400R050	40,0	80							
PRP9 - 200 - 100R050	2,00	2,00		10,0	60	0,9°	4	0,5	
PRP9 - 200 - 150R050			15,0						
PRP9 - 200 - 200R050			20,0						
PRP9 - 200 - 250R050			25,0	70					
PRP9 - 200 - 300R050			30,0						
PRP9 - 200 - 350R050			35,0	80					
PRP9 - 200 - 400R050	40,0								

Weitere Abmessungen auf Folgeseite / Further dimensions on next page »

## VHM-Rippenfräser mit konischer Halsfreilegung 4-Schneider, ø 1,0 - 6,0 mm, Schaft ø 4 - 8 mm

### Solid carbide radius end mill with clearance length 4 flutes, ø 1,0 - 6,0 mm, shank ø 4 - 8 mm



Best.-Nr. / Order no.	d1	L1	L2	L	VJ	D	ER	Z
PRP4 - 300 - 200R080	3,0	3,0	20,0	60	0,4°	6	0,8	4
PRP4 - 300 - 260R080			26,0					
PRP4 - 300 - 300R080			30,0					
PRP4 - 300 - 360R080			36,0					
PRP4 - 300 - 400R080			40,0					
PRP9 - 300 - 200R080	3,0	3,0	20,0	60	0,9°	6	0,8	4
PRP9 - 300 - 250R080			25,0					
PRP9 - 300 - 300R080			30,0					
PRP9 - 300 - 350R080			35,0					
PRP9 - 300 - 400R080			40,0					
PRP4 - 400 - 250R100	4,0	4,0	25,0	60	0,4°	6	1,0	4
PRP4 - 400 - 300R100			30,0					
PRP4 - 400 - 350R100			35,0					
PRP4 - 400 - 400R100			40,0					
PRP4 - 400 - 450R100			45,0					
PRP4 - 400 - 500R100			50,0	90				
PRP9 - 400 - 200R100	4,0	4,0	20,0	60	0,9°	6	1,0	4
PRP9 - 400 - 250R100			25,0					
PRP9 - 400 - 300R100			30,0					
PRP9 - 400 - 350R100			35,0					
PRP9 - 400 - 400R100			40,0					
PRP9 - 400 - 500R100			50,0	90				
PRP9 - 600 - 200R150	6,0	6,0	20,0	60	0,9°	8	1,5	4
PRP9 - 600 - 300R150			30,0					
PRP9 - 600 - 400R150			40,0					
PRP9 - 600 - 500R150			50,0					
PRP9 - 600 - 600R150			60,0					
			60,0	100				

Weitere Freilegungen und Abmessungen auf Anfrage lieferbar.  
Further dimensions and clearance length available on request.

### VHM-Torusfräser kurze Ausführung, zum Hartfräsen bis 65 HRC, 4-Schneider, ø 2,0 - 12,0 mm

### Solid carbide end mill with corner radius short version, hard milling up to 65 HRC, 4 flutes, ø 2,0 - 12,0 mm

HRRK / HRRL

ER

16° SHANK ANGLE

\*\* VARIABLE HELIX

CENTRE CUT

ER ± 0,01

ø 2-6

ER ± 0,015

h5

45° HELIX

ø 8-12

ST 9 COATING

<700 N/mm<sup>2</sup>

700-1100 N/mm<sup>2</sup>

1100-1300 N/mm<sup>2</sup>

30-45 HRC

45-55 HRC

55-60 HRC

60-65 HRC

65-70 HRC

INOX

Best.-Nr. / Order no.	d1	L1	L2	d2	ER	L	D	Z
HRRK 020 - 060 CR 050 **	2,0	2,0	6,0	1,91	0,50	45	4	4
HRRK 040 - 120 CR 100 **	4,0	4,0	12,0	3,82	1,00	50	4	4
HRRK 060 - 180 CR 150	6,0	6,0	18,0	5,82	1,50	50	6	4
HRRK 080 - 240 CR 200	8,0	8,0	24,0	7,82	2,00	60	8	4
HRRK 100 - 300 CR 200	10,0	10,0	30,0	9,82	2,00	65	10	4
HRRK 120 - 360 CR 200	12,0	12,0	36,0	11,82	2,00	75	12	4

Weitere Werkzeugabmessungen im Bereich d1=2,00 mm bis d1= 12,00 mm auf Anfrage verfügbar.  
Other tool dimensions in the range d1=2.00 mm to d1=12.00 mm available on request.

\*\* Schaftwinkel 16°  
\*\* Shank angle 16°

### VHM-Torusfräser lange Ausführung, zum Hartfräsen bis 65 HRC, 4-Schneider, ø 2,0 - 12,0 mm

### Solid carbide end mill with corner radius long version, for hard milling up to 65 HRC, 4 flutes, ø 2,0 - 12,0 mm

Best.-Nr. / Order no.	d1	L1	L2	d2	ER	L	D	Z
HRRL 020 - 060 CR 050 **	2,0	2,0	6,0	1,91	0,50	70	4	4
HRRL 040 - 120 CR 100 **	4,0	4,0	12,0	3,82	1,00	70	4	4
HRRL 040 - 120 - 6 CR 100							6	
HRRL 060 - 180 CR 050	6,0	6,0	18,0	5,82	0,50	90	6	4
HRRL 060 - 180 CR 100					1,00			
HRRL 060 - 180 CR 150					1,50			
HRRL 060 - 180 CR 200					2,00			
HRRL 080 - 240 CR 050	8,0	8,0	24,0	7,82	0,50	100	8	4
HRRL 080 - 240 CR 100					1,00			
HRRL 080 - 240 CR 200					2,00			
HRRL 080 - 240 CR 300					3,00			
HRRL 100 - 300 CR 050	10,0	10,0	30,0	9,82	0,50	110	10	4
HRRL 100 - 300 CR 100					1,00			
HRRL 100 - 300 CR 200					2,00			
HRRL 100 - 300 CR 300					3,00			
HRRL 120 - 360 CR 050	12,0	12,0	36,0	11,82	0,50	120	12	4
HRRL 120 - 360 CR 100					1,00			
HRRL 120 - 360 CR 200					2,00			
HRRL 120 - 360 CR 400					4,00			

Weitere Werkzeugabmessungen im Bereich d1=2,00 mm bis d1= 12,00 mm auf Anfrage verfügbar.  
Other tool dimensions in the range d1=2.00 mm to d1=12.00 mm available on request.

\*\* Schaftwinkel 16°  
\*\* Shank angle 16°

**VHM-Torusfräser** zum Hartfräsen bis 65 HRC, 4-Schneider,  $\varnothing$  2,0 - 12,0 mm, Schaft  $\varnothing$  6 - 12 mm

**Solid carbide end mill with corner radius** for hard milling up to 65 HRC, 4 flutes,  $\varnothing$  2,0 - 12,0 mm, shank  $\varnothing$  6 - 12 mm

CNBH

ER

16°  
SHANK  
ANGLE

ER  
± 0,01

h5

20° HELIX

ST 9  
COATING

<700  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

55-60  
HRC

60-65  
HRC

65-70  
HRC

Best.-Nr. / Order no.	d1	L1	L2	d2	ER	L	D	Z
CNBH 020 - 050 CR 020	2,0	2,5	5,0	1,93	0,20	50	6	4
CNBH 025 - 060 CR 025	2,5	3,0	6,0	2,43	0,25	50	6	4
CNBH 030 - 070 CR 030	3,0	4,0	7,0	2,84	0,30	50	6	4
CNBH 040 - 090 CR 040	4,0	5,0	9,0	3,74	0,40	50	6	4
CNBH 050 - 120 CR 050	5,0	6,0	12,0	4,64	0,50	50	6	4
CNBH 060 - 140 CR 060	6,0	7,0	14,0	5,64	0,60	55	6	4
CNBH 080 - 180 CR 080	8,0	10,0	18,0	7,82	0,80	60	8	4
CNBH 100 - 250 CR 100	10,0	12,0	25,0	9,82	1,00	70	10	4
CNBH 120 - 300 CR 120 *	12,0	15,0	30,0	11,82	1,20	75	12	4

\* Auslaufend / \* discontinued

**VHM-Torusfräser** zum Hartfräsen bis 65 HRC, 2/4-Schneider,  $\varnothing$  2,0 - 12,0 mm, Schaft  $\varnothing$  4 - 12 mm

**Solid carbide end mill with corner radius** for hard milling up to 65 HRC, 2/4 flutes,  $\varnothing$  2,0 - 12,0 mm, shank  $\varnothing$  4 - 12 mm

TNAH

ER

16°  
SHANK  
ANGLE

ER  
± 0,01

h5

30° HELIX

ST 9  
COATING

<700  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

55-60  
HRC

60-65  
HRC

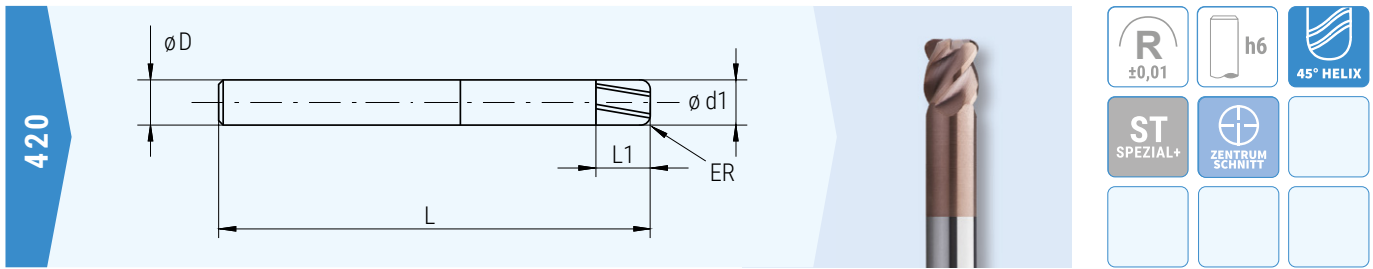
65-70  
HRC

Best.-Nr. / Order no.	d1	L1	L2	d2	ER	L	D	Z
TNAH 020 - 060 CR 050	2,0	2,0	6,0	1,8	0,50	40	4	2
TNAH 030 - 090 CR 050	3,0	3,0	9,0	2,6	0,50	40	4	2
TNAH 030 - 090 CR 100					1,00			
TNAH 040 - 100 CR 050	4,0	4,0	10,0	3,4	0,50	50	6	2
TNAH 040 - 100 CR 100					1,00			
TNAH 060 - 150 CR 100	6,0	6,0	15,0	5,2	1,00	55	6	4
TNAH 060 - 150 CR 150					1,50			
TNAH 080 - 200 CR 100	8,0	8,0	20,0	6,8	1,00	60	8	4
TNAH 080 - 200 CR 200					2,00			
TNAH 100 - 250 CR 100	10,0	10,0	25,0	8,8	1,00	70	10	4

\* Auslaufend / \* discontinued

**VHM-Torusfräser** zum Hartfräsen im Bereich 45-60 HRC,  $\phi$  3,0 - 12,0 mm, Schaft  $\phi$  6 - 12 mm

**Solid carbide end mill with corner radius** for hard milling in the range of 45-60 HRC,  $\phi$  3,0 - 12,0 mm, shank  $\phi$  6 - 12 mm



Best.-Nr. / Order no.	d1	L1	L	D	ER	Z
420 030 003	3,0	4,0	60	6	0,30	4
420 030 005	3,0	4,0	60	6	0,50	4
420 040 003	4,0	5,0	60	6	0,30	4
420 040 005	4,0	5,0	60	6	0,50	4
420 050 003	5,0	6,0	60	6	0,30	4
420 050 005	5,0	6,0	60	6	0,50	4
420 060 003	6,0	7,0	60	6	0,30	4
420 060 005	6,0	7,0	60	6	0,50	4
420 060 010	6,0	7,0	60	6	1,00	4
420 080 003	8,0	9,0	64	8	0,30	4
420 080 005	8,0	9,0	64	8	0,50	4
420 080 010	8,0	9,0	64	8	1,00	4
420 100 005	10,0	11,0	70	10	0,50	4
420 100 010	10,0	11,0	70	10	1,00	4
420 100 020	10,0	11,0	70	10	2,00	4
420 120 005	12,0	13,0	75	12	0,50	4
420 120 010	12,0	13,0	75	12	1,00	4
420 120 020	12,0	13,0	75	12	2,00	4

Weitere Werkzeugabmessungen im Bereich d1=3,00 mm bis d1= 12,00 mm sowie Halsfreilegung auf Anfrage verfügbar.

Other tool dimensions in the range d1=3,00 mm to d1= 12,00 mm and clearance length available on request.

## VHM-Torusfräser zum Schlichten bis 70 HRC, $\phi$ 2,0 - 12,0 mm, Schaft $\phi$ 6 - 12 mm

**Solid carbide end mill with corner radius** for finishing operations up to 70 HRC,  $\phi$  2,0 - 12,0 mm, shank  $\phi$  6 - 12 mm

421

$R$   
 $\pm 0,01$

h6

25° HELIX

UNGLEICHE  
TEILUNG

ZENTRUM  
SCHNITT

ST 10  
COATING

40-45  
HRC

45-55  
HRC

55-60  
HRC

60-65  
HRC

STAHL

Best.-Nr. / Order no.	d1	L1	L	D	ER	Z
421 020 005	2,0	2,0	60	6	0,50	4
421 030 005	3,0	3,0	60	6	0,50	4
421 040 005	4,0	4,0	60	6	0,50	4
421 060 005	6,0	6,0	60	6	0,50	4
421 080 005	8,0	8,0	64	8	0,50	6
421 080 010	8,0	8,0	64	8	1,00	6
421 100 005	10,0	10,0	75	10	0,50	6
421 100 010	10,0	10,0	75	10	1,00	6
421 120 005	12,0	12,0	75	12	0,50	6
421 120 010	12,0	12,0	75	12	1,00	6

Weitere Werkzeugabmessungen im Bereich  $d1=2,00$  mm bis  $d1= 12,00$  mm sowie Halsfreilegung auf Anfrage verfügbar.

Other tool dimensions in the range  $d1=2,00$  mm to  $d1= 12,00$  mm and clearance length available on request.

## VHM-Torusfräser mit Freilegung, zum Schlichten bis 70 HRC, $\phi$ 2,0 - 12,0 mm

**Solid carbide end mill with corner radius** with clearance length, for finishing operations up to 70 HRC,  $\phi$  2,0 - 12,0 mm

422

$R$   
 $\pm 0,01$

h6

25° HELIX

UNGLEICHE  
TEILUNG

ZENTRUM  
SCHNITT

ST 10  
COATING

40-45  
HRC

45-55  
HRC

55-60  
HRC

60-65  
HRC

STAHL

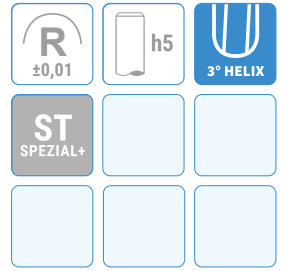
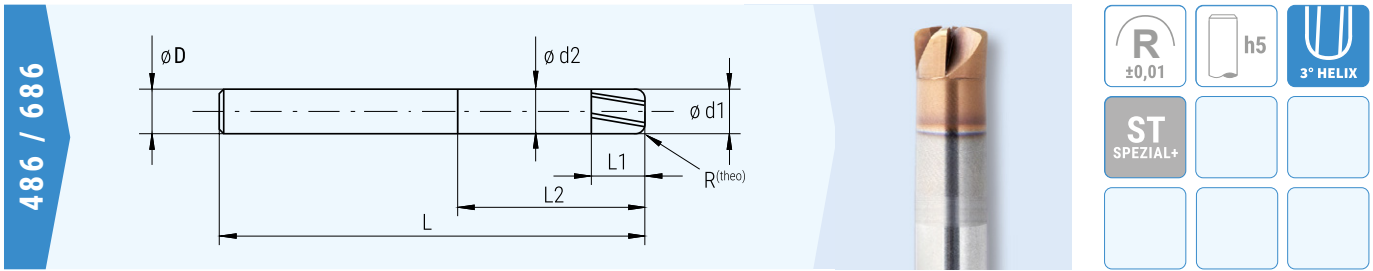
Best.-Nr. / Order no.	d1	L1	L2	L	D	ER	Z
422 020 020 05	2,0	2,0	20,0	60	6	0,50	4
422 030 020 05	3,0	3,0	21,0	60	6	0,50	4
422 040 010 05	4,0	4,0	12,0	60	6	0,50	4
422 060 020 05	6,0	6,0	20,0	60	6	0,50	4
422 080 025 05	8,0	8,0	24,0	64	8	0,50	6
422 080 025 10	8,0	8,0	24,0	64	8	1,00	6
422 100 030 05	10,0	10,0	30,0	75	10	0,50	6
422 100 030 10	10,0	10,0	30,0	75	10	1,00	6
422 120 030 05	12,0	12,0	30,0	75	12	0,50	6
422 120 030 10	12,0	12,0	30,0	75	12	1,00	6

Weitere Werkzeugabmessungen im Bereich  $d1=2,00$  mm bis  $d1= 12,00$  mm auf Anfrage verfügbar.

Other tool dimensions in the range  $d1=2,00$  mm to  $d1= 12,00$  mm available on request.

# VHM-Hochvorschubfräser extrem stabile Schneidkanten, kurze Schneiden, zum Hartfräsen bis 70 HRC, $\varnothing$ 3,0 - $\varnothing$ 12,0 mm

**Solid carbide high feed milling cutter** extremely stable cutting edges, short cutting edges, for hard milling up to HRC 70, diameter 3 - 12 mm



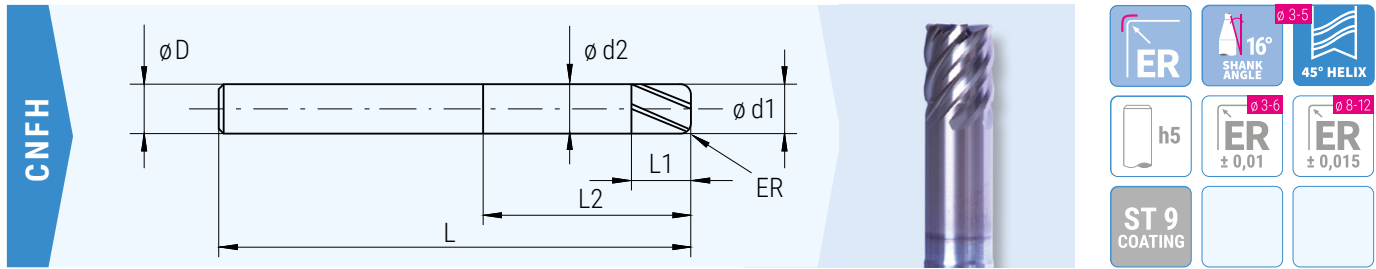
Best.-Nr. / Order no.	d1	L1	L2	L	D	R <sup>(theo)</sup>	Z
486 030	3,0	1,5	6,0	57	6	0,30	4
486 L 030	3,0	1,5	12,0	57	6	0,30	4
486 040	4,0	1,5	8,0	57	6	0,40	4
486 L 040	4,0	1,5	16,0	57	6	0,40	4
486 050	5,0	2,0	10,0	57	6	0,50	4
486 L 050	5,0	2,0	22,0	57	6	0,50	4
486 060	6,0	2,5	12,0	57	6	0,60	4
486 L 060	6,0	2,5	26,0	57	6	0,60	4
686 080	8,0	3,0	16,0	63	8	0,80	6
686 L 080	8,0	3,0	32,0	63	8	0,80	6
686 100	10,0	3,5	20,0	72	10	1,00	6
686 L 100	10,0	3,5	36,0	72	10	1,00	6
686 120	12,0	4,0	24,0	83	12	1,20	6
686 L 120	12,0	4,0	43,0	83	12	1,20	6

Weitere Werkzeugabmessungen im Bereich d1=3,00 mm bis d1= 12,00 mm sowie Halsfreilegung auf Anfrage.

Other tool dimensions in the range d1=3,00 mm to d1= 12,00 mm and clearance length available on request.

**VHM-Torusfräser** 4/6-Schneider, mit unterschiedlichen Eckenradien, zum Hartfräsen bis 60 HRC

**Solid carbide end mill with corner radius** 4/6 flutes, with different corner radii, for hard milling up to 60 HRC



Material and coating options:

- <math><700</math> N/mm<sup>2</sup>
- 700-1100 N/mm<sup>2</sup>
- 1100-1300 N/mm<sup>2</sup>
- 30-45 HRC
- 45-55 HRC
- 55-60 HRC
- 60-65 HRC
- INOX
- ST 9 COATING
- ER  $\pm 0,01$
- ER  $\pm 0,015$
- 16° SHANK ANGLE
- 45° HELIX

Best.-Nr. / Order no.	d1	L1	L2	d2	ER	L	D	Z
CNFH 030 - 100 CR 010	3,0	3,0	10,0	2,80	0,10	60	6	4
CNFH 030 - 100 CR 020					0,20			
CNFH 030 - 100 CR 050					0,50			
CNFH 040 - 120 CR 010	4,0	4,0	12,0	3,80	0,10	60	6	4
CNFH 040 - 120 CR 020					0,20			
CNFH 040 - 120 CR 050					0,50			
CNFH 040 - 120 CR 100					1,00			
CNFH 050 - 160 CR 020	5,0	5,0	16,0	4,80	0,20	60	6	4
CNFH 050 - 160 CR 050					0,50			
CNFH 060 - 210 CR 010	6,0	6,0	21,0	5,95	0,10	60	6	6
CNFH 060 - 210 CR 020					0,20			
CNFH 060 - 210 CR 030					0,30			
CNFH 060 - 210 CR 050					0,50			
CNFH 060 - 210 CR 100					1,00			
CNFH 080 - 260 CR 030	8,0	8,0	26,0	7,81	0,30	80	8	6
CNFH 080 - 260 CR 050					0,50			
CNFH 080 - 260 CR 100					1,00			
CNFH 100 - 310 CR 030	10,0	10,0	31,0	9,81	0,30	80	10	6
CNFH 100 - 310 CR 050					0,50			
CNFH 100 - 310 CR 100					1,00			
CNFH 120 - 370 CR 030	12,0	12,0	37,0	11,81	0,30	100	12	6
CNFH 120 - 370 CR 050					0,50			
CNFH 120 - 370 CR 100					1,00			



**VHM-Schaftfräser** zum Besäumen, Hartfräsen bis 65 HRC, 3/4/6-Schneider, in kurzer Ausführung,  $\varnothing$  1,0 - 12,0 mm, Schaft  $\varnothing$  4 - 12 mm

**Solid carbide end mills** for trimming operations, hard milling up to 65 HRC, 3/4/6 flutes, short version,  $\varnothing$  1,0 - 12,0 mm, shank  $\varnothing$  4 - 12 mm

HMSK

$\varnothing$  1-5  
16°  
SHANK  
ANGLE

ECKENFASE

h5

45° HELIX

ST 9  
COATING

<700  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

55-60  
HRC

60-65  
HRC

65-70  
HRC

INOX

Best.-Nr. / Order no.	d1	L1	L	D	Z
HMSK 010 - 025 *	1,0	2,5	45	4	3
HMSK 015 - 040 *	1,5	4,0	45	4	3
HMSK 020 - 040 *	2,0	4,0	45	4	3
HMSK 030 - 060 *	3,0	6,0	50	6	3
HMSK 040 - 080 *	4,0	8,0	50	6	4
HMSK 050 - 100 *	5,0	10,0	50	6	4
HMSK 060 - 130 *	6,0	13,0	50	6	6
HMSK 080 - 190 *	8,0	19,0	60	8	6
HMSK 100 - 220 *	10,0	22,0	70	10	6
HMSK 120 - 260 *	12,0	26,0	75	12	6

\* Auslaufend - Wird ersetzt durch Serie SHSL - (siehe S.102) / \* Discontinued - Will be replaced by series SHSL - (see p.102)

**VHM-Schaftfräser** zum Besäumen, Hartfräsen bis 65 HRC, 3/4/6-Schneider, in langer Ausführung,  $\varnothing$  1,0 - 12,0 mm, Schaft  $\varnothing$  4 - 12 mm

**Solid carbide end mills** for trimming operations, hard milling up to 65 HRC, 3/4/6 flutes, long version,  $\varnothing$  1,0 - 12,0 mm, shank  $\varnothing$  4 - 12 mm

HMSL

$\varnothing$  1-2  
16°  
SHANK  
ANGLE

ECKENFASE

h5

45° HELIX

ST 9  
COATING

<700  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

55-60  
HRC

60-65  
HRC

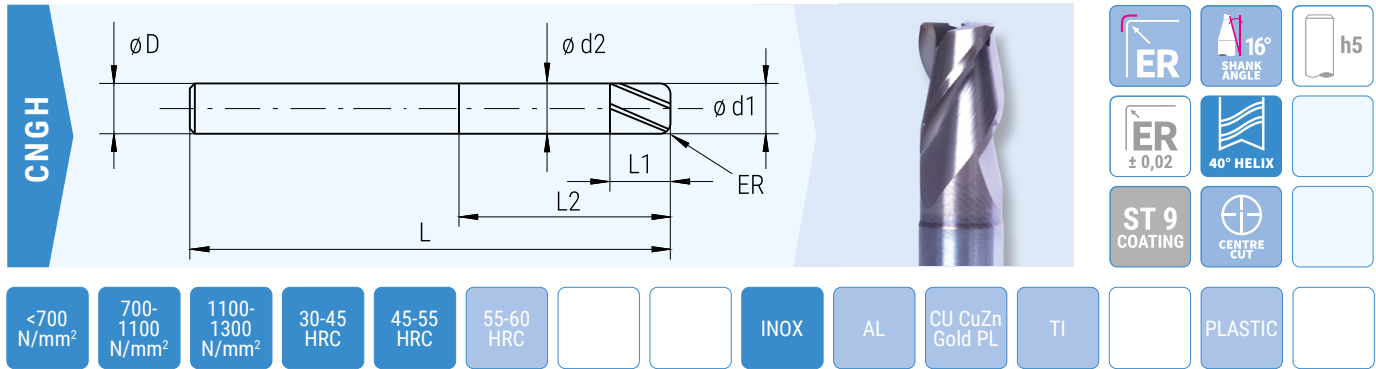
65-70  
HRC

INOX

Best.-Nr. / Order no.	d1	L1	L	D	Z
HMSL 010 - 035 *	1,0	3,5	45	4	3
HMSL 015 - 060 *	1,5	6,0	45	4	3
HMSL 020 - 070 *	2,0	7,0	45	4	3
HMSL 030 - 150 *	3,0	15,0	60	6	3
HMSL 040 - 200 *	4,0	20,0	70	6	4
HMSL 050 - 250 *	5,0	25,0	70	6	4
HMSL 060 - 260 *	6,0	26,0	70	6	6
HMSL 080 - 360 *	8,0	36,0	90	8	6
HMSL 100 - 460 *	10,0	46,0	100	10	6
HMSL 120 - 560 *	12,0	56,0	120	12	6

\* Auslaufend - Wird ersetzt durch Serie SHSL - (siehe S.102) / \* Discontinued - Will be replaced by series SHSL - (see p.102)

**VHM-Schaftfräser universal** 3-Schneider,  $\varnothing$  2,0 - 12,0 mm, Schaft  $\varnothing$  3 - 12 mm  
**Solid carbide end mills universal** 3 flutes,  $\varnothing$  2,0 - 12,0 mm, shank  $\varnothing$  3 - 12 mm



Best.-Nr. / Order no.	d1	L1	L2	d2	ER	L	D	Z
CNGH 020 - 060 CR 020	2,0	3,0	6,0	1,93	0,20	38	3	3
CNGH 020 - 100 CR 020			10,0			60		
CNGH 025 - 060 CR 020	2,5	4,0	6,0	2,43	0,20	38	3	3
CNGH 030 - 070 CR 010	3,0	4,0	7,0	2,84	0,10	38	3	3
CNGH 030 - 070 CR 020			7,0		0,20			
CNGH 030 - 140 CR 020			14,0		0,20			
CNGH 035 - 090 CR 020	3,5	5,0	9,0	3,24	0,20	50	6	3
CNGH 040 - 090 CR 020	4,0	5,0	9,0	3,74	0,20	50	6	3
CNGH 040 - 090 CR 030			9,0		0,30			
CNGH 040 - 090 CR 050			9,0		0,50			
CNGH 040 - 180 CR 020			18,0		0,20			
CNGH 050 - 110 CR 020	5,0	6,0	11,0	4,64	0,20	50	6	3
CNGH 050 - 220 CR 020			22,0			65		
CNGH 060 - 140 CR 020	6,0	7,0	14,0	5,64	0,20	60	6	3
CNGH 060 - 140 CR 030			14,0		0,30			
CNGH 060 - 140 CR 050			14,0		0,50			
CNGH 060 - 260 CR 030			26,0		0,30			
CNGH 080 - 180 CR 020	8,0	9,0	18,0	7,82	0,20	60	8	3
CNGH 080 - 180 CR 050			18,0		0,50			
CNGH 080 - 360 CR 050			36,0		0,50			
CNGH 100 - 250 CR 020	10,0	12,0	25,0	9,82	0,20	70	10	3
CNGH 100 - 250 CR 050			25,0		0,50			
CNGH 100 - 450 CR 050			45,0		0,50			
CNGH 120 - 300 CR 050	12,0	15,0	30,0	11,82	0,50	75	12	3
CNGH 120 - 540 CR 050			54,0			120		

**VHM-Trochoidalfräser** mit ungleicher Teilung, 5-Schneider,  $\varnothing$  3,0 - 12,0 mm, Schaft  $\varnothing$  6 - 12 mm  
**Solid carbide trochoidal end mills** with unequal pitch, 5 flutes,  $\varnothing$  3,0 - 12,0 mm, shank  $\varnothing$  6 - 12 mm

CHSS / CLSS

ER

UNEVEN PITCH

$\varnothing$  3-4  
16°  
SHANK ANGLE

VARIABLE HELIX

h5

ER  
 $\pm 0,01$

42-45°  
HELIX

ST 8  
COATING

<700  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

INOX

AL

CU CuZn  
Gold PL

TI

Best.-Nr. / Order no.	d1	L1	ER	Schaftwinkel shank angle	L	D	Z
CHSS 030 - 060 CR 050	3,0	6,0	0,50	16°	50	6	5
CHSS 040 - 120 CR 100	4,0	12,0	1,00	16°	60	6	5
CHSS 060 - 120 CR 050	6,0	12,0	0,50	-	70	6	5
CHSS 060 - 120 CR 100	6,0	12,0	1,00	-	70	6	5
CHSS 080 - 240 CR 050	8,0	24,0	0,50	-	70	8	5
CHSS 080 - 240 CR 100	8,0	24,0	1,00	-	70	8	5
CHSS 100 - 200 CR 050	10,0	20,0	0,50	-	80	10	5
CHSS 100 - 300 CR 050	10,0	30,0	0,50	-	80	10	5
CHSS 100 - 300 CR 100	10,0	30,0	1,00	-	80	10	5
CHSS 120 - 240 CR 050	12,0	24,0	0,50	-	80	12	5
CHSS 120 - 360 CR 050	12,0	36,0	0,50	-	100	12	5
CHSS 120 - 240 CR 100	12,0	24,0	1,00	-	80	12	5
CHSS 120 - 360 CR 100	12,0	36,0	1,00	-	100	12	5
CHSS 120 - 240 CR 150	12,0	24,0	1,50	-	80	12	5

Best.-Nr. / Order no.	d1	L1	L2	ER	d2	Schaftwinkel shank angle	L	D	Z
CLSS 030 - 090 CR 050	3,0	6,0	9,0	0,50	2,95	16°	50	6	5
CLSS 040 - 160 CR 100	4,0	8,0	16,0	1,00	3,85	16°	60	6	5
CLSS 060 - 180 CR 050	6,0	12,0	18,0	0,50	5,85	-	60	6	5
CLSS 060 - 180 CR 100	6,0	12,0	18,0	1,00	5,85	-	60	6	5
CLSS 080 - 320 CR 050	8,0	16,0	32,0	0,50	7,80	-	70	8	5
CLSS 080 - 320 CR 100	8,0	16,0	32,0	1,00	7,80	-	70	8	5
CLSS 100 - 400 CR 050	10,0	20,0	40,0	0,50	9,80	-	80	10	5
CLSS 100 - 400 CR 100	10,0	20,0	40,0	1,00	9,80	-	80	10	5
CLSS 120 - 480 CR 050	12,0	24,0	48,0	0,50	11,80	-	100	12	5
CLSS 120 - 480 CR 100	12,0	24,0	48,0	1,00	11,80	-	100	12	5
CLSS 120 - 360 CR 150	12,0	24,0	36,0	1,50	11,80	-	80	12	5

Weitere Werkzeugabmessungen im Bereich  $d1=3,00$  mm bis  $d1=12,00$  mm in verschiedenen Eckenradien auf Anfrage verfügbar.  
 Other tool dimensions in the range  $d1=3,00$  mm to  $d1=12,00$  mm in different corner radii available on request.

**VHM-Torusfräser** zum Abzeilen, Besäumen und trochoidalem Hartfräsen, 5/7-Schneider,  $\phi$  6,0 - 12,0 mm, Schaft  $\phi$  6 - 12 mm

**Solid carbide end mill with corner radius** trimming, trochoidal operations for hard milling, 5/7 flutes,  $\phi$  6,0 - 12,0 mm, shank  $\phi$  6 - 12 mm

CNTF

ER

h5

45° HELIX

ST 7 COATING

<math><700</math>  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

55-60  
HRC

60-65  
HRC

65-70  
HRC

INOX

CFK  
GFK

Best.-Nr. / Order no.	d1	L1	L2	d2	ER	L	D	Z
CNTF 060 - 180 CR 050	6,0	13,0	18,0	5,8	0,50	60	6	5
CNTF 080 - 240 CR 050	8,0	19,0	24,0	7,8	0,50	70	8	5
CNTF 100 - 270 CR 050	10,0	22,0	27,0	9,7	0,50	80	10	5
CNTF 120 - 310 CR 050	12,0	26,0	31,0	11,7	0,50	84	12	7

**VHM-Torusfräser** zum Hartfräsen von 48 bis 60 HRC, 7-Schneider, kurze Ausführung,  $\phi$  4,0 - 12,0 mm, Schaft  $\phi$  6 - 12 mm

**Solid carbide end mill with corner radius** for hard milling from 48 to 60 HRC, 7 flutes, short version,  $\phi$  4,0 - 12,0 mm, shank  $\phi$  6 - 12 mm

CRSF

ER

h5

ER  
 $\pm 0,01$

ST 7 COATING

<math><700</math>  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

55-60  
HRC

60-65  
HRC

65-70  
HRC

Best.-Nr. / Order no.	d1	L1	L2	d2	ER	L	D	Z
CRSF 040 - 120 CR 100	4,0	1,0	12	3,6	1,00	55	6	5
CRSF 060 - 100 CR 150	6,0	1,5	10	5,6	1,50	55	6	5
CRSF 080 - 120 CR 200	8,0	2,0	12	7,6	2,00	65	8	5
CRSF 100 - 160 CR 250	10,0	2,5	16	9,5	2,50	75	10	7
CRSF 120 - 200 CR 300	12,0	3,0	20	11,5	3,00	75	12	7

# Hard Line: VHM-Torusfräser 2-Schneider Schrupp-, Vorschlicht- und Schlicht-Einsatz. Große Auswahl an Abmessungen und Eckenradien

## Hard Line: Solid carbide end mill with corner radius 2-cutter Roughing, semi-finishing and finishing

SHRN-2

h5

R005-05  
ER  
±0,005

R1-15  
ER  
±0,01

R2-3  
ER  
±0,015

STH  
COATING

ø02-5  
-0.000/  
-0.010

ø6-12  
-0.005/  
-0.015

ø16  
-0.010/  
-0.020

30° HELIX

CENTRE  
CUT

ø02-5  
15°  
SHANK  
ANGLE

<700  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

55-60  
HRC

60-65  
HRC

65-70  
HRC

INOX

AL

CU CuZn  
Gold PL

TI

CFK  
GFK

PLASTIC

GRAPHIT

Best. - Nr. / Order no.	d1	ER	L1	L2	L	D	Z
SHRN - 2002 - R0005 - 010 - STH	0,2	0,05	0,2	1,0	40	4	2
SHRN - 2002 - R0005 - 015 - STH				1,5			
SHRN - 2002 - R0005 - 020 - STH				2,0			
SHRN - 2003 - R0005 - 010 - STH	0,3	0,05	0,3	1,0	40	4	2
SHRN - 2003 - R0005 - 020 - STH				2,0			
SHRN - 2003 - R0005 - 030 - STH				3,0			
SHRN - 2003 - R0005 - 040 - STH				4,0			
SHRN - 2004 - R0005 - 010 - STH	0,4	0,05	0,4	1,0	40	4	2
SHRN - 2004 - R0005 - 020 - STH				2,0			
SHRN - 2004 - R0005 - 030 - STH				3,0			
SHRN - 2004 - R0005 - 040 - STH				4,0			
SHRN - 2004 - R0005 - 050 - STH				5,0			
SHRN - 2004 - R0005 - 060 - STH				6,0			
SHRN - 2004 - R001 - 010 - STH	0,4	0,10	0,4	1,0	40	4	2
SHRN - 2004 - R001 - 015 - STH				1,5			
SHRN - 2004 - R001 - 020 - STH				2,0			
SHRN - 2004 - R001 - 030 - STH				3,0			
SHRN - 2004 - R001 - 040 - STH				4,0			
SHRN - 2005 - R0005 - 010 - STH	0,5	0,05	0,5	1,0	45	4	2
SHRN - 2005 - R0005 - 015 - STH				1,5			
SHRN - 2005 - R0005 - 020 - STH				2,0			
SHRN - 2005 - R0005 - 025 - STH				2,5			
SHRN - 2005 - R0005 - 030 - STH				3,0			
SHRN - 2005 - R0005 - 040 - STH				4,0			
SHRN - 2005 - R0005 - 050 - STH				5,0			
SHRN - 2005 - R0005 - 060 - STH				6,0			
SHRN - 2005 - R0005 - 080 - STH				8,0			
SHRN - 2005 - R001 - 010 - STH				0,5			
SHRN - 2005 - R001 - 015 - STH	1,5						
SHRN - 2005 - R001 - 020 - STH	2,0						
SHRN - 2005 - R001 - 025 - STH	2,5						
SHRN - 2005 - R001 - 030 - STH	3,0						
SHRN - 2005 - R001 - 040 - STH	4,0						
SHRN - 2005 - R001 - 050 - STH	5,0						
SHRN - 2005 - R001 - 060 - STH	6,0						
SHRN - 2005 - R001 - 080 - STH	8,0						

Best. - Nr. / Order no.	d1	ER	L1	L2	L	D	Z	
SHRN - 2006 - R0005 - 020 - STH	0,6	0,05	0,6	2,0	45	4	2	
SHRN - 2006 - R0005 - 030 - STH				3,0				
SHRN - 2006 - R0005 - 040 - STH				4,0				
SHRN - 2006 - R0005 - 060 - STH				6,0				
SHRN - 2006 - R0005 - 080 - STH				8,0				
SHRN - 2006 - R0005 - 100 - STH				10,0				50
SHRN - 2006 - R001 - 020 - STH	0,6	0,10	0,6	2,0	45	4	2	
SHRN - 2006 - R001 - 030 - STH				3,0				
SHRN - 2006 - R001 - 040 - STH				4,0				
SHRN - 2006 - R001 - 060 - STH				6,0				
SHRN - 2006 - R001 - 080 - STH				8,0				
SHRN - 2006 - R001 - 100 - STH				10,0				50
SHRN - 2007 - R001 - 020 - STH	0,7	0,10	0,7	2,0	45	4	2	
SHRN - 2007 - R001 - 040 - STH				4,0				
SHRN - 2007 - R001 - 060 - STH				6,0				
SHRN - 2007 - R001 - 080 - STH				8,0				
SHRN - 2007 - R001 - 100 - STH				10,0				
SHRN - 2008 - R0005 - 020 - STH	0,8	0,05	0,8	2,0	45	4	2	
SHRN - 2008 - R0005 - 040 - STH				4,0				
SHRN - 2008 - R0005 - 060 - STH				6,0				
SHRN - 2008 - R0005 - 080 - STH				8,0				
SHRN - 2008 - R0005 - 100 - STH				10,0				50
SHRN - 2008 - R0005 - 120 - STH				12,0				
SHRN - 2008 - R001 - 020 - STH	0,8	0,10	0,8	2,0	45	4	2	
SHRN - 2008 - R001 - 040 - STH				4,0				
SHRN - 2008 - R001 - 060 - STH				6,0				
SHRN - 2008 - R001 - 080 - STH				8,0				
SHRN - 2008 - R001 - 100 - STH				10,0				50
SHRN - 2008 - R001 - 120 - STH				12,0				
SHRN - 2008 - R002 - 020 - STH	0,8	0,20	0,8	2,0	45	4	2	
SHRN - 2008 - R002 - 040 - STH				4,0				
SHRN - 2008 - R002 - 060 - STH				6,0				
SHRN - 2008 - R002 - 080 - STH				8,0				
SHRN - 2008 - R002 - 100 - STH				10,0				50
SHRN - 2008 - R002 - 120 - STH				12,0				
SHRN - 2010 - R0005 - 040 - STH	1,0	0,05	1,0	4,0	45	4	2	
SHRN - 2010 - R0005 - 060 - STH				6,0				
SHRN - 2010 - R0005 - 080 - STH				8,0				
SHRN - 2010 - R0005 - 100 - STH				10,0				50
SHRN - 2010 - R0005 - 120 - STH				12,0				
SHRN - 2010 - R0005 - 140 - STH				14,0				
SHRN - 2010 - R0005 - 160 - STH				16,0				
SHRN - 2010 - R001 - 040 - STH	1,0	0,10	1,0	4,0	45	4	2	
SHRN - 2010 - R001 - 060 - STH				6,0				
SHRN - 2010 - R001 - 080 - STH				8,0				
SHRN - 2010 - R001 - 100 - STH				10,0				50
SHRN - 2010 - R001 - 120 - STH				12,0				
SHRN - 2010 - R001 - 140 - STH				14,0				
SHRN - 2010 - R001 - 160 - STH				16,0				

Best. - Nr. / Order no.	d1	ER	L1	L2	L	D	Z
SHRN - 2010 - R002 - 040 - STH	1,0	0,20	1,0	4,0	45	4	2
SHRN - 2010 - R002 - 060 - STH				6,0			
SHRN - 2010 - R002 - 080 - STH				8,0			
SHRN - 2010 - R002 - 100 - STH				10,0			
SHRN - 2010 - R002 - 120 - STH				12,0			
SHRN - 2010 - R002 - 140 - STH				14,0			
SHRN - 2010 - R002 - 160 - STH				16,0			
SHRN - 2010 - R003 - 040 - STH	1,0	0,30	1,0	4,0	45	4	2
SHRN - 2010 - R003 - 060 - STH				6,0			
SHRN - 2010 - R003 - 080 - STH				8,0			
SHRN - 2010 - R003 - 100 - STH				10,0			
SHRN - 2010 - R003 - 120 - STH				12,0			
SHRN - 2010 - R003 - 140 - STH				14,0			
SHRN - 2010 - R003 - 160 - STH				16,0			
SHRN - 2012 - R001 - 040 - STH	1,2	0,10	1,2	4,0	45	4	2
SHRN - 2012 - R001 - 060 - STH				6,0			
SHRN - 2012 - R001 - 080 - STH				8,0			
SHRN - 2012 - R001 - 100 - STH				10,0			
SHRN - 2012 - R001 - 120 - STH				12,0			
SHRN - 2012 - R001 - 140 - STH				14,0			
SHRN - 2012 - R001 - 160 - STH				16,0			
SHRN - 2012 - R002 - 040 - STH	1,2	0,20	1,2	4,0	45	4	2
SHRN - 2012 - R002 - 060 - STH				6,0			
SHRN - 2012 - R002 - 080 - STH				8,0			
SHRN - 2012 - R002 - 100 - STH				10,0			
SHRN - 2012 - R002 - 120 - STH				12,0			
SHRN - 2012 - R002 - 140 - STH				14,0			
SHRN - 2012 - R002 - 160 - STH				16,0			
SHRN - 2012 - R003 - 040 - STH	1,2	0,30	1,2	4,0	45	4	2
SHRN - 2012 - R003 - 060 - STH				6,0			
SHRN - 2012 - R003 - 080 - STH				8,0			
SHRN - 2012 - R003 - 100 - STH				10,0			
SHRN - 2012 - R003 - 120 - STH				12,0			
SHRN - 2012 - R003 - 140 - STH				14,0			
SHRN - 2012 - R003 - 160 - STH				16,0			
SHRN - 2015 - R001 - 040 - STH	1,5	0,10	1,5	4,0	45	4	2
SHRN - 2015 - R001 - 060 - STH				6,0			
SHRN - 2015 - R001 - 080 - STH				8,0			
SHRN - 2015 - R001 - 100 - STH				10,0			
SHRN - 2015 - R001 - 120 - STH				12,0			
SHRN - 2015 - R001 - 140 - STH				14,0			
SHRN - 2015 - R001 - 160 - STH				16,0			
SHRN - 2015 - R001 - 200 - STH				20,0			
SHRN - 2015 - R001 - 220 - STH				22,0			
SHRN - 2015 - R002 - 040 - STH	1,5	0,20	1,5	4,0	45	4	2
SHRN - 2015 - R002 - 060 - STH				6,0			
SHRN - 2015 - R002 - 080 - STH				8,0			
SHRN - 2015 - R002 - 100 - STH				10,0			
SHRN - 2015 - R002 - 120 - STH				12,0			
SHRN - 2015 - R002 - 140 - STH				14,0			
SHRN - 2015 - R002 - 160 - STH				16,0			
SHRN - 2015 - R002 - 200 - STH				20,0			
SHRN - 2015 - R002 - 220 - STH				22,0			

Best. - Nr. / Order no.	d1	ER	L1	L2	L	D	Z
SHRN - 2015 - R003 - 040 - STH	1,5	0,30	1,5	4,0	45	4	2
SHRN - 2015 - R003 - 060 - STH				6,0			
SHRN - 2015 - R003 - 080 - STH				8,0			
SHRN - 2015 - R003 - 100 - STH				10,0	50		
SHRN - 2015 - R003 - 120 - STH				12,0			
SHRN - 2015 - R003 - 140 - STH				14,0			
SHRN - 2015 - R003 - 160 - STH				16,0			
SHRN - 2015 - R003 - 200 - STH				20,0			
SHRN - 2015 - R003 - 220 - STH				22,0	60		
SHRN - 2015 - R005 - 040 - STH				1,5	0,50		
SHRN - 2015 - R005 - 060 - STH	6,0						
SHRN - 2015 - R005 - 080 - STH	8,0						
SHRN - 2015 - R005 - 100 - STH	10,0	50					
SHRN - 2015 - R005 - 120 - STH	12,0						
SHRN - 2015 - R005 - 140 - STH	14,0						
SHRN - 2015 - R005 - 160 - STH	16,0						
SHRN - 2015 - R005 - 200 - STH	20,0						
SHRN - 2015 - R005 - 220 - STH	22,0	60					
SHRN - 2020 - R001 - 060 - STH	2,0	0,10	2,0			6,0	45
SHRN - 2020 - R001 - 080 - STH				8,0			
SHRN - 2020 - R001 - 100 - STH				10,0			
SHRN - 2020 - R001 - 120 - STH				12,0	50		
SHRN - 2020 - R001 - 140 - STH				14,0			
SHRN - 2020 - R001 - 160 - STH				16,0			
SHRN - 2020 - R001 - 200 - STH				20,0			
SHRN - 2020 - R001 - 250 - STH				25,0	60		
SHRN - 2020 - R001 - 300 - STH				30,0	70		
SHRN - 2020 - R002 - 060 - STH				2,0	0,20	2,0	6,0
SHRN - 2020 - R002 - 080 - STH	8,0						
SHRN - 2020 - R002 - 100 - STH	10,0						
SHRN - 2020 - R002 - 120 - STH	12,0	50					
SHRN - 2020 - R002 - 140 - STH	14,0						
SHRN - 2020 - R002 - 160 - STH	16,0						
SHRN - 2020 - R002 - 200 - STH	20,0						
SHRN - 2020 - R002 - 250 - STH	25,0	60					
SHRN - 2020 - R002 - 300 - STH	30,0	70					
SHRN - 2020 - R003 - 060 - STH	2,0	0,30	2,0				6,0
SHRN - 2020 - R003 - 080 - STH				8,0			
SHRN - 2020 - R003 - 100 - STH				10,0			
SHRN - 2020 - R003 - 120 - STH				12,0	50		
SHRN - 2020 - R003 - 140 - STH				14,0			
SHRN - 2020 - R003 - 160 - STH				16,0			
SHRN - 2020 - R003 - 200 - STH				20,0			
SHRN - 2020 - R003 - 250 - STH				25,0	60		
SHRN - 2020 - R003 - 300 - STH				30,0	70		
SHRN - 2020 - R005 - 060 - STH				2,0	0,50	2,0	6,0
SHRN - 2020 - R005 - 080 - STH	8,0						
SHRN - 2020 - R005 - 100 - STH	10,0	50					
SHRN - 2020 - R005 - 120 - STH	12,0						
SHRN - 2020 - R005 - 140 - STH	14,0						



Best. - Nr. / Order no.	d1	ER	L1	L2	L	D	Z
SHRN - 2020 - R005 - 160 - STH	2,0	0,50	2,0	16,0	50	4	2
SHRN - 2020 - R005 - 200 - STH				20,0			
SHRN - 2020 - R005 - 250 - STH				25,0			
SHRN - 2020 - R005 - 300 - STH				30,0			
SHRN - 2025 - R001 - 100 - STH	2,5	0,10	2,5	10,0	50	4	2
SHRN - 2025 - R001 - 160 - STH				16,0			
SHRN - 2025 - R001 - 200 - STH				20,0			
SHRN - 2025 - R001 - 250 - STH				25,0			
SHRN - 2025 - R001 - 300 - STH				30,0	70		
SHRN - 2025 - R002 - 100 - STH	2,5	0,20	2,5	10,0	50	4	2
SHRN - 2025 - R002 - 160 - STH				16,0			
SHRN - 2025 - R002 - 200 - STH				20,0			
SHRN - 2025 - R002 - 250 - STH				25,0			
SHRN - 2025 - R002 - 300 - STH				30,0	70		
SHRN - 2025 - R003 - 100 - STH	2,5	0,30	2,5	10,0	50	4	2
SHRN - 2025 - R003 - 160 - STH				16,0			
SHRN - 2025 - R003 - 200 - STH				20,0			
SHRN - 2025 - R003 - 250 - STH				25,0			
SHRN - 2025 - R003 - 300 - STH				30,0	70		
SHRN - 2025 - R005 - 100 - STH	2,5	0,50	2,5	10,0	50	4	2
SHRN - 2025 - R005 - 160 - STH				16,0			
SHRN - 2025 - R005 - 200 - STH				20,0			
SHRN - 2025 - R005 - 250 - STH				25,0			
SHRN - 2025 - R005 - 300 - STH				30,0	70		
SHRN - 2030 - R001 - 100 - STH	3,0	0,10	3,0	10,0	50	6	2
SHRN - 2030 - R001 - 120 - STH				12,0			
SHRN - 2030 - R001 - 160 - STH				16,0			
SHRN - 2030 - R001 - 200 - STH				20,0			
SHRN - 2030 - R001 - 250 - STH				25,0			
SHRN - 2030 - R001 - 300 - STH				30,0			
SHRN - 2030 - R001 - 350 - STH				35,0			
SHRN - 2030 - R001 - 400 - STH	40,0						
SHRN - 2030 - R002 - 100 - STH	3,0	0,20	3,0	10,0	50	6	2
SHRN - 2030 - R002 - 120 - STH				12,0			
SHRN - 2030 - R002 - 160 - STH				16,0			
SHRN - 2030 - R002 - 200 - STH				20,0			
SHRN - 2030 - R002 - 250 - STH				25,0			
SHRN - 2030 - R002 - 300 - STH				30,0			
SHRN - 2030 - R002 - 350 - STH				35,0			
SHRN - 2030 - R002 - 400 - STH	40,0						
SHRN - 2030 - R003 - 100 - STH	3,0	0,30	3,0	10,0	50	6	2
SHRN - 2030 - R003 - 120 - STH				12,0			
SHRN - 2030 - R003 - 160 - STH				16,0			
SHRN - 2030 - R003 - 200 - STH				20,0			
SHRN - 2030 - R003 - 250 - STH				25,0			
SHRN - 2030 - R003 - 300 - STH				30,0			
SHRN - 2030 - R003 - 350 - STH				35,0			
SHRN - 2030 - R003 - 400 - STH	40,0						

Best. - Nr. / Order no.	d1	ER	L1	L2	L	D	Z
SHRN - 2030 - R005 - 100 - STH	3,0	0,50	3,0	10,0	50	6	2
SHRN - 2030 - R005 - 120 - STH				12,0	55		
SHRN - 2030 - R005 - 160 - STH				16,0			
SHRN - 2030 - R005 - 200 - STH				20,0	60		
SHRN - 2030 - R005 - 250 - STH				25,0	65		
SHRN - 2030 - R005 - 300 - STH				30,0	70		
SHRN - 2030 - R005 - 350 - STH				35,0	75		
SHRN - 2030 - R005 - 400 - STH				40,0	80		
SHRN - 2030 - R010 - 100 - STH	3,0	1,00	3,0	10,0	50	6	2
SHRN - 2030 - R010 - 120 - STH				12,0	55		
SHRN - 2030 - R010 - 160 - STH				16,0			
SHRN - 2030 - R010 - 200 - STH				20,0	60		
SHRN - 2030 - R010 - 250 - STH				25,0	65		
SHRN - 2030 - R010 - 300 - STH				30,0	70		
SHRN - 2030 - R010 - 350 - STH				35,0	75		
SHRN - 2030 - R010 - 400 - STH				40,0	80		
SHRN - 2040 - R001 - 120 - STH	4,0	0,10	4,0	12,0	55	6	2
SHRN - 2040 - R001 - 160 - STH				16,0			
SHRN - 2040 - R001 - 200 - STH				20,0	60		
SHRN - 2040 - R001 - 250 - STH				25,0	65		
SHRN - 2040 - R001 - 300 - STH				30,0	70		
SHRN - 2040 - R001 - 350 - STH				35,0	75		
SHRN - 2040 - R001 - 400 - STH				40,0	80		
SHRN - 2040 - R001 - 450 - STH				45,0	90		
SHRN - 2040 - R001 - 500 - STH	50,0	100					
SHRN - 2040 - R002 - 120 - STH	4,0	0,20	4,0	12,0	55	6	2
SHRN - 2040 - R002 - 160 - STH				16,0			
SHRN - 2040 - R002 - 200 - STH				20,0	60		
SHRN - 2040 - R002 - 250 - STH				25,0	65		
SHRN - 2040 - R002 - 300 - STH				30,0	70		
SHRN - 2040 - R002 - 350 - STH				35,0	75		
SHRN - 2040 - R002 - 400 - STH				40,0	80		
SHRN - 2040 - R002 - 450 - STH				45,0	90		
SHRN - 2040 - R002 - 500 - STH	50,0	100					
SHRN - 2040 - R003 - 120 - STH	4,0	0,30	4,0	12,0	55	6	2
SHRN - 2040 - R003 - 160 - STH				16,0			
SHRN - 2040 - R003 - 200 - STH				20,0	60		
SHRN - 2040 - R003 - 250 - STH				25,0	65		
SHRN - 2040 - R003 - 300 - STH				30,0	70		
SHRN - 2040 - R003 - 350 - STH				35,0	75		
SHRN - 2040 - R003 - 400 - STH				40,0	80		
SHRN - 2040 - R003 - 450 - STH				45,0	90		
SHRN - 2040 - R003 - 500 - STH	50,0	100					
SHRN - 2040 - R005 - 120 - STH	4,0	0,50	4,0	12,0	55	6	2
SHRN - 2040 - R005 - 160 - STH				16,0			
SHRN - 2040 - R005 - 200 - STH				20,0	60		
SHRN - 2040 - R005 - 250 - STH				25,0	65		
SHRN - 2040 - R005 - 300 - STH				30,0	70		
SHRN - 2040 - R005 - 350 - STH				35,0	75		
SHRN - 2040 - R005 - 400 - STH				40,0	80		
SHRN - 2040 - R005 - 450 - STH				45,0	90		
SHRN - 2040 - R005 - 500 - STH	50,0	100					

Best. - Nr. / Order no.	d1	ER	L1	L2	L	D	Z
SHRN - 2040 - R010 - 120 - STH	4,0	1,00	4,0	12,0	55	6	2
SHRN - 2040 - R010 - 160 - STH				16,0			
SHRN - 2040 - R010 - 200 - STH				20,0			
SHRN - 2040 - R010 - 250 - STH				25,0			
SHRN - 2040 - R010 - 300 - STH				30,0			
SHRN - 2040 - R010 - 350 - STH				35,0			
SHRN - 2040 - R010 - 400 - STH				40,0			
SHRN - 2040 - R010 - 450 - STH				45,0			
SHRN - 2040 - R010 - 500 - STH				50,0			
SHRN - 2050 - R002 - 250 - STH	5,0	0,20	6,0	25,0	70	6	2
SHRN - 2050 - R002 - 400 - STH				40,0			
SHRN - 2050 - R002 - 500 - STH				50,0			
SHRN - 2050 - R005 - 250 - STH	5,0	0,50	6,0	25,0	70	6	2
SHRN - 2050 - R005 - 400 - STH				40,0			
SHRN - 2050 - R005 - 500 - STH				50,0			
SHRN - 2050 - R010 - 250 - STH	5,0	1,00	6,0	25,0	70	6	2
SHRN - 2050 - R010 - 400 - STH				40,0			
SHRN - 2050 - R010 - 500 - STH				50,0			
SHRN - 2060 - R001 - 200 - STH <b>NEW!</b>	6,0	0,10	7,0	20,0	60	6	2
SHRN - 2060 - R001 - 400 - STH				40,0			
SHRN - 2060 - R002 - 200 - STH <b>NEW!</b>	6,0	0,20	7,0	20,0	60	6	2
SHRN - 2060 - R002 - 400 - STH				40,0			
SHRN - 2060 - R002 - 600 - STH				60,0			
SHRN - 2060 - R003 - 200 - STH <b>NEW!</b>	6,0	0,30	7,0	20,0	60	6	2
SHRN - 2060 - R003 - 400 - STH				40,0			
SHRN - 2060 - R005 - 200 - STH	6,0	0,50	7,0	20,0	60	6	2
SHRN - 2060 - R005 - 400 - STH				40,0			
SHRN - 2060 - R005 - 600 - STH <b>NEW!</b>				60,0			
SHRN - 2060 - R010 - 200 - STH	6,0	1,00	7,0	20,0	60	6	2
SHRN - 2060 - R010 - 400 - STH				40,0			
SHRN - 2060 - R010 - 600 - STH				60,0			
SHRN - 2080 - R002 - 220 - STH	8,0	0,20	9,0	22,0	65	8	2
SHRN - 2080 - R002 - 400 - STH				40,0			
SHRN - 2080 - R003 - 220 - STH	8,0	0,30	9,0	22,0	65	8	2
SHRN - 2080 - R003 - 400 - STH				40,0			
SHRN - 2080 - R005 - 400 - STH	8,0	0,50	9,0	40,0	100	8	2
SHRN - 2080 - R005 - 600 - STH				60,0			
SHRN - 2080 - R010 - 400 - STH	8,0	1,00	9,0	40,0	100	8	2
SHRN - 2080 - R010 - 600 - STH				60,0			
SHRN - 2100 - R002 - 450 - STH	10,0	0,20	11,0	45,0	65	8	2
SHRN - 2100 - R002 - 600 - STH				60,0			
SHRN - 2100 - R005 - 450 - STH	10,0	0,50	11,0	45,0	65	8	2
SHRN - 2100 - R005 - 600 - STH				60,0			
SHRN - 2100 - R010 - 450 - STH	10,0	1,00	11,0	45,0	100	8	2
SHRN - 2100 - R010 - 600 - STH				60,0			
SHRN - 2120 - R005 - 500 - STH	12,0	0,50	13,0	50,0	110	12	2
SHRN - 2120 - R005 - 700 - STH				70,0			
SHRN - 2120 - R010 - 500 - STH	12,0	1,00	13,0	50,0	110	12	2
SHRN - 2120 - R010 - 700 - STH				70,0			

# Hard Line: VHM-Torusfräser 4-Schneider für Schrupp-, Vorschlicht- und Schlicht-Einsatz

Hard Line: Solid carbide end mill with corner radius 4-cutter for roughing, semi-finishing and finishing applications

SHRN-4

h5

R0020.5  
ER  
±0,005

R1-1.5  
ER  
±0,01

R23  
ER  
±0,015

STH  
COATING

ø1-5  
-0.000/  
-0.010

ø6-12  
-0.005/  
-0.015

30° HELIX

CENTRE  
CUT

ø0.8-5  
15°  
SHANK  
ANGLE

<700  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

55-60  
HRC

60-65  
HRC

65-70  
HRC

INOX

AL

CU CuZn  
Gold PL

TI

CFK  
GFK

PLASTIC

GRAPHIT

Best. - Nr. / Order no.	d1	ER	L1	L2	L	D	Z
SHRN - 4008 - R0002 - 020 - STH	0,8	0,02	0,8	2,0	45	4	4
SHRN - 4008 - R0002 - 040 - STH				4,0			
SHRN - 4008 - R0002 - 060 - STH				6,0			
SHRN - 4008 - R0002 - 080 - STH				8,0			
SHRN - 4008 - R0002 - 100 - STH				10,0			
SHRN - 4008 - R0002 - 120 - STH				12,0			
SHRN - 4008 - R0005 - 020 - STH	0,8	0,05	0,8	2,0	45	4	4
SHRN - 4008 - R0005 - 040 - STH				4,0			
SHRN - 4008 - R0005 - 060 - STH				6,0			
SHRN - 4008 - R0005 - 080 - STH				8,0			
SHRN - 4008 - R0005 - 100 - STH				10,0			
SHRN - 4008 - R0005 - 120 - STH				12,0			
SHRN - 4008 - R001 - 020 - STH	0,8	0,10	0,8	2,0	45	4	4
SHRN - 4008 - R001 - 040 - STH				4,0			
SHRN - 4008 - R001 - 060 - STH				6,0			
SHRN - 4008 - R001 - 080 - STH				8,0			
SHRN - 4008 - R001 - 100 - STH				10,0			
SHRN - 4008 - R001 - 120 - STH				12,0			
SHRN - 4010 - R0002 - 040 - STH	1,0	0,02	1,0	4,0	45	4	4
SHRN - 4010 - R0002 - 060 - STH				6,0			
SHRN - 4010 - R0002 - 080 - STH				8,0			
SHRN - 4010 - R0002 - 100 - STH				10,0			
SHRN - 4010 - R0002 - 120 - STH				12,0			
SHRN - 4010 - R0002 - 140 - STH				14,0			
SHRN - 4010 - R0002 - 160 - STH	16,0						
SHRN - 4010 - R0005 - 040 - STH	1,0	0,05	1,0	4,0	45	4	4
SHRN - 4010 - R0005 - 060 - STH				6,0			
SHRN - 4010 - R0005 - 080 - STH				8,0			
SHRN - 4010 - R0005 - 100 - STH				10,0			
SHRN - 4010 - R0005 - 120 - STH				12,0			
SHRN - 4010 - R0005 - 140 - STH				14,0			
SHRN - 4010 - R0005 - 160 - STH	16,0						
SHRN - 4010 - R001 - 040 - STH	1,0	0,10	1,0	4,0	45	4	4
SHRN - 4010 - R001 - 060 - STH				6,0			
SHRN - 4010 - R001 - 080 - STH				8,0			
SHRN - 4010 - R001 - 100 - STH				10,0			
SHRN - 4010 - R001 - 120 - STH				12,0			
SHRN - 4010 - R001 - 140 - STH				14,0			
SHRN - 4010 - R001 - 160 - STH	16,0						

Best. - Nr. / Order no.	d1	ER	L1	L2	L	D	Z
SHRN - 4010 - R002 - 040 - STH	1,0	0,20	1,0	4,0	45	4	4
SHRN - 4010 - R002 - 060 - STH				6,0			
SHRN - 4010 - R002 - 080 - STH				8,0			
SHRN - 4010 - R002 - 100 - STH				10,0	50		
SHRN - 4010 - R002 - 120 - STH				12,0			
SHRN - 4010 - R002 - 140 - STH				14,0			
SHRN - 4010 - R002 - 160 - STH				16,0			
SHRN - 4010 - R003 - 040 - STH	1,0	0,30	1,0	4,0	45	4	4
SHRN - 4010 - R003 - 060 - STH				6,0			
SHRN - 4010 - R003 - 080 - STH				8,0			
SHRN - 4010 - R003 - 100 - STH				10,0	50		
SHRN - 4010 - R003 - 120 - STH				12,0			
SHRN - 4010 - R003 - 140 - STH				14,0			
SHRN - 4010 - R003 - 160 - STH				16,0			
SHRN - 4012 - R0002 - 040 - STH	1,2	0,02	1,2	4,0	45	4	4
SHRN - 4012 - R0002 - 060 - STH				6,0			
SHRN - 4012 - R0002 - 080 - STH				8,0			
SHRN - 4012 - R0002 - 100 - STH				10,0	50		
SHRN - 4012 - R0002 - 120 - STH				12,0			
SHRN - 4012 - R0002 - 140 - STH				14,0			
SHRN - 4012 - R0002 - 160 - STH				16,0			
SHRN - 4012 - R0005 - 040 - STH	1,2	0,05	1,2	4,0	45	4	4
SHRN - 4012 - R0005 - 060 - STH				6,0			
SHRN - 4012 - R0005 - 080 - STH				8,0			
SHRN - 4012 - R0005 - 100 - STH				10,0	50		
SHRN - 4012 - R0005 - 120 - STH				12,0			
SHRN - 4012 - R0005 - 140 - STH				14,0			
SHRN - 4012 - R0005 - 160 - STH				16,0			
SHRN - 4012 - R001 - 040 - STH	1,2	0,10	1,2	4,0	45	4	4
SHRN - 4012 - R001 - 060 - STH				6,0			
SHRN - 4012 - R001 - 080 - STH				8,0			
SHRN - 4012 - R001 - 100 - STH				10,0	50		
SHRN - 4012 - R001 - 120 - STH				12,0			
SHRN - 4012 - R001 - 140 - STH				14,0			
SHRN - 4012 - R001 - 160 - STH				16,0			
SHRN - 4012 - R002 - 040 - STH	1,2	0,20	1,2	4,0	45	4	4
SHRN - 4012 - R002 - 060 - STH				6,0			
SHRN - 4012 - R002 - 080 - STH				8,0			
SHRN - 4012 - R002 - 100 - STH				10,0	50		
SHRN - 4012 - R002 - 120 - STH				12,0			
SHRN - 4012 - R002 - 140 - STH				14,0			
SHRN - 4012 - R002 - 160 - STH				16,0			
SHRN - 4012 - R003 - 040 - STH	1,2	0,30	1,2	4,0	45	4	4
SHRN - 4012 - R003 - 060 - STH				6,0			
SHRN - 4012 - R003 - 080 - STH				8,0			
SHRN - 4012 - R003 - 100 - STH				10,0	50		
SHRN - 4012 - R003 - 120 - STH				12,0			
SHRN - 4012 - R003 - 140 - STH				14,0			
SHRN - 4012 - R003 - 160 - STH				16,0			

Best. - Nr. / Order no.	d1	ER	L1	L2	L	D	Z
SHRN - 4015 - R0002 - 060 - STH	1,5	0,02	1,5	6,0	45	4	4
SHRN - 4015 - R0002 - 080 - STH				8,0			
SHRN - 4015 - R0002 - 100 - STH				10,0			
SHRN - 4015 - R0002 - 120 - STH				12,0	50		
SHRN - 4015 - R0002 - 140 - STH				14,0			
SHRN - 4015 - R0002 - 160 - STH				16,0			
SHRN - 4015 - R0002 - 200 - STH				20,0			
SHRN - 4015 - R0005 - 060 - STH	1,5	0,05	1,5	6,0	45	4	4
SHRN - 4015 - R0005 - 080 - STH				8,0			
SHRN - 4015 - R0005 - 100 - STH				10,0			
SHRN - 4015 - R0005 - 120 - STH				12,0	50		
SHRN - 4015 - R0005 - 140 - STH				14,0			
SHRN - 4015 - R0005 - 160 - STH				16,0			
SHRN - 4015 - R0005 - 200 - STH				20,0			
SHRN - 4015 - R001 - 060 - STH	1,5	0,10	1,5	6,0	45	4	4
SHRN - 4015 - R001 - 080 - STH				8,0			
SHRN - 4015 - R001 - 100 - STH				10,0			
SHRN - 4015 - R001 - 120 - STH				12,0	50		
SHRN - 4015 - R001 - 140 - STH				14,0			
SHRN - 4015 - R001 - 160 - STH				16,0			
SHRN - 4015 - R001 - 200 - STH				20,0			
SHRN - 4015 - R002 - 060 - STH	1,5	0,20	1,5	6,0	45	4	4
SHRN - 4015 - R002 - 080 - STH				8,0			
SHRN - 4015 - R002 - 100 - STH				10,0			
SHRN - 4015 - R002 - 120 - STH				12,0	50		
SHRN - 4015 - R002 - 140 - STH				14,0			
SHRN - 4015 - R002 - 160 - STH				16,0			
SHRN - 4015 - R002 - 200 - STH				20,0			
SHRN - 4015 - R003 - 060 - STH	1,5	0,30	1,5	6,0	45	4	4
SHRN - 4015 - R003 - 080 - STH				8,0			
SHRN - 4015 - R003 - 100 - STH				10,0			
SHRN - 4015 - R003 - 120 - STH				12,0	50		
SHRN - 4015 - R003 - 140 - STH				14,0			
SHRN - 4015 - R003 - 160 - STH				16,0			
SHRN - 4015 - R003 - 200 - STH				20,0			
SHRN - 4015 - R005 - 060 - STH	1,5	0,50	1,5	6,0	45	4	4
SHRN - 4015 - R005 - 080 - STH				8,0			
SHRN - 4015 - R005 - 100 - STH				10,0			
SHRN - 4015 - R005 - 120 - STH				12,0	50		
SHRN - 4015 - R005 - 140 - STH				14,0			
SHRN - 4015 - R005 - 160 - STH				16,0			
SHRN - 4015 - R005 - 200 - STH				20,0			
SHRN - 4020 - R0002 - 060 - STH	2,0	0,02	2,0	6,0	45	4	4
SHRN - 4020 - R0002 - 080 - STH				8,0			
SHRN - 4020 - R0002 - 100 - STH				10,0			
SHRN - 4020 - R0002 - 120 - STH				12,0	50		
SHRN - 4020 - R0002 - 140 - STH				14,0			
SHRN - 4020 - R0002 - 160 - STH				16,0			
SHRN - 4020 - R0002 - 180 - STH				18,0			
SHRN - 4020 - R0002 - 200 - STH				20,0	60		
SHRN - 4020 - R0002 - 220 - STH				22,0			
SHRN - 4020 - R0002 - 250 - STH				25,0			
SHRN - 4020 - R0002 - 300 - STH				30,0			

Best. - Nr. / Order no.	d1	ER	L1	L2	L	D	Z
SHRN - 4020 - R0005 - 060 - STH	2,0	0,05	2,0	6,0	45	4	4
SHRN - 4020 - R0005 - 080 - STH				8,0			
SHRN - 4020 - R0005 - 100 - STH				10,0			
SHRN - 4020 - R0005 - 120 - STH				12,0			
SHRN - 4020 - R0005 - 140 - STH				14,0			
SHRN - 4020 - R0005 - 160 - STH				16,0	50		
SHRN - 4020 - R0005 - 180 - STH				18,0			
SHRN - 4020 - R0005 - 200 - STH				20,0			
SHRN - 4020 - R0005 - 220 - STH				22,0	60		
SHRN - 4020 - R0005 - 250 - STH				25,0			
SHRN - 4020 - R0005 - 300 - STH				30,0			
SHRN - 4020 - R001 - 060 - STH				2,0	0,10		
SHRN - 4020 - R001 - 080 - STH	8,0						
SHRN - 4020 - R001 - 100 - STH	10,0						
SHRN - 4020 - R001 - 120 - STH	12,0						
SHRN - 4020 - R001 - 140 - STH	14,0						
SHRN - 4020 - R001 - 160 - STH	16,0	50					
SHRN - 4020 - R001 - 180 - STH	18,0						
SHRN - 4020 - R001 - 200 - STH	20,0						
SHRN - 4020 - R001 - 220 - STH	22,0	60					
SHRN - 4020 - R001 - 250 - STH	25,0						
SHRN - 4020 - R001 - 300 - STH	30,0		70				
SHRN - 4020 - R002 - 060 - STH	2,0	0,20	2,0			6,0	45
SHRN - 4020 - R002 - 080 - STH				8,0			
SHRN - 4020 - R002 - 100 - STH				10,0			
SHRN - 4020 - R002 - 120 - STH				12,0			
SHRN - 4020 - R002 - 140 - STH				14,0			
SHRN - 4020 - R002 - 160 - STH				16,0	50		
SHRN - 4020 - R002 - 180 - STH				18,0			
SHRN - 4020 - R002 - 200 - STH				20,0			
SHRN - 4020 - R002 - 220 - STH				22,0	60		
SHRN - 4020 - R002 - 250 - STH				25,0			
SHRN - 4020 - R002 - 300 - STH				30,0		70	
SHRN - 4020 - R003 - 060 - STH				2,0	0,30	2,0	6,0
SHRN - 4020 - R003 - 080 - STH	8,0						
SHRN - 4020 - R003 - 100 - STH	10,0						
SHRN - 4020 - R003 - 120 - STH	12,0						
SHRN - 4020 - R003 - 140 - STH	14,0						
SHRN - 4020 - R003 - 160 - STH	16,0	50					
SHRN - 4020 - R003 - 180 - STH	18,0						
SHRN - 4020 - R003 - 200 - STH	20,0						
SHRN - 4020 - R003 - 220 - STH	22,0	60					
SHRN - 4020 - R003 - 250 - STH	25,0						
SHRN - 4020 - R003 - 300 - STH	30,0		70				
SHRN - 4020 - R005 - 060 - STH	2,0	0,50	2,0				6,0
SHRN - 4020 - R005 - 080 - STH				8,0			
SHRN - 4020 - R005 - 100 - STH				10,0			
SHRN - 4020 - R005 - 120 - STH				12,0	50		
SHRN - 4020 - R005 - 140 - STH				14,0			
SHRN - 4020 - R005 - 160 - STH				16,0			

Best. - Nr. / Order no.	d1	ER	L1	L2	L	D	Z
SHRN - 4020 - R005 - 180 - STH	2,0	0,50	2,0	18,0	50	4	4
SHRN - 4020 - R005 - 200 - STH				20,0			
SHRN - 4020 - R005 - 220 - STH				22,0			
SHRN - 4020 - R005 - 250 - STH				25,0			
SHRN - 4020 - R005 - 300 - STH				30,0			
SHRN - 4025 - R001 - 100 - STH	2,5	0,10	2,5	10,0	50	4	4
SHRN - 4025 - R001 - 120 - STH				12,0			
SHRN - 4025 - R001 - 160 - STH				16,0			
SHRN - 4025 - R001 - 200 - STH				20,0			
SHRN - 4025 - R001 - 250 - STH				25,0			
SHRN - 4025 - R001 - 300 - STH	30,0						
SHRN - 4025 - R002 - 100 - STH	2,5	0,20	2,5	10,0	50	4	4
SHRN - 4025 - R002 - 120 - STH				12,0			
SHRN - 4025 - R002 - 160 - STH				16,0			
SHRN - 4025 - R002 - 200 - STH				20,0			
SHRN - 4025 - R002 - 250 - STH				25,0			
SHRN - 4025 - R002 - 300 - STH	30,0						
SHRN - 4025 - R003 - 100 - STH	2,5	0,30	2,5	10,0	50	4	4
SHRN - 4025 - R003 - 120 - STH				12,0			
SHRN - 4025 - R003 - 160 - STH				16,0			
SHRN - 4025 - R003 - 200 - STH				20,0			
SHRN - 4025 - R003 - 250 - STH				25,0			
SHRN - 4025 - R003 - 300 - STH	30,0						
SHRN - 4025 - R005 - 100 - STH	2,5	0,50	2,5	10,0	50	4	4
SHRN - 4025 - R005 - 120 - STH				12,0			
SHRN - 4025 - R005 - 160 - STH				16,0			
SHRN - 4025 - R005 - 200 - STH				20,0			
SHRN - 4025 - R005 - 250 - STH				25,0			
SHRN - 4025 - R005 - 300 - STH	30,0						
SHRN - 4030 - R001 - 100 - STH	3,0	0,10	3,0	10,0	50	6	4
SHRN - 4030 - R001 - 120 - STH				12,0			
SHRN - 4030 - R001 - 160 - STH				16,0			
SHRN - 4030 - R001 - 200 - STH				20,0			
SHRN - 4030 - R001 - 250 - STH				25,0			
SHRN - 4030 - R001 - 300 - STH				30,0			
SHRN - 4030 - R001 - 350 - STH				35,0			
SHRN - 4030 - R001 - 400 - STH	40,0						
SHRN - 4030 - R002 - 100 - STH	3,0	0,20	3,0	10,0	50	6	4
SHRN - 4030 - R002 - 120 - STH				12,0			
SHRN - 4030 - R002 - 160 - STH				16,0			
SHRN - 4030 - R002 - 200 - STH				20,0			
SHRN - 4030 - R002 - 250 - STH				25,0			
SHRN - 4030 - R002 - 300 - STH				30,0			
SHRN - 4030 - R002 - 350 - STH				35,0			
SHRN - 4030 - R002 - 400 - STH	40,0						



Best. - Nr. / Order no.	d1	ER	L1	L2	L	D	Z
SHRN - 4030 - R003 - 100 - STH	3,0	0,30	3,0	10,0	50	6	4
SHRN - 4030 - R003 - 120 - STH				12,0			
SHRN - 4030 - R003 - 160 - STH				16,0			
SHRN - 4030 - R003 - 200 - STH				20,0			
SHRN - 4030 - R003 - 250 - STH				25,0			
SHRN - 4030 - R003 - 300 - STH				30,0			
SHRN - 4030 - R003 - 350 - STH				35,0			
SHRN - 4030 - R003 - 400 - STH				40,0			
SHRN - 4030 - R005 - 100 - STH				3,0			
SHRN - 4030 - R005 - 120 - STH	12,0						
SHRN - 4030 - R005 - 160 - STH	16,0						
SHRN - 4030 - R005 - 200 - STH	20,0						
SHRN - 4030 - R005 - 250 - STH	25,0						
SHRN - 4030 - R005 - 300 - STH	30,0						
SHRN - 4030 - R005 - 350 - STH	35,0						
SHRN - 4030 - R005 - 400 - STH	40,0						
SHRN - 4030 - R010 - 100 - STH	3,0	1,00	3,0		10,0	50	6
SHRN - 4030 - R010 - 120 - STH				12,0			
SHRN - 4030 - R010 - 160 - STH				16,0			
SHRN - 4030 - R010 - 200 - STH				20,0			
SHRN - 4030 - R010 - 250 - STH				25,0			
SHRN - 4030 - R010 - 300 - STH				30,0			
SHRN - 4030 - R010 - 350 - STH				35,0			
SHRN - 4030 - R010 - 400 - STH				40,0			
SHRN - 4040 - R001 - 130 - STH				4,0	0,10		
SHRN - 4040 - R001 - 160 - STH	16,0						
SHRN - 4040 - R001 - 200 - STH	20,0						
SHRN - 4040 - R001 - 250 - STH	25,0						
SHRN - 4040 - R001 - 300 - STH	30,0						
SHRN - 4040 - R001 - 350 - STH	35,0						
SHRN - 4040 - R001 - 400 - STH	40,0						
SHRN - 4040 - R001 - 450 - STH	45,0						
SHRN - 4040 - R001 - 500 - STH	50,0						
SHRN - 4040 - R001 - 600 - STH	60,0						
SHRN - 4040 - R002 - 130 - STH	4,0	0,20	4,0	13,0	55	6	4
SHRN - 4040 - R002 - 160 - STH				16,0			
SHRN - 4040 - R002 - 200 - STH				20,0			
SHRN - 4040 - R002 - 250 - STH				25,0			
SHRN - 4040 - R002 - 300 - STH				30,0			
SHRN - 4040 - R002 - 350 - STH				35,0			
SHRN - 4040 - R002 - 400 - STH				40,0			
SHRN - 4040 - R002 - 450 - STH				45,0			
SHRN - 4040 - R002 - 500 - STH				50,0			
SHRN - 4040 - R002 - 600 - STH				60,0			

Best. - Nr. / Order no.	d1	ER	L1	L2	L	D	Z
SHRN - 4040 - R003 - 130 - STH	4,0	0,30	4,0	13,0	55	6	4
SHRN - 4040 - R003 - 160 - STH				16,0			
SHRN - 4040 - R003 - 200 - STH				20,0			
SHRN - 4040 - R003 - 250 - STH				25,0			
SHRN - 4040 - R003 - 300 - STH				30,0			
SHRN - 4040 - R003 - 350 - STH				35,0			
SHRN - 4040 - R003 - 400 - STH				40,0			
SHRN - 4040 - R003 - 450 - STH				45,0			
SHRN - 4040 - R003 - 500 - STH				50,0			
SHRN - 4040 - R003 - 600 - STH				60,0			
SHRN - 4040 - R005 - 130 - STH				4,0			
SHRN - 4040 - R005 - 160 - STH	16,0						
SHRN - 4040 - R005 - 200 - STH	20,0						
SHRN - 4040 - R005 - 250 - STH	25,0						
SHRN - 4040 - R005 - 300 - STH	30,0						
SHRN - 4040 - R005 - 350 - STH	35,0						
SHRN - 4040 - R005 - 400 - STH	40,0						
SHRN - 4040 - R005 - 450 - STH	45,0						
SHRN - 4040 - R005 - 500 - STH	50,0						
SHRN - 4040 - R005 - 600 - STH	60,0						
SHRN - 4040 - R010 - 130 - STH	4,0	1,00	4,0	13,0	55	6	4
SHRN - 4040 - R010 - 160 - STH				16,0			
SHRN - 4040 - R010 - 200 - STH				20,0			
SHRN - 4040 - R010 - 250 - STH				25,0			
SHRN - 4040 - R010 - 300 - STH				30,0			
SHRN - 4040 - R010 - 350 - STH				35,0			
SHRN - 4040 - R010 - 400 - STH				40,0			
SHRN - 4040 - R010 - 450 - STH				45,0			
SHRN - 4040 - R010 - 500 - STH				50,0			
SHRN - 4040 - R010 - 600 - STH				60,0			
SHRN - 4050 - R001 - 160 - STH	5,0	0,10	5,0	16,0	60	6	4
SHRN - 4050 - R001 - 300 - STH				30,0			
SHRN - 4050 - R001 - 400 - STH				40,0			
SHRN - 4050 - R001 - 500 - STH				50,0			
SHRN - 4050 - R002 - 160 - STH	5,0	0,20	5,0	16,0	60	6	4
SHRN - 4050 - R002 - 300 - STH				30,0			
SHRN - 4050 - R002 - 400 - STH				40,0			
SHRN - 4050 - R002 - 500 - STH				50,0			
SHRN - 4050 - R003 - 160 - STH	5,0	0,30	5,0	16,0	60	6	4
SHRN - 4050 - R003 - 300 - STH				30,0			
SHRN - 4050 - R003 - 400 - STH				40,0			
SHRN - 4050 - R003 - 500 - STH				50,0			
SHRN - 4050 - R005 - 160 - STH	5,0	0,50	5,0	16,0	60	6	4
SHRN - 4050 - R005 - 300 - STH				30,0			
SHRN - 4050 - R005 - 400 - STH				40,0			
SHRN - 4050 - R005 - 500 - STH				50,0			
SHRN - 4050 - R005 - 600 - STH				60,0			

Best. - Nr. / Order no.	d1	ER	L1	L2	L	D	Z
SHRN - 4050 - R010 - 160 - STH	5,0	1,00	5,0	16,0	60	6	4
SHRN - 4050 - R010 - 300 - STH				30,0	70		
SHRN - 4050 - R010 - 400 - STH				40,0	80		
SHRN - 4050 - R010 - 500 - STH				50,0	100		
SHRN - 4050 - R010 - 600 - STH				60,0	110		
SHRN - 4060 - R001 - 200 - STH	6,0	0,10	7,0	20,0	60	6	4
SHRN - 4060 - R001 - 300 - STH <b>NEW!</b>				30,0	80		
SHRN - 4060 - R001 - 400 - STH				40,0	100		
SHRN - 4060 - R001 - 500 - STH				50,0	110		
SHRN - 4060 - R002 - 200 - STH	6,0	0,20	7,0	20,0	60	6	4
SHRN - 4060 - R002 - 300 - STH <b>NEW!</b>				30,0	80		
SHRN - 4060 - R002 - 400 - STH				40,0	100		
SHRN - 4060 - R002 - 500 - STH				50,0	110		
SHRN - 4060 - R002 - 600 - STH				60,0	110		
SHRN - 4060 - R003 - 200 - STH	6,0	0,30	7,0	20,0	60	6	4
SHRN - 4060 - R003 - 300 - STH <b>NEW!</b>				30,0	80		
SHRN - 4060 - R003 - 400 - STH				40,0	100		
SHRN - 4060 - R003 - 500 - STH				50,0	110		
SHRN - 4060 - R005 - 200 - STH	6,0	0,50	7,0	20,0	60	6	4
SHRN - 4060 - R005 - 300 - STH <b>NEW!</b>				30,0	80		
SHRN - 4060 - R005 - 400 - STH				40,0	100		
SHRN - 4060 - R005 - 500 - STH				50,0	110		
SHRN - 4060 - R005 - 600 - STH				60,0	110		
SHRN - 4060 - R010 - 200 - STH	6,0	1,00	7,0	20,0	60	6	4
SHRN - 4060 - R010 - 300 - STH				30,0	80		
SHRN - 4060 - R010 - 400 - STH				40,0	100		
SHRN - 4060 - R010 - 500 - STH				50,0	110		
SHRN - 4060 - R010 - 600 - STH				60,0	110	8	
SHRN - 4080 - R005 - 400 - STH	8,0	0,50	9,0	40,0	100	8	4
SHRN - 4080 - R005 - 600 - STH				60,0	120		
SHRN - 4080 - R010 - 400 - STH	8,0	1,00	9,0	40,0	100	8	4
SHRN - 4080 - R010 - 600 - STH				60,0	120		
SHRN - 4100 - R005 - 400 - STH	10,0	0,50	11,0	40,0	100	10	4
SHRN - 4100 - R005 - 600 - STH				60,0	120		
SHRN - 4100 - R010 - 400 - STH	10,0	1,00	11,0	40,0	100	10	4
SHRN - 4100 - R010 - 600 - STH				60,0	120		
SHRN - 4120 - R005 - 600 - STH	12,0	0,50	13,0	60,0	130	12	4
SHRN - 4120 - R010 - 600 - STH		1,00		60,0	130		

# Hard Line: VHM-HighFeed-Torusfräser für Schruppeinsatz mit stabiler Kerngeometrie

## Hard Line: Solid carbide high feed end mill with corner radius for roughing application with stable core geometry

SHRF

h5	<b>R0.20.5</b> ER ±0,005	<b>R1-1.5</b> ER ±0,01	<b>R2.3</b> ER ±0,015
<b>STH COATING</b>	<b>ø1-5</b> -0.000/ -0.010	<b>ø6-12</b> -0.005/ -0.015	<b>ø16</b> -0.010/ -0.020
<b>15° HELIX</b>	<b>CENTRE CUT</b>	<b>15° SHANK ANGLE</b>	

<700 N/mm²

700-1100 N/mm²

1100-1300 N/mm²

30-45 HRC

45-55 HRC

55-60 HRC

60-65 HRC

65-70 HRC

INOX

AL

CU CuZn Gold PL

TI

CFK GFK

PLASTIC

GRAPHIT

Best. - Nr. / Order no.	d1	ER	L1	L2	L	D	Z
SHRF - 4010 - R002 - 025 - STH	1,0	0,20	1,0	2,5	50	4	4
SHRF - 4015 - R005 - 040 - STH	1,5	0,50	1,5	4,0	50	4	4
SHRF - 4020 - R005 - 060 - STH	2,0	0,50	2,0	6,0	50	6	4
SHRF - 4030 - R005 - 080 - STH	3,0	0,50	3,0	8,0	50	6	4
SHRF - 4030 - R0075 - 100 - STH <span style="color: red; font-weight: bold;">NEW!</span>		0,75		10,0			
SHRF - 4040 - R005 - 120 - STH	4,0	0,50	4,0	12,0	60	6	4
SHRF - 4040 - R005 - 160 - STH				16,0			
SHRF - 4040 - R010 - 120 - STH	4,0	1,00	4,0	12,0	60	6	4
SHRF - 4040 - R010 - 160 - STH				16,0			
SHRF - 4050 - R005 - 150 - STH	5,0	0,50	5,0	15,0	60	6	4
SHRF - 4050 - R010 - 150 - STH		1,00					
SHRF - 4060 - R005 - 150 - STH <span style="color: red; font-weight: bold;">NEW!</span>	6,0	0,50	6,0	15,0	60	6	4
SHRF - 4060 - R005 - 300 - STH <span style="color: red; font-weight: bold;">NEW!</span>				30,0			
SHRF - 4060 - R015 - 150 - STH	6,0	1,50	6,0	15,0	60	6	4
SHRF - 4060 - R015 - 300 - STH <span style="color: red; font-weight: bold;">NEW!</span>				30,0			
SHRF - 4080 - R005 - 200 - STH <span style="color: red; font-weight: bold;">NEW!</span>	8,0	0,50	8,0	20,0	80	8	4
SHRF - 4080 - R005 - 300 - STH <span style="color: red; font-weight: bold;">NEW!</span>				30,0			
SHRF - 4080 - R005 - 400 - STH <span style="color: red; font-weight: bold;">NEW!</span>				40,0			
SHRF - 4080 - R020 - 200 - STH	8,0	2,00	8,0	20,0	80	8	4
SHRF - 4080 - R020 - 300 - STH				30,0			
SHRF - 4080 - R020 - 400 - STH <span style="color: red; font-weight: bold;">NEW!</span>				40,0			
SHRF - 4100 - R005 - 250 - STH <span style="color: red; font-weight: bold;">NEW!</span>	10,0	0,50	10,0	25,0	90	10	4
SHRF - 4100 - R005 - 300 - STH <span style="color: red; font-weight: bold;">NEW!</span>				30,0			
SHRF - 4100 - R005 - 500 - STH <span style="color: red; font-weight: bold;">NEW!</span>				50,0			
SHRF - 4100 - R010 - 250 - STH <span style="color: red; font-weight: bold;">NEW!</span>	10,0	1,00	10,0	25,0	90	10	4
SHRF - 4100 - R010 - 300 - STH <span style="color: red; font-weight: bold;">NEW!</span>				30,0			
SHRF - 4100 - R020 - 250 - STH <span style="color: red; font-weight: bold;">NEW!</span>				25,0			
SHRF - 4100 - R020 - 300 - STH	10,0	2,00	10,0	30,0	120	10	4
SHRF - 4100 - R020 - 500 - STH <span style="color: red; font-weight: bold;">NEW!</span>				50,0			
SHRF - 4120 - R005 - 300 - STH <span style="color: red; font-weight: bold;">NEW!</span>	12,0	0,50	12,0	30,0	100	12	4
SHRF - 4120 - R005 - 600 - 1100 - STH <span style="color: red; font-weight: bold;">NEW!</span>				60,0			
SHRF - 4120 - R010 - 300 - STH <span style="color: red; font-weight: bold;">NEW!</span>	12,0	1,00	12,0	30,0	100	12	4
SHRF - 4120 - R010 - 600 - 1100 - STH <span style="color: red; font-weight: bold;">NEW!</span>				60,0			
SHRF - 4120 - R020 - 300 - STH <span style="color: red; font-weight: bold;">NEW!</span>	12,0	2,00	12,0	30,0	100	12	4
SHRF - 4120 - R020 - 350 - STH				35,0			
SHRF - 4120 - R020 - 600 - 1100 - STH <span style="color: red; font-weight: bold;">NEW!</span>				60,0			
SHRF - 4160 - R020 - 300 - STH	16,0	2,00	16,0	30,0	110	16	4

**Hard Line: VHM-Schaftfräser** mit Eckenradius, Schrupp-, Vorschlicht- und Schlicht-Einsatz, für Trochoid-, Besäum- und Abzeil-Bearbeitungen  
**Hard Line: Solid carbide end mill** with corner radius, roughing, semi-finishing and finishing, for trochoidal, trimming and cutting-off operations

SHRS

h5

R0.1-0.5  
ER  
±0,005

R1-1.5  
ER  
±0,01

R2  
ER  
±0,015

STH  
COATING

ø3-5  
-0.000/  
-0.010

ø6-12  
-0.005/  
-0.015

ø16  
-0.010/  
-0.020

45° HELIX

ø3-5  
15°  
SHANK  
ANGLE

<700  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

55-60  
HRC

60-65  
HRC

65-70  
HRC

INOX

AL

CU CuZn  
Gold PL

TI

CFK  
GFK

PLASTIC

GRAPHIT

Best. - Nr. / Order no.	d1	ER	L1	L	D	Z
SHRS - 6030 - R001 - STH	3,0	0,10	7,5	60	6	6
SHRS - 6030 - R002 - STH		0,20				
SHRS - 6030 - R003 - STH		0,30				
SHRS - 6030 - R005 - STH		0,50				
SHRS - 6040 - R001 - STH	4,0	0,10	10,0	60	6	6
SHRS - 6040 - R002 - STH		0,20				
SHRS - 6040 - R003 - STH		0,30				
SHRS - 6040 - R005 - STH		0,50				
SHRS - 6040 - R010 - STH		1,00				
SHRS - 6050 - R002 - STH	5,0	0,20	13,0	60	6	6
SHRS - 6050 - R003 - STH		0,30				
SHRS - 6050 - R005 - STH		0,50				
SHRS - 6050 - R010 - STH		1,00				
SHRS - 6060 - R001 - STH	6,0	0,10	15,0	60	6	6
SHRS - 6060 - R002 - STH		0,20				
SHRS - 6060 - R003 - STH		0,30				
SHRS - 6060 - R005 - STH		0,50				
SHRS - 6060 - R010 - STH		1,00				
SHRS - 6080 - R002 - STH	8,0	0,20	20,0	70	8	6
SHRS - 6080 - R003 - STH		0,30				
SHRS - 6080 - R005 - STH		0,50				
SHRS - 6080 - R010 - STH		1,00				
SHRS - 6080 - R015 - STH		1,50				
SHRS - 6100 - R003 - STH	10,0	0,30	25,0	75	10	6
SHRS - 6100 - R005 - STH		0,50				
SHRS - 6100 - R010 - STH		1,00				
SHRS - 6100 - R020 - STH		2,00				
SHRS - 6120 - R003 - STH	12,0	0,30	30,0	80	12	6
SHRS - 6120 - R005 - STH		0,50				
SHRS - 6120 - R010 - STH		1,00		110		
SHRS - 6120 - R010 - 110 - STH <span style="color: red;">NEW!</span>		2,00				
SHRS - 6120 - R020 - STH		2,00				
SHRS - 6160 - R005 - STH	16,0	0,50	50,0	110	16	6
SHRS - 6160 - R010 - STH		1,00				
SHRS - 6160 - R020 - STH		2,00				

**NEU! NEW!****Hard Line: VHM-Schaftfräser** zum Besäumen, Hartfräsen bis 65 HRC, 4/6-Schneider, in kurzer Ausführung,  $\varnothing$  1,0 - 1,5 mm, Schaft  $\varnothing$  6 - 20 mm**Hard Line: Solid carbide end mills** for trimming operations, hard milling up to 65 HRC, 4/6 flutes, short version,  $\varnothing$  1,0 - 1,5 mm, shank  $\varnothing$  6 - 20 mm

**SHSL-Z4 / Z6**

h5

STH COATING

45° HELIX

15° SHANK ANGLE

$\varnothing$ 1-6: -0.000/-0.010

$\varnothing$ 8-12: -0.010/-0.025

$\varnothing$ 14-25: -0.015/-0.030

<700 N/mm<sup>2</sup>

700-1100 N/mm<sup>2</sup>

1100-1300 N/mm<sup>2</sup>

30-45 HRC

45-55 HRC

55-60 HRC

60-65 HRC

65-70 HRC

INOX

AL

CU CuZn Gold PL

TI

CFK GFK

PLASTIC

GRAPHIT

Best. - Nr. / Order no.	d1	L1	L	D	Z
SHSL - 4010 - 025 - STH	1,0	2,5	40	6	4
SHSL - 4010 - 050 - STH		5,0	45		
SHSL - 4015 - 040 - STH	1,5	4,0	40	6	4
SHSL - 4015 - 060 - STH		6,0	40		
SHSL - 4020 - 050 - STH	2,0	5,0	40	6	4
SHSL - 4020 - 080 - STH		8,0	45		
SHSL - 6030 - 100 - STH	3,0	10,0	50	6	6
SHSL - 6030 - 150 - STH		15,0	50		
SHSL - 6040 - 120 - STH	4,0	12,0	50	6	6
SHSL - 6040 - 160 - STH		16,0	50		
SHSL - 6050 - 150 - STH	5,0	15,0	50	6	6
SHSL - 6050 - 200 - STH		20,0	50		
SHSL - 6060 - 150 - STH	6,0	15,0	50	6	6
SHSL - 6060 - 250 - STH		25,0	65		
SHSL - 6060 - 300 - STH		30,0	70		
SHSL - 6080 - 200 - STH	8,0	20,0	60	8	6
SHSL - 6080 - 300 - STH		30,0	75		
SHSL - 6080 - 400 - STH		40,0	90		
SHSL - 6100 - 250 - STH	10,0	25,0	70	10	6
SHSL - 6100 - 350 - STH		35,0	90		
SHSL - 6100 - 500 - STH		50,0	100		
SHSL - 6120 - 300 - STH	12,0	30,0	80	12	6
SHSL - 6120 - 400 - STH		40,0	90		
SHSL - 6120 - 600 - STH		60,0	110		
SHSL - 6160 - 350 - STH	16,0	35,0	90	16	6
SHSL - 6160 - 650 - STH		65,0	120		
SHSL - 6200 - 450 - STH	20,0	45,0	100	20	6
SHSL - 6200 - 800 - STH		80,0	150		

**Performance Line: HPC-Schaftfräser** mit variabler Helix 35° / 38° und Schutzfase, Allrounder zum Schruppen und Schlichten  
**Performance Line: HPC end mill** with variable helix 35° / 38° and protective chamfer, all-rounder for roughing and finishing

SPSS

	-0.010/ -0.025	-0.015/ -0.030

<700  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

INOX

AL

CU CuZn  
Gold PL

TI

Best.-Nr. / Order no.	d1	L1	L2	L	D	Z
SPSS - 4030 - 180 - STC	3,0	8,0	18,0	60	6	4
SPSS - 4040 - 210 - STC	4,0	11,0	21,0	60	6	4
SPSS - 4050 - 210 - STC	5,0	13,0	21,0	60	6	4
SPSS - 4060 - 210 - STC	6,0	13,0	21,0	60	6	4
SPSS - 4080 - 270 - STC	8,0	19,0	27,0	60	8	4
SPSS - 4100 - 320 - STC	10,0	22,0	32,0	70	10	4
SPSS - 4120 - 380 - STC	12,0	26,0	38,0	80	12	4
SPSS - 4160 - 450 - STC	16,0	32,0	45,0	90	16	4
SPSS - 4200 - 550 - STC	20,0	38,0	55,0	100	20	4

**Performance Line: HPC-Schaftfräser** ungleiche Teilung, Freilänge 5xD und Schneidlänge 1,5xD, Allrounder zum Schruppen und Schlichten  
**Performance Line: HPC end mill** with unequal pitch, clearance length 5xD and cutting length 1.5xD, all-rounder for roughing and finishing

SPSN

	-0.000/ -0.010	-0.010/ -0.025

<700  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

INOX

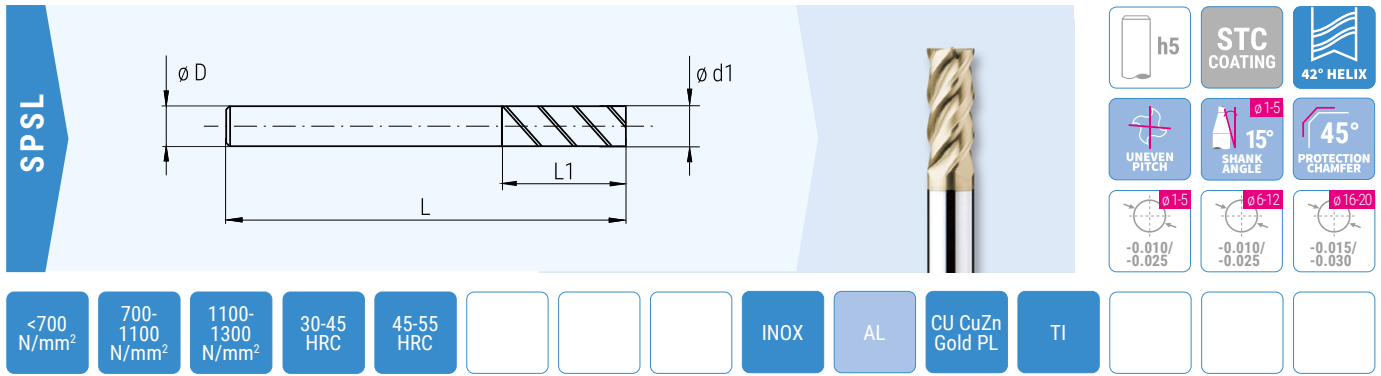
AL

CU CuZn  
Gold PL

TI

Best.-Nr. / Order no.	d1	L1	L2	L	D	Z
SPSN - 4010 - 050 - STC	1,0	1,5	5,0	50	4	4
SPSN - 4015 - 080 - STC	1,5	2,5	8,0	50	4	4
SPSN - 4020 - 100 - STC	2,0	3,0	10,0	50	4	4
SPSN - 4025 - 120 - STC	2,5	4,0	12,0	50	4	4
SPSN - 4030 - 160 - STC	3,0	4,5	16,0	60	6	4
SPSN - 4040 - 200 - STC	4,0	6,0	20,0	60	6	4
SPSN - 4050 - 250 - STC	5,0	7,5	25,0	65	6	4
SPSN - 4060 - 300 - STC	6,0	9,0	30,0	70	6	4
SPSN - 4080 - 400 - STC	8,0	12,0	40,0	80	8	4
SPSN - 4100 - 500 - STC	10,0	15,0	50,0	100	10	4
SPSN - 4120 - 600 - STC	12,0	18,0	60,0	110	12	4
SPSN - 4160 - 800 - STC	16,0	24,0	80,0	130	16	4
SPSN - 4200 - 1000 - STC	20,0	30,0	100,0	160	20	4

**Performance Line: HPC-Schaftfräser** ungleiche Teilung und Schutzfase, diverse Schneidlängen, Allrounder zum Schruppen und Schlichten  
**Performance Line: HPC end mill** with unequal pitch and protective chamfer, various cutting lengths, all-rounder for roughing and finishing



Best.-Nr. / Order no.	d1	L1	L	D	Z
SPSL - 4010 - 035 - STC	1,0	3,5	50	4	4
SPSL - 4010 - 050 - STC		5,0			
SPSL - 4020 - 060 - STC	2,0	6,0	50	4	4
SPSL - 4020 - 080 - STC		8,0			
SPSL - 4020 - 100 - STC		10,0			
SPSL - 4025 - 080 - STC	2,5	8,0	50	4	4
SPSL - 4025 - 100 - STC		10,0			
SPSL - 4025 - 120 - STC		12,0			
SPSL - 4030 - 100 - STC	3,0	10,0	60	6	4
SPSL - 4030 - 120 - STC		12,0			
SPSL - 4030 - 150 - STC		15,0			
SPSL - 4040 - 120 - STC	4,0	12,0	60	6	4
SPSL - 4040 - 160 - STC		16,0			
SPSL - 4040 - 200 - STC		20,0			
SPSL - 4050 - 150 - STC	5,0	15,0	60	6	4
SPSL - 4050 - 200 - STC		20,0			
SPSL - 4050 - 250 - STC		25,0			
SPSL - 4060 - 180 - STC	6,0	18,0	65	6	4
SPSL - 4060 - 250 - STC		25,0			
SPSL - 4060 - 300 - STC		30,0			
SPSL - 4080 - 240 - STC	8,0	24,0	70	8	4
SPSL - 4080 - 300 - STC		30,0			
SPSL - 4080 - 400 - STC		40,0			
SPSL - 4100 - 300 - STC	10,0	30,0	80	10	4
SPSL - 4100 - 400 - STC		40,0			
SPSL - 4100 - 500 - STC		50,0			
SPSL - 4120 - 360 - STC	12,0	36,0	90	12	4
SPSL - 4120 - 500 - STC		50,0			
SPSL - 4120 - 600 - STC		60,0			
SPSL - 4160 - 500 - STC	16,0	50,0	110	16	4
SPSL - 4160 - 700 - STC		70,0			
SPSL - 4160 - 900 - STC		90,0			
SPSL - 4200 - 600 - STC	20,0	60,0	120	20	4
SPSL - 4200 - 800 - STC		80,0			
SPSL - 4200 - 1000 - STC		100,0			



**Performance Line: HPC-Torusfräser** ungleiche Teilung, L2 5xD und L1 1,5xD, Schruppen und Schlichten

**Performance Line: HPC end mill with corner radius** unequal pitch, L2 5xD and L1 1.5xD, roughing and finishing

SPRN

h5

STC COATING

42° HELIX

UNEVEN PITCH

15° SHANK ANGLE

ER

$\varnothing 1-5$   
-0.000/-0.010

$\varnothing 6-12$   
-0.005/-0.015

$\varnothing 16-20$   
-0.010/-0.020

$R0.1-0.5$   
ER  
± 0,005

$R1-1.5$   
ER  
± 0,010

$R2.5$   
ER  
± 0,015

<math><700</math> N/mm<sup>2</sup>

700-1100 N/mm<sup>2</sup>

1100-1300 N/mm<sup>2</sup>

30-45 HRC

45-55 HRC

INOX

AL

CU CuZn Gold PL

TI

Best.-Nr. / Order no.	d1	ER	L1	L2	L	D	Z
SPRN - 4010 - R001 - 050 - STC	1,0	0,1	1,5	5,0	60	4	4
SPRN - 4020 - R001 - 100 - STC	2,0	0,1	3,0	10,0	60	4	4
SPRN - 4020 - R002 - 100 - STC		0,2					
SPRN - 4030 - R002 - 150 - STC	3,0	0,2	4,5	15,0	65	6	4
SPRN - 4030 - R005 - 150 - STC		0,5					
SPRN - 4040 - R002 - 200 - STC	4,0	0,2	6,0	20,0	70	6	4
SPRN - 4040 - R005 - 200 - STC		0,5					
SPRN - 4040 - R010 - 200 - STC		1,0					
SPRN - 4050 - R002 - 250 - STC	5,0	0,2	7,5	25,0	70	6	4
SPRN - 4050 - R005 - 250 - STC		0,5					
SPRN - 4050 - R010 - 250 - STC		1,0					
SPRN - 4060 - R003 - 300 - STC	6,0	0,3	9,0	30,0	70	6	4
SPRN - 4060 - R005 - 300 - STC		0,5					
SPRN - 4060 - R010 - 300 - STC		1,0					
SPRN - 4060 - R015 - 300 - STC		1,5					
SPRN - 4080 - R003 - 400 - STC	8,0	0,3	12,0	40,0	80	8	4
SPRN - 4080 - R005 - 400 - STC		0,5					
SPRN - 4080 - R010 - 400 - STC		1,0					
SPRN - 4080 - R015 - 400 - STC		1,5					
SPRN - 4080 - R020 - 400 - STC		2,0					
SPRN - 4100 - R003 - 500 - STC	10,0	0,3	15,0	50,0	100	10	4
SPRN - 4100 - R005 - 500 - STC		0,5					
SPRN - 4100 - R010 - 500 - STC		1,0					
SPRN - 4100 - R015 - 500 - STC		1,5					
SPRN - 4100 - R020 - 500 - STC		2,0					
SPRN - 4120 - R003 - 600 - STC	12,0	0,3	18,0	60,0	110	12	4
SPRN - 4120 - R005 - 600 - STC		0,5					
SPRN - 4120 - R010 - 600 - STC		1,0					
SPRN - 4120 - R015 - 600 - STC		1,5					
SPRN - 4120 - R020 - 600 - STC		2,0					
SPRN - 4120 - R025 - 600 - STC		2,5					
SPRN - 4120 - R030 - 600 - STC		3,0					

**Performance Line: HPC-Torusfräser** mit ungleicher Teilung, L2 5xD und L1 1,5xD, Schruppen und Schlichten

**Performance Line: HPC end mill with corner radius** unequal pitch, L2 5xD, L1 1.5xD, roughing and finishing

SPRN

h5

STC COATING

42° HELIX

UNEVEN PITCH

15° SHANK ANGLE

ER

$\varnothing 1-5$   
-0.000/-0.010

$\varnothing 6-12$   
-0.005/-0.015

$\varnothing 16-20$   
-0.010/-0.020

$R0.1-0.5$   
ER  
 $\pm 0,005$

$R1-1.5$   
ER  
 $\pm 0,010$

$R2.5$   
ER  
 $\pm 0,015$

<700 N/mm<sup>2</sup>

700-1100 N/mm<sup>2</sup>

1100-1300 N/mm<sup>2</sup>

30-45 HRC

45-55 HRC

INOX

AL

CU CuZn Gold PL

TI

Best.-Nr. / Order no.	d1	ER	L1	L2	L	D	Z
SPRN - 4160 - R005 - 800 - STC	16,0	0,5	24,0	80,0	130	16	4
SPRN - 4160 - R010 - 800 - STC		1,0					
SPRN - 4160 - R015 - 800 - STC		1,5					
SPRN - 4160 - R020 - 800 - STC		2,0					
SPRN - 4160 - R030 - 800 - STC		3,0					
SPRN - 4200 - R005 - 1000 - STC	20,0	0,5	30,0	100,0	150	20	4
SPRN - 4200 - R010 - 1000 - STC		1,0					
SPRN - 4200 - R015 - 1000 - STC		1,5					
SPRN - 4200 - R020 - 1000 - STC		2,0					
SPRN - 4200 - R030 - 1000 - STC		3,0					
SPRN - 4200 - R050 - 1000 - STC		5,0					

**Performance Line: HPC-Torusfräser** mit ungleicher Teilung, diverse Radien, Allrounder zum Schruppen und Schlichten

**Performance Line: HPC end mill with corner radius** with unequal pitch, various radii, all-rounder for roughing and finishing

SPRS

h5

STC COATING

42° HELIX

UNEVEN PITCH

15° SHANK ANGLE

ER

$\varnothing 1.5$   
 $-0.000/-0.010$

$\varnothing 6-12$   
 $-0.005/-0.015$

$\varnothing 16-20$   
 $-0.010/-0.020$

$R0.1-0.5$   
**ER**  
 $\pm 0,005$

$R1-1.5$   
**ER**  
 $\pm 0,010$

$R2-5$   
**ER**  
 $\pm 0,015$

<math><700</math>  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

INOX

AL

CU CuZn  
Gold PL

TI

Best.-Nr. / Order no.	d1	ER	L1	L	D	Z
SPRS - 4010 - R001 - STC	1,0	0,1	2,5	50	4	4
SPRS - 4010 - R002 - STC		0,2				
SPRS - 4015 - R001 - STC	1,5	0,1	4,0	50	4	4
SPRS - 4015 - R002 - STC		0,2				
SPRS - 4015 - R003 - STC		0,3				
SPRS - 4020 - R001 - STC	2,0	0,1	6,0	50	4	4
SPRS - 4020 - R002 - STC		0,2				
SPRS - 4020 - R003 - STC		0,3				
SPRS - 4020 - R005 - STC		0,5				
SPRS - 4030 - R001 - STC	3,0	0,1	10,0	60	6	4
SPRS - 4030 - R002 - STC		0,2				
SPRS - 4030 - R003 - STC		0,3				
SPRS - 4030 - R005 - STC		0,5				
SPRS - 4040 - R001 - STC	4,0	0,1	12,0	60	6	4
SPRS - 4040 - R002 - STC		0,2				
SPRS - 4040 - R003 - STC		0,3				
SPRS - 4040 - R005 - STC		0,5				
SPRS - 4040 - R010 - STC		1,0				
SPRS - 4050 - R002 - STC	5,0	0,2	15,0	60	6	4
SPRS - 4050 - R003 - STC		0,3				
SPRS - 4050 - R005 - STC		0,5				
SPRS - 4050 - R010 - STC		1,0				
SPRS - 4060 - R003 - STC	6,0	0,3	15,0	60	6	4
SPRS - 4060 - R005 - STC		0,5				
SPRS - 4060 - R010 - STC		1,0				
SPRS - 4060 - R015 - STC		1,5				
SPRS - 4080 - R003 - STC	8,0	0,3	20,0	80	8	4
SPRS - 4080 - R005 - STC		0,5				
SPRS - 4080 - R010 - STC		1,0				
SPRS - 4080 - R015 - STC		1,5				
SPRS - 4080 - R020 - STC		2,0				

**Performance Line: HPC-Torusfräser** mit ungleicher Teilung, diverse Radien, Allrounder zum Schruppen und Schlichten

**Performance Line: HPC end mill with corner radius** with unequal pitch, various radii, all-rounder for roughing and finishing

SPRS

h5

STC COATING

42° HELIX

UNEVEN PITCH

15° SHANK ANGLE

ER

$\phi 1.5$   
-0.000/-0.010

$\phi 6-12$   
-0.005/-0.015

$\phi 16-20$   
-0.010/-0.020

$R0.1-0.5$   
ER  
 $\pm 0,005$

$R1-1.5$   
ER  
 $\pm 0,010$

$R2.5$   
ER  
 $\pm 0,015$

<math><700</math> N/mm<sup>2</sup>

700-1100 N/mm<sup>2</sup>

1100-1300 N/mm<sup>2</sup>

30-45 HRC

45-55 HRC

INOX

AL

CU CuZn Gold PL

TI

Best.-Nr. / Order no.	d1	ER	L1	L	D	Z
SPRS - 4100 - R003 - STC	10,0	0,3	25,0	80	10	4
SPRS - 4100 - R005 - STC		0,5				
SPRS - 4100 - R010 - STC		1,0				
SPRS - 4100 - R015 - STC		1,5				
SPRS - 4100 - R020 - STC		2,0				
SPRS - 4100 - R025 - STC		2,5				
SPRS - 4100 - R030 - STC		3,0				
SPRS - 4120 - R003 - STC	12,0	0,3	30,0	100	12	4
SPRS - 4120 - R005 - STC		0,5				
SPRS - 4120 - R010 - STC		1,0				
SPRS - 4120 - R015 - STC		1,5				
SPRS - 4120 - R020 - STC		2,0				
SPRS - 4120 - R025 - STC		2,5				
SPRS - 4120 - R030 - STC	3,0					
SPRS - 4160 - R005 - STC	16,0	0,5	42,0	110	16	4
SPRS - 4160 - R010 - STC		1,0				
SPRS - 4200 - R005 - STC	20,0	0,5	48,0	110	20	4
SPRS - 4200 - R010 - STC		1,0				

**VHM-Kugelfräser für Superlegierungen**  $\varnothing$  0,6 - 12,0 mm, Schaft  $\varnothing$  4 - 12 mm  
**Solid carbide ballnose end mills for super alloys**  $\varnothing$  0,6 - 12,0 mm, shank  $\varnothing$  4 - 12 mm

BMAT

$\varnothing$  0,6-3  
R  
 $\pm 0,005$

$\varnothing$  4-6  
R  
 $\pm 0,007$

$\varnothing$  8-12  
R  
 $\pm 0,01$

30° HELIX

16°  
SHANK  
ANGLE

ST 8  
COATING

h5

<700  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

INOX

AL

CU CuZn  
Gold PL

TI

Ni Co  
alloy

Best.-Nr. / Order no.	d1	L1	Schaftwinkel shank angle	L	D	R	Z
BMAT 006 009	0,6	0,90	16°	50	4	0,30	3
BMAT 008 012	0,8	1,20	16°	50	4	0,40	3
BMAT 010 015	1,0	1,50	16°	50	4	0,50	3
BMAT 015 022	1,5	2,25	16°	50	4	0,75	3
BMAT 020 030	2,0	3,00	16°	50	4	1,00	3
BMAT 030 045	3,0	4,50	16°	60	6	1,50	3
BMAT 040 060	4,0	6,00	16°	70	6	2,00	3
BMAT 050 075	5,0	7,50	16°	80	6	2,50	3
BMAT 060 090	6,0	9,00	-	80	6	3,00	3
BMAT 080 120	8,0	12,00	-	90	8	4,00	3
BMAT 100 150	10,0	15,00	-	100	10	5,00	3
BMAT 120 180	12,0	18,00	-	110	12	6,00	3

**VHM-Schafffräser** für rostfreie Stähle und Guss,  $\varnothing$  3,0 - 12,0 mm, Schaft  $\varnothing$  6 - 12 mm  
**Solid carbide end mills** for stainless steel and cast iron,  $\varnothing$  3,0 - 12,0 mm, shank  $\varnothing$  6 - 12 mm

425

40° HELIX

h6

CENTRE CUT

ST 10 COATING

<700 N/mm<sup>2</sup>

700-1100 N/mm<sup>2</sup>

1100-1300 N/mm<sup>2</sup>

30-45 HRC

STAHL

GUSS

INOX

TI

Best.-Nr. / Order no.	d1	L1	L	D	Z
425 030 *	3,0	9,0	57	6	4
425 040 *	4,0	12,0	57	6	4
425 050 *	5,0	13,0	57	6	4
425 060 *	6,0	13,0	57	6	4
425 080 *	8,0	20,0	64	8	4
425 100 *	10,0	22,0	72	10	4
425 120 *	12,0	26,0	83	12	4

Weitere Werkzeugabmessungen im Bereich d1=3,00 mm bis d1= 12,00 mm sowie Halsfreilegung auf Anfrage verfügbar.  
 Other tool dimensions in the range d1=3,00 mm to d1= 12,00 mm and clearance length available on request.

\* Auslaufend  
 \* Discontinued

**VHM-Torusfräser** für rostfreie Stähle und Guss,  $\varnothing$  4,0 - 12,0 mm, Schaft  $\varnothing$  6 - 12 mm  
**Solid carbide end mill with corner radius** for stainless steel and cast iron,  $\varnothing$  4,0 - 12,0 mm, shank  $\varnothing$  6 - 12 mm

426

35-38° HELIX

h6

ER  $\pm 0,01$

UNEVEN PITCH

CENTRE CUT

VARIABLE HELIX

ST 10 COATING

<700 N/mm<sup>2</sup>

700-1100 N/mm<sup>2</sup>

1100-1300 N/mm<sup>2</sup>

30-45 HRC

STAHL

GUSS

INOX

TI

Best.-Nr. / Order no.	d1	L1	L	D	ER	Z
426 040 005	4,0	11,0	57	6	0,5	4
426 050 005	5,0	13,0	57	6	0,5	4
426 060 005	6,0	13,0	57	6	0,5	4
426 060 010	6,0	13,0	57	6	1,0	4
426 080 005	8,0	20,0	64	8	0,5	4
426 080 010	8,0	20,0	64	8	1,0	4
426 100 005	10,0	22,0	72	10	0,5	4
426 100 010	10,0	22,0	72	10	1,0	4
426 120 005	12,0	26,0	83	12	0,5	4
426 120 010	12,0	26,0	83	12	1,0	4

Weitere Werkzeugabmessungen im Bereich d1=4,00 mm bis d1= 12,00 mm sowie Halsfreilegung auf Anfrage verfügbar.  
 Other tool dimensions in the range d1=4,00 mm to d1= 12,00 mm and clearance length available on request.

**VHM-Schafffräser** mit ungleicher Teilung, für rostfreie Stähle und Guss,  $\varnothing$  4,0 - 12,0 mm, Schaft  $\varnothing$  6 - 12 mm  
**Solid carbide end mills** with uneven pitch, for stainless steel and cast iron,  $\varnothing$  4,0 - 12,0 mm, shank  $\varnothing$  6 - 12 mm

427

40° HELIX

h6

CENTRE CUT

UNEVEN PITCH

ST 10 COATING

<math><700</math> N/mm<sup>2</sup>

700-1100 N/mm<sup>2</sup>

1100-1300 N/mm<sup>2</sup>

30-45 HRC

STAH

GUSS

INOX

TI

Best.-Nr. / Order no.	d1	L1	L2	L	D	C	Z
427 040	4,0	11,0	15,0	57	6	0,1	4
427 050	5,0	13,0	18,0	57	6	0,1	4
427 060	6,0	13,0	19,0	57	6	0,1	4
427 080	8,0	20,0	26,0	64	8	0,2	4
427 100	10,0	22,0	30,0	72	10	0,2	4
427 120	12,0	26,0	36,0	83	12	0,2	4

Weitere Werkzeugabmessungen im Bereich  $d1=4,00$  mm bis  $d1= 12,00$  mm sowie Halsfreilegung auf Anfrage verfügbar.  
 Other tool dimensions in the range  $d1=4,00$  mm to  $d1= 12,00$  mm and clearance length available on request.

**VHM-Schafffräser** mit ungleicher Teilung und Innenkühlung, für rostfreie Stähle und Guss,  $\varnothing$  4,0 - 12,0 mm, Schaft  $\varnothing$  6 - 12 mm  
**Solid carbide end mills** with uneven pitch and inner coolant supply, for stainless steel and cast iron,  $\varnothing$  4,0 - 12,0 mm, shank  $\varnothing$  6 - 12 mm

428

40° HELIX

h6

CENTRE CUT

UNEVEN PITCH

ST 10 COATING

<math><700</math> N/mm<sup>2</sup>

700-1100 N/mm<sup>2</sup>

1100-1300 N/mm<sup>2</sup>

30-45 HRC

GUSS

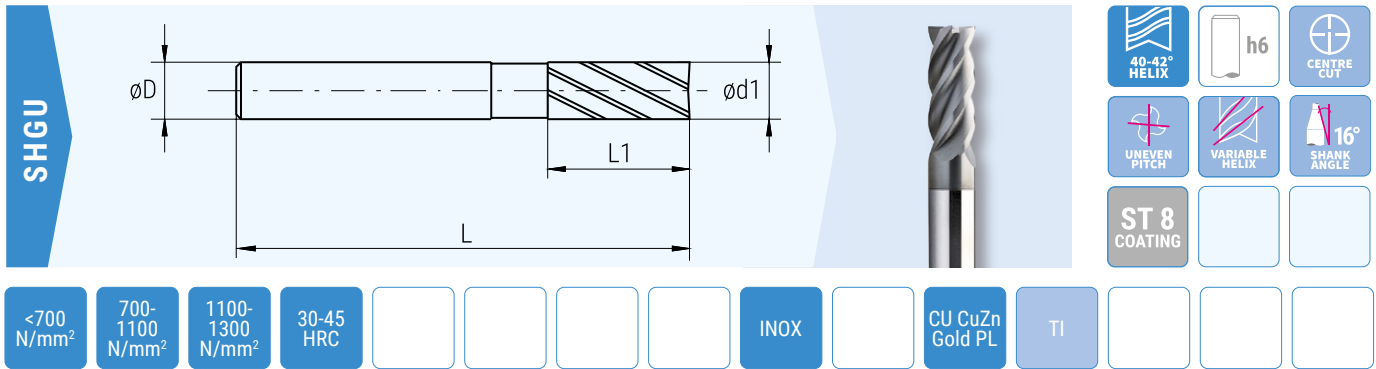
INOX

TI

Best.-Nr. / Order no.	d1	L1	L2	L	D	ER	Z
428 040	4,0	11,0	15,0	57	6	0,1	4
428 050	5,0	13,0	18,0	57	6	0,1	4
428 060	6,0	13,0	19,0	57	6	0,1	4
428 080	8,0	20,0	26,0	64	8	0,2	4
428 100	10,0	22,0	30,0	72	10	0,2	4
428 120	12,0	26,0	36,0	83	12	0,2	4

Weitere Werkzeugabmessungen im Bereich  $d1=4,00$  mm bis  $d1= 12,00$  mm sowie Halsfreilegung auf Anfrage verfügbar.  
 Other tool dimensions in the range  $d1=4,00$  mm to  $d1= 12,00$  mm and clearance length available on request.

**VHM-Schaftfräser** für rostfreie Stähle und Kupfer bis HRC 45,  $\varnothing$  6,0 - 12,0 mm, Schaft  $\varnothing$  6 - 12 mm  
**Solid carbide end mills** for stainless steel and copper up to HRC 45,  $\varnothing$  6,0 - 12,0 mm, shank  $\varnothing$  6 - 12 mm



Best.-Nr. / Order no.	d1	L1	Schaftwinkel shank angle	L	D	Z
SHGU 060 - 090	6,0	9,0	-	60	6	4
SHGU 060 - 130	6,0	13,0	-	60	6	4
SHGU 060 - 180	6,0	18,0	-	60	6	4
SHGU 070 - 105	7,0	10,5	16°	70	8	4
SHGU 070 - 160	7,0	16,0	16°	70	8	4
SHGU 070 - 210	7,0	21,0	16°	70	8	4
SHGU 080 - 120	8,0	12,0	-	70	8	4
SHGU 080 - 190	8,0	19,0	-	70	8	4
SHGU 080 - 240	8,0	24,0	-	70	8	4
SHGU 090 - 135	9,0	13,5	16°	80	10	4
SHGU 090 - 190	9,0	19,0	16°	80	10	4
SHGU 090 - 270	9,0	27,0	16°	80	10	4
SHGU 100 - 150	10,0	15,0	-	80	10	4
SHGU 100 - 220	10,0	22,0	-	80	10	4
SHGU 100 - 300	10,0	30,0	-	80	10	4
SHGU 110 - 165	11,0	16,5	16°	100	12	4
SHGU 110 - 220	11,0	22,0	16°	100	12	4
SHGU 110 - 330	11,0	33,0	16°	100	12	4
SHGU 120 - 180	12,0	18,0	-	100	12	4
SHGU 120 - 260	12,0	26,0	-	100	12	4
SHGU 120 - 360	12,0	36,0	-	100	12	4

Weitere Werkzeugabmessungen im Bereich  $d1=6,00$  mm bis  $d1= 12,00$  mm sowie Halsfreilegung auf Anfrage verfügbar.  
 Other tool dimensions in the range  $d1=6,00$  mm to  $d1= 12,00$  mm and clearance length available on request.



**VHM-Schaftfräser** für rostfreie Stähle und Kupfer bis HRC 55,  $\varnothing$  2,0 - 12,0 mm, Schaft  $\varnothing$  4 - 12 mm  
**Solid carbide end mills** for stainless steel and copper up to HRC 55,  $\varnothing$  2,0 - 12,0 mm, shank  $\varnothing$  4 - 12 mm

CMFT

45° HELIX

h5

16° SCHAFTWINKEL

$\varnothing$  2,0-6,0

ER  $\pm 0,01$

UNEVEN PITCH

$\varnothing$  8,0-12,0

ER  $\pm 0,015$

ST 8 COATING

<700 N/mm<sup>2</sup>

700-1100 N/mm<sup>2</sup>

1100-1300 N/mm<sup>2</sup>

30-45 HRC

45-55 HRC

INOX

CU CuZn Gold PL

TI

Best.-Nr. / Order no.	d1	L1	d2	L2	Schaftwinkel shank angle	L	D	ER	Z
CMFT 020 - 060 - 050	2,0	2,0	1,91	6,0	16°	70	4	0,5	4
CMFT 030 - 090 - 080	3,0	3,0	2,92	9,0	16°	70	6	0,8	4
CMFT 040 - 120 - 030	4,0	4,0	3,82	12,0	16°	60	6	0,3	4
CMFT 040 - 120 - 050	4,0	4,0	3,82	12,0	16°	60	6	0,5	4
CMFT 040 - 120 - 100	4,0	4,0	3,82	12,0	16°	70	6	1,0	4
CMFT 050 - 150 - 120	5,0	5,0	4,82	15,0	16°	70	6	1,2	4
CMFT 060 - 180 - 030	6,0	6,0	5,82	18,0	-	90	6	0,3	4
CMFT 060 - 180 - 050	6,0	6,0	5,82	18,0	-	60	6	0,5	4
CMFT 060 - 180 - 100	6,0	6,0	5,82	18,0	-	60	6	1,0	4
CMFT 060 - 180 - 150	6,0	6,0	5,82	18,0	-	90	6	1,5	4
CMFT 080 - 240 - 030	8,0	8,0	7,82	24,0	-	100	8	0,3	4
CMFT 080 - 260 - 050	8,0	8,0	7,82	26,0	-	70	8	0,5	4
CMFT 080 - 260 - 100	8,0	8,0	7,82	26,0	-	70	8	1,0	4
CMFT 080 - 240 - 200	8,0	8,0	7,82	24,0	-	100	8	2,0	4
CMFT 100 - 300 - 030	10,0	10,0	9,82	30,0	-	110	10	0,3	4
CMFT 100 - 300 - 050	10,0	10,0	9,82	30,0	-	80	10	0,5	4
CMFT 100 - 300 - 100	10,0	10,0	9,82	30,0	-	80	10	1,0	4
CMFT 100 - 300 - 200	10,0	10,0	9,82	30,0	-	110	10	2,0	4
CMFT 120 - 360 - 030	12,0	12,0	11,82	36,0	-	120	12	0,3	4
CMFT 120 - 360 - 050	12,0	12,0	11,82	36,0	-	120	12	0,5	4
CMFT 120 - 360 - 100	12,0	12,0	11,82	36,0	-	120	12	1,0	4
CMFT 120 - 360 - 200	12,0	12,0	11,82	36,0	-	120	12	2,0	4

Weitere Werkzeugabmessungen im Bereich d1=2,00 mm bis d1= 12,00 mm auf Anfrage verfügbar.  
 Other tool dimensions in the range d1=2,00 mm to d1= 12,00 mm available on request.

**VHM-Gravierfräser** mit Helix, Spitzenwinkel 60°, Ø 3,0 - 6,0 mm, Schaft Ø 3 - 6 mm  
**Solid carbide engraving cutters** with helix, point angle 60°, Ø 3,0 - 6,0 mm, shank Ø 3 - 6 mm

229

<input type="checkbox"/>	<input type="checkbox"/>

<700  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

55-60  
HRC

INOX

AL

CU CuZn  
Gold PL

CFK  
GFK

PLASTIC

Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	D	L1	L
229 030	229 030 M	3,0	3,0	15,0	40
229 040	229 040 M	4,0	4,0	15,0	40
229 060	229 060 M	6,0	6,0	25,0	50

**VHM-Schaftfräser** mit Weldon-Schaft, ø 2,0 - 6,0 mm, Schaft ø 6 mm  
**Solid carbide end mills** with Weldon shank, ø 2,0 - 6,0 mm, shank ø 6 mm

335 W

<input type="checkbox"/>	<input type="checkbox"/>

<700  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

45-55  
HRC

INOX

AL

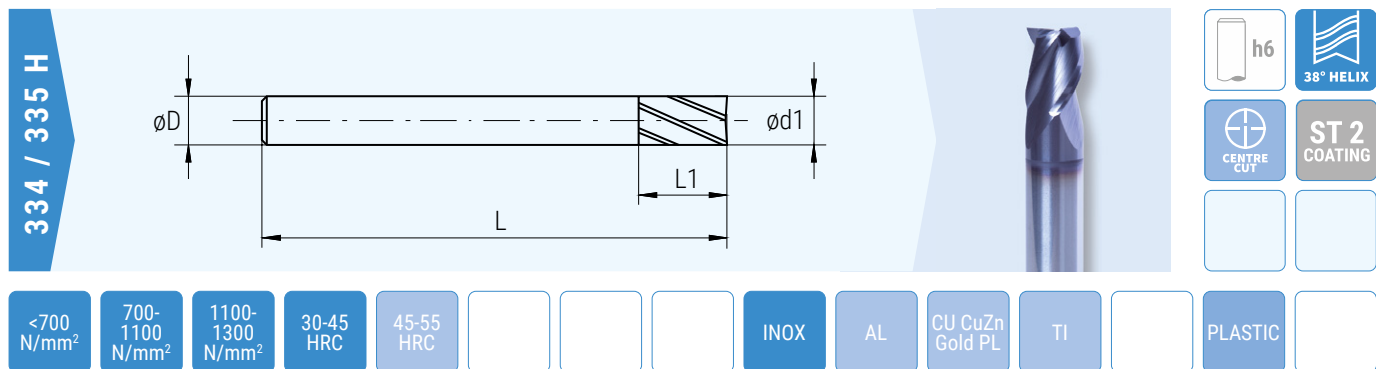
CU CuZn  
Gold PL

TI

PLASTIC

Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	L	D	Z
335 W 020	335 W 020 M	2,0	6,0	50	6	3
335 W 025	335 W 025 M	2,5	12,0	55	6	3
335 W 030	335 W 030 M	3,0	12,0	55	6	3
335 W 035	335 W 035 M	3,5	14,0	60	6	3
335 W 040	335 W 040 M	4,0	14,0	60	6	3
335 W 045	335 W 045 M	4,5	16,0	60	6	3
335 W 050	335 W 050 M	5,0	16,0	60	6	3
335 W 055	335 W 055 M	5,5	16,0	60	6	3
335 W 060	335 W 060 M	6,0	16,0	55	6	3

**VHM-Schaftfräser** kurze Ausführung,  $\varnothing$  1,0 - 6,0 mm, Schaft  $\varnothing$  3 - 6 mm  
**Solid carbide end mills** short version,  $\varnothing$  1,0 - 6,0 mm, shank  $\varnothing$  3 - 6 mm

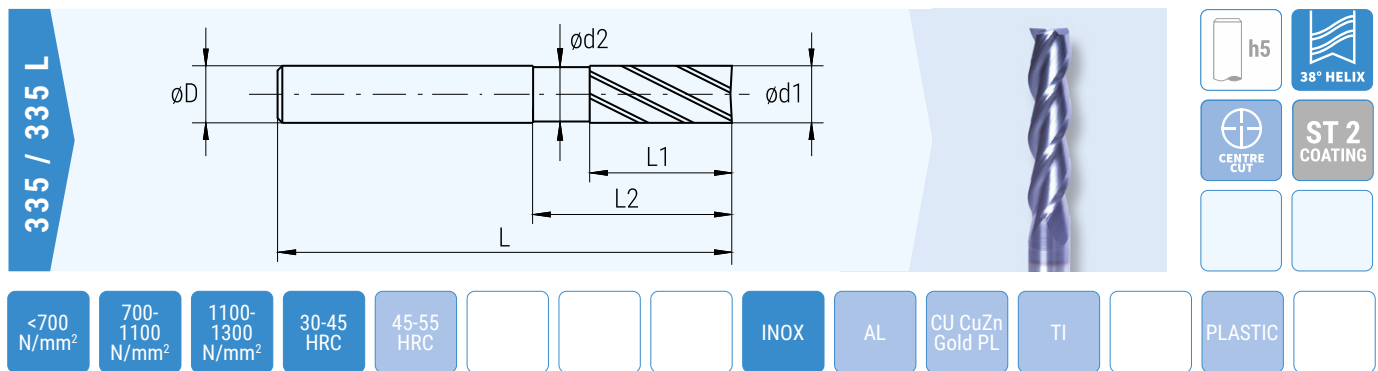


Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	L	D	Z
334 010	334 010 M	1,0	2,0	40	3	3
334 015	334 015 M	1,5	3,0	40	3	3
334 020	334 020 M	2,0	4,0	40	3	3
334 025	334 025 M	2,5	5,0	40	3	3
334 030	334 030 M	3,0	6,0	40	3	3
334 035	334 035 M	3,5	6,0	40	4	3
334 040	334 040 M	4,0	6,0	40	4	3
334 045	334 045 M	4,5	7,0	50	5	3
334 050	334 050 M	5,0	7,0	50	5	3
334 060	334 060 M	6,0	8,0	50	6	3

**VHM-Schaftfräser** Speziallänge,  $\varnothing$  2,0 - 6,0 mm, Schaft  $\varnothing$  6 mm  
**Solid carbide end mills** special length,  $\varnothing$  2,0 - 6,0 mm, shank  $\varnothing$  6 mm

Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	L	D	Z
335 H 020	335 H 020 M	2,0	6,0	57	6	3
335 H 025	335 H 025 M	2,5	8,0	57	6	3
335 H 030	335 H 030 M	3,0	8,0	57	6	3
335 H 035	335 H 035 M	3,5	11,0	57	6	3
335 H 040	335 H 040 M	4,0	11,0	57	6	3
335 H 045	335 H 045 M	4,5	13,0	57	6	3
335 H 050	335 H 050 M	5,0	13,0	57	6	3
335 H 055	335 H 055 M	5,5	13,0	57	6	3
335 H 060	335 H 060 M	6,0	13,0	57	6	3

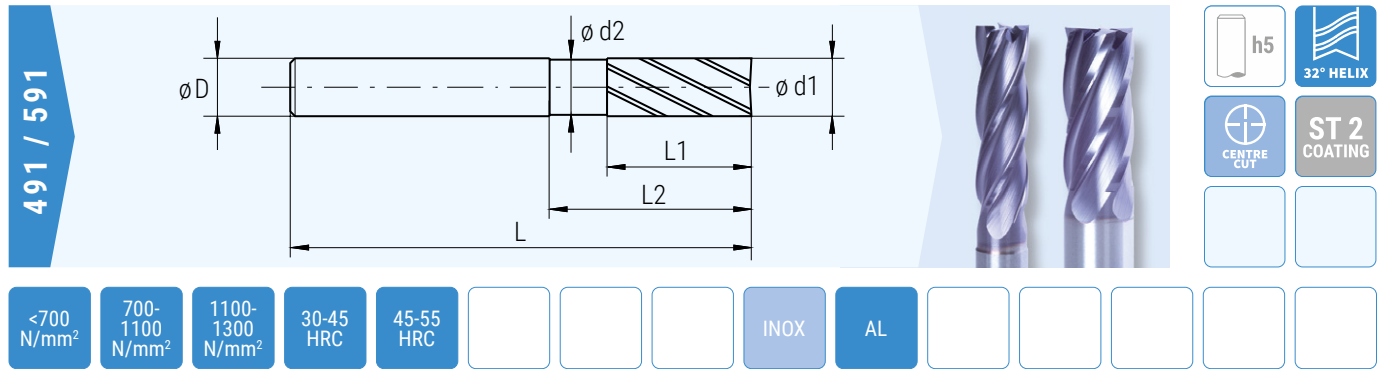
**VHM-Schaftfräser** lange Ausführung, ø 4,0 - 25,0 mm, Schaft ø 4 - 25 mm  
**Solid carbide end mills** long version, ø 4,0 - 25,0 mm, shank ø 4 - 25 mm



Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	L2	d2	L	D	Z
335 L 040	335 L 040 M	4,0	22,0	30,0	3,86	60	4	3
335 L 050	335 L 050 M	5,0	22,0	30,0	4,88	60	5	3
335 060	335 060 M	6,0	16,0	-	-	55	6	3
335 L 060	335 L 060 M		25,0	35,0	5,88	75		
335 070	335 070 M	7,0	18,0	-	-	60	8	3
335 080	335 080 M	8,0	22,0	-	-	60	8	3
335 L 080	335 L 080 M		34,0	44,0	7,68	80		
335 090	335 090 M	9,0	24,0	-	-	65	10	3
335 100	335 100 M	10,0	26,0	-	-	65	10	3
335 L 100	335 L 100 M		32,0	42,0	9,56	80		
335 110	335 110 M	11,0	25,0	-	-	70	12	3
335 120	335 120 M	12,0	25,0	-	-	70	12	3
335 L 120	335 L 120 M		40,0	50,0	11,32	100		
335 140	335 140 M	14,0	30,0	-	-	80	14	3
335 L 140	335 L 140 M		45,0	55,0	13,36	100		
335 150	335 150 M	15,0	32,0	-	-	90	16	3
335 160	335 160 M	16,0	35,0	-	-	90	16	3
335 L 160	335 L 160 M		50,0	60,0	15,44	110		
335 XL 160	335 XL 160 M		70,0	80,0	15,44	125		
335 180	335 180 M	18,0	40,0	-	-	100	18	3
335 L 180	335 L 180 M		55,0	65,0	17,40	125		
335 200	335 200 M	20,0	45,0	-	-	100	20	3
335 L 200	335 L 200 M		65,0	75,0	19,50	150		
335 XL 200	335 XL 200 M		85,0	95,0	19,50	150		
335 L 250	335 L 250 M	25,0	55,0	65,0	24,56	125	25	3
335 XL 250	335 XL 250 M		85,0	95,0	24,56	150		

## VHM-Schaftfräser $\varnothing 6,0 - 15,0$ mm, Schaft $\varnothing 6 - 16$ mm

### Solid carbide end mills $\varnothing 6,0 - 15,0$ mm, shank $\varnothing 6 - 16$ mm



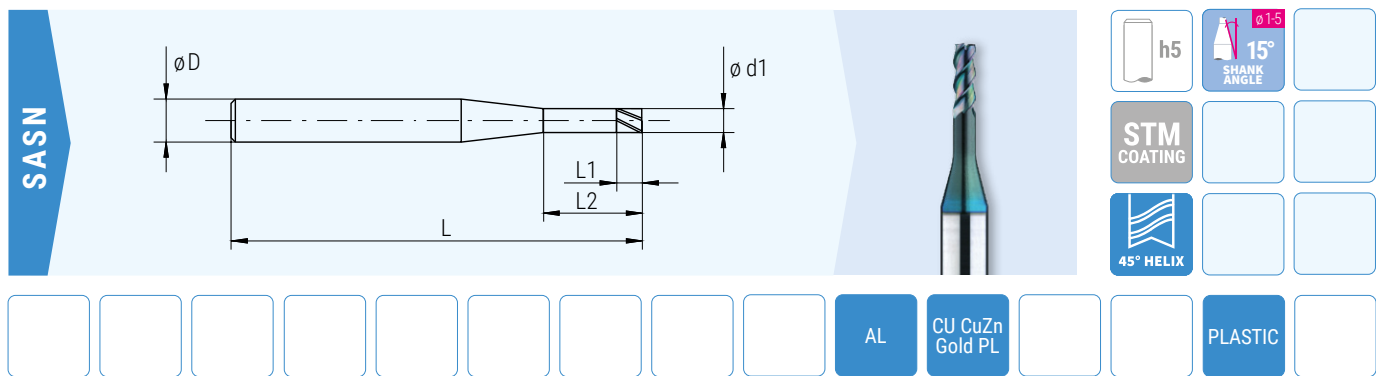
Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	L2	d2	L	D	Z
491 060	491 060 M	6,0	16,0	-	-	55	6	4
491 L 060	491 L 060 M		25,0	35,0	5,90	75		
491 070	491 070 M	7,0	18,0	-	-	60	8	4
491 080	491 080 M	8,0	22,0	-	-	60	8	4
491 L 080	491 L 080 M		34,0	44,0	7,88	80		
491 090	491 090 M	9,0	24,0	-	-	65	10	4
491 100	491 100 M	10,0	26,0	-	-	65	10	4
491 L 100	491 L 100 M		32,0	42,0	9,54	80		
491 110	491 110 M	11,0	25,0	-	-	70	12	4
491 120	491 120 M	12,0	25,0	-	-	70	12	4
491 L 120	491 L 120 M		40,0	50,0	11,78	100		
491 130	491 130 M	13,0	30,0	-	-	80	14	4
491 140	491 140 M	14,0	30,0	-	-	80	14	4
491 L 140	491 L 140 M		45,0	55,0	13,34	100		
491 150	491 150 M	15,0	32,0	-	-	90	16	4

## VHM-Schaftfräser $\varnothing 16,0 - 25,0$ mm, Schaft $\varnothing 16 - 25$ mm

### Solid carbide end mills $\varnothing 16,0 - 25,0$ mm, shank $\varnothing 16 - 25$ mm

Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	L2	d2	L	D	Z
591 160	591 160 M	16,0	35,0	-	-	90	16	5
591 L 160	591 L 160 M		50,0	60,0	15,38	110		
591 XL 160	591 XL 160 M		70,0	80,0		125		
591 180	591 180 M	18,0	40,0	-	-	100	18	5
591 L 180	591 L 180 M		55,0	65,0	16,34	125		
591 200	591 200 M	20,0	45,0	-	-	100	20	5
591 L 200	591 L 200 M		65,0	75,0	19,68	125		
591 XL 200	591 XL 200 M		85,0	95,0		150		
591 L 250	591 L 250 M	25,0	55,0	65,0	24,38	125	25	5
591 XL 250	591 XL 250 M		85,0	95,0		150		

**Alu Line: VHM-Schaftfräser** 3-Schneider für Aluminium, Schaft HA  
**Alu Line: Solid carbide end mill** 3 flutes for aluminium, shank HA



Best.-Nr. / Order no.	d1	L1	L2	L	D	Z
SASN-3008-030-S04-STM	0,8	1,6	3	50	4	3
SASN-3008-080-S04-STM			8			
SASN-3010-040-S06-STM	1,0	2,0	4	60	6	3
SASN-3010-060-S06-STM			6			
SASN-3010-100-S06-STM			10			
SASN-3015-060-S06-STM	1,5	3,0	6	60	6	3
SASN-3015-080-S06-STM			8			
SASN-3015-160-S06-STM			16			
SASN-3020-040-S06-STM	2,0	4,0	4	60	6	3
SASN-3020-100-S06-STM			10			
SASN-3020-200-S06-STM			20			
SASN-3025-100-S06-STM	2,5	5,0	10	60	6	3
SASN-3025-150-S06-STM			15			
SASN-3025-250-S06-STM			25			
SASN-3025-300-S06-STM			30			
SASN-3030-100-STM	3,0	6,0	10	60	6	3
SASN-3030-150-STM			15			
SASN-3030-300-STM			30			
SASN-3030-400-STM			40			
SASN-3040-100-STM	4,0	8,0	10	70	6	3
SASN-3040-200-STM			20			
SASN-3040-300-STM			30			
SASN-3040-400-STM			40			
SASN-3050-100-STM	5,0	10,0	10	80	6	3
SASN-3050-200-STM			20			
SASN-3050-300-STM			30			
SASN-3050-500-STM			50			
SASN-3060-200-STM	6,0	12,0	20	80	6	3
SASN-3060-400-STM			40			
SASN-3060-600-STM			60			
SASN-3060-800-STM			80			
SASN-3060-800-STM			120			
SASN-3080-400-STM	8,0	16,0	40	100	8	3
SASN-3080-600-STM			60			
SASN-3080-800-STM			80			
SASN-3100-500-STM	10,0	20,0	50	110	10	3
SASN-3100-700-STM			70			
SASN-3100-900-STM			90			
SASN-3120-500-STM	12,0	24,0	50	110	12	3
SASN-3120-700-STM			70			
SASN-3120-900-STM			90			
SASN-3160-800-STM	16,0	32,0	80	130	16	3
SASN-3200-1200-STM	20,0	40,0	120	160	20	3
SASN-3200-1500-STM			150			

**Alu Line: VHM-Schaftfräser** 3-Schneider, für Aluminium, lange Schneide, Schaft HA

**Alu Line: Solid carbide end mill** 3 flutes for aluminium, long cutting edge, shank HA

SASL

h5
15°  
SHANK  
ANGLE

STM  
COATING

45°  
HELIX

AL

CU CuZn  
Gold PL

PLASTIC

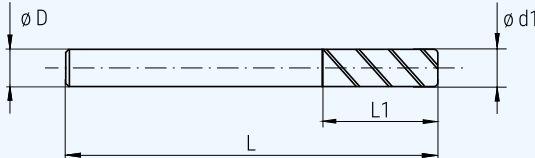
Best.-Nr. / Order no.	d1	L1	L	D	Z
SASL-3010-100-STM	1,0	10	45	6	3
SASL-3015-150-STM	1,5	15	50	6	3
SASL-3020-200-STM	2,0	20	60	6	3
SASL-3025-080-STM	2,5	8	45	6	3
SASL-3025-250-STM		25	65		
SASL-3030-200-STM	3,0	20	55	6	3
SASL-3030-300-STM		30	65		
SASL-3040-200-STM	4,0	20	55	6	3
SASL-3040-300-STM		30	65		
SASL-3050-300-STM	5,0	30	65	6	3
SASL-3050-400-STM		40	75		
SASL-3060-300-STM	6,0	30	70	6	3
SASL-3060-500-STM		50	90		
SASL-3080-400-STM	8,0	40	80	8	3
SASL-3080-700-STM		70	120		
SASL-3100-500-STM	10,0	50	100	10	3
SASL-3100-800-STM		80	130		
SASL-3120-500-STM	12,0	50	100	12	3
SASL-3120-800-STM		80	130		
SASL-3160-800-STM	16,0	80	130	16	3
SASL-3160-1000-STM		100	160		
SASL-3200-1000-STM	20,0	100	160	20	3
SASL-3200-2000-STM		130	200		


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## Alu Line: VHM-Schruppfräser 3-Schneider für Aluminium, Schaft HA, mit Schruppverzahnung


Alu Line: Solid carbide roughing end mill 3-flute for aluminum, HA shank, with roughing teeth


SARS





 h5

 STM COATING

 45° HELIX

AL

CU CuZn  
Gold PL

PLASTIC

Best.-Nr. / Order no.	d1	L1	L	D	Z
SARS-3060-150-STM	6	15	60	6	3
SARS-3080-200-STM	8	20	70	8	3
SARS-3080-300-STM		30	90		
SARS-3100-400-STM	10	40	100	10	3
SARS-3120-300-STM	12	30	80	12	3
SARS-3120-500-STM		50	110		
SARS-3160-420-STM	16	42	100	16	3
SARS-3200-480-STM	20	48	100	20	3



# Alu Line: VHM-Kugelfräser 2-Schneider für Aluminium, Schaft HA

## Alu Line: Solid carbide ball nose end mill 2-cutter for aluminum, shank HA

SABN

h5

$R_{\pm 0,005}^{\varnothing 0,25-2,5}$

$R_{\pm 0,01}^{\varnothing 3-6}$

STM COATING

$R_{\pm 0,015}^{\varnothing 8}$

45° HELIX

$15^{\circ}$  SHANK ANGLE

AL

CU CuZn  
Gold PL

PLASTIC

Best.-Nr. / Order no.	d1	ER	L1	L2	L	D	Z
SABN-2005-020-S04-STM	0,5	0,25	0,7	2	45	4	2
SABN-2005-040-S04-STM				4			
SABN-2005-060-S04-STM				6			
SABN-2006-020-S04-STM	0,6	0,30	0,9	2	45	4	2
SABN-2006-040-S04-STM				4			
SABN-2006-060-S04-STM				6			
SABN-2006-080-S04-STM				8			
SABN-2008-030-S04-STM	0,8	0,40	1,2	3	45	4	2
SABN-2008-060-S04-STM				6			
SABN-2008-080-S04-STM				8			
SABN-2008-100-S04-STM				10			
SABN-2008-120-S04-STM				12			
SABN-2010-050-S04-STM	1,0	0,50	1,5	5	50	4	2
SABN-2010-100-S04-STM				10			
SABN-2010-160-S04-STM				16			
SABN-2010-200-S04-STM				20			
SABN-2012-040-S04-STM	1,2	0,60	1,8	4	50	4	2
SABN-2012-060-S04-STM				6			
SABN-2012-080-S04-STM				8			
SABN-2012-100-S04-STM				10			
SABN-2015-050-S04-STM	1,5	0,75	2,0	5	50	4	2
SABN-2015-100-S04-STM				10			
SABN-2015-160-S04-STM				16			
SABN-2015-200-S04-STM				20			
SABN-2020-050-S06-STM	2,0	1,00	3,0	5	50	6	2
SABN-2020-080-S06-STM				8			
SABN-2020-100-S06-STM				10			
SABN-2020-160-S06-STM				16	60		
SABN-2020-200-S06-STM				20			
SABN-2020-250-S06-STM				25			
SABN-2025-060-S06-STM	2,5	1,25	4,0	6	50	6	2
SABN-2025-100-S06-STM				10			
SABN-2025-160-S06-STM				16	60		
SABN-2025-200-S06-STM				20			

# Alu Line: VHM-Kugelfräser 2-Schneider für Aluminium, Schaft HA

## Alu Line: Solid carbide ball nose end mill 2-cutter for aluminum, shank HA

SABN

h5

$\varnothing 0.25-2.5$   
R  
 $\pm 0,005$

$\varnothing 3-6$   
R  
 $\pm 0,01$

STM  
COATING

$\varnothing 8$   
R  
 $\pm 0,015$

45° HELIX

$\varnothing 1-5$   
15°  
SHANK  
ANGLE

AL

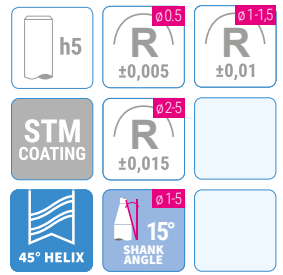
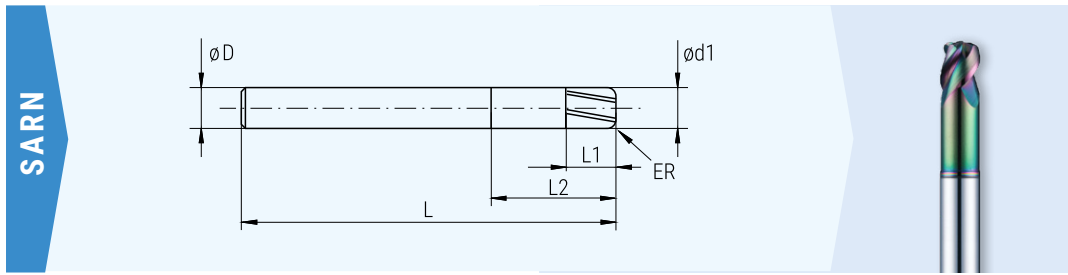
CU CuZn  
Gold PL

PLASTIC

Best.-Nr. / Order no.	d1	ER	L1	L2	L	D	Z
SABN-2030-080-STM	3,0	1,50	4,5	8	60	6	2
SABN-2030-120-STM				12			
SABN-2030-160-STM				16			
SABN-2030-200-STM				20			
SABN-2030-250-STM				25			
SABN-2030-300-STM				30			
SABN-2030-400-STM				40			
SABN-2040-100-STM	4,0	2,00	6,0	10	60	6	2
SABN-2040-160-STM				16			
SABN-2040-200-STM				20			
SABN-2040-300-STM				30			
SABN-2040-400-STM				40			
SABN-2050-160-STM	5,0	2,50	8,0	16	80	6	2
SABN-2050-200-STM				20			
SABN-2050-250-STM				25			
SABN-2060-300-STM	6,0	3,00	9,0	30	90	6	2
SABN-2060-400-STM				40			
SABN-2080-200-STM	8,0	4,00	12,0	20	100	8	2
SABN-2100-250-STM	10,0	5,00	15,0	25	100	10	2
SABN-2120-300-STM	12,0	6,00	18,0	30	110	12	2
SABN-2160-600-STM	16,0	8,00	30,0	60	160	16	2

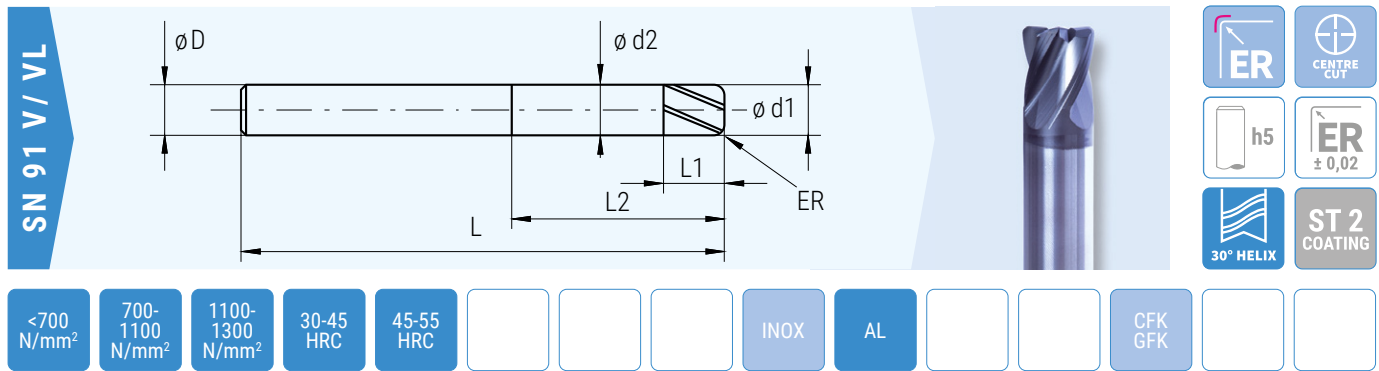
**Alu Line: VHM-Torusfräser** 3-Schneider für Aluminium, Schaft HA

**Alu Line: Solid carbide end mill with corner radius** 3 flutes for aluminium, shank HA



Best.-Nr. / Order no.	d1	ER	L1	L2	L	D	Z
SARN-3030-R005-600-STM	3	0,5	10	15	60	4	3
SARN-3040-R005-600-STM	4	0,5	12	20	60	4	3
SARN-3050-R005-600-STM	5	0,5	15	20	60	6	3
SARN-3050-R010-600-STM		1,0					
SARN-3060-R005-700-STM	6	0,5	7	20	70	6	3
SARN-3060-R010-700-STM		1,0					
SARN-3080-R005-800-STM	8	0,5	9	25	80	8	3
SARN-3080-R010-800-STM		1,0					
SARN-3100-R005-1000-STM	10	0,5	11	30	100	10	3
SARN-3100-R010-1000-STM		1,0					
SARN-3100-R015-1000-STM		1,5					
SARN-3120-R005-1100-STM	12	0,5	13	36	110	12	3
SARN-3120-R010-1100-STM		1,0					
SARN-3120-R015-1100-STM		1,5					
SARN-3120-R020-1100-STM		2,0					
SARN-3160-R005-1300-STM	16	0,5	17	50	130	16	3
SARN-3160-R010-1300-STM		1,0					
SARN-3160-R020-1300-STM		2,0					
SARN-3200-R010-1500-STM	20	1,0	21	60	150	20	3
SARN-3200-R020-1500-STM		2,0					
SARN-3200-R040-1500-STM		4,0					

**VHM-Torusfräser** ø 6,0 - 12,0 mm, Schaft ø 6 - 12 mm  
**Solid carbide end mill with corner radius** ø 6,0 - 12,0 mm, shank ø 6 - 12 mm



Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	L2	d2	L	D	ER	Z
91 V 0605	SN 91 V 0605	6,0	6,0	30,0	5,8	55	6	0,50	4
91 V 06010	SN 91 V 06010			50,0		75		1,00	
91 VL 0605	SN 91 VL 0605			50,0		75		0,50	
91 VL 06010	SN 91 VL 06010			50,0		75		1,00	
91 V 0805	SN 91 V 0805	8,0	8,0	35,0	7,8	65	8	0,50	4
91 V 08010	SN 91 V 08010			50,0		80		1,00	
91 VL 0805	SN 91 VL 0805			50,0		80		0,50	
91 VL 08010	SN 91 VL 08010			50,0		80		1,00	
91 V 1005	SN 91 V 1005	10,0	10,0	40,0	9,8	75	10	0,50	4
91 V 10010	SN 91 V 10010			60,0		100		1,00	
91 VL 1005	SN 91 VL 1005			60,0		100		0,50	
91 VL 10010	SN 91 VL 10010			60,0		100		1,00	
91 V 1205	SN 91 V 1205	12,0	12,0	40,0	11,8	75	12	0,50	4
91 V 12010	SN 91 V 12010			60,0		100		1,00	
91 VL 1205	SN 91 VL 1205			60,0		100		0,50	
91 VL 12010	SN 91 VL 12010			60,0		100		1,00	

# VHM-Torusfräser $\varnothing 6,0 - 16,0$ mm, Schaft $\varnothing 6 - 16$ mm

Solid carbide end mill with corner radius  $\varnothing 6,0 - 16,0$  mm, shank  $\varnothing 6 - 16$  mm

SN 64

ER
ER  $\pm 0,02$

h5
30° HELIX

ST 2 COATING

<math><700</math> N/mm<sup>2</sup>

700-1100 N/mm<sup>2</sup>

1100-1300 N/mm<sup>2</sup>

30-45 HRC

45-55 HRC

INOX

AL

CU CuZn Gold PL

TI

PLASTIC

Best.-Nr. / Order no.	d1	L1	L2	d2	ER	Z	L	D
SN 64 V 060 - 100	6,0	6,0	15,0	5,9	1,00	4	50	6
SN 64 VL 060 - 100			30,0				65	
SN 64 V 080 - 100	8,0	8,0	20,0	7,9	1,00	4	50	8
SN 64 VL 080 - 100			35,0				65	
SN 64 V 100 - 100	10,0	10,0	20,0	9,9	1,00	4	50	10
SN 64 VL 100 - 100			40,0				75	
SN 64 VXL 100 - 100			60,0				100	
SN 64 V 100 - 150	10,0	10,0	20,0	9,9	1,50	4	50	10
SN 64 VL 100 - 150			40,0				75	
SN 64 V 120 - 100	12,0	12,0	20,0	11,9	1,00	4	60	12
SN 64 VL 120 - 100			40,0				75	
SN 64 VXL 120 - 100			60,0				100	
SN 64 V 120 - 200	12,0	12,0	20,0	11,9	2,00	4	75	12
SN 64 VL 120 - 200			40,0				100	
SN 64 V 160 - 200	16,0	16,0	30,0	15,9	2,00	4	50	16
SN 64 VL 160 - 200			50,0				75	

## VHM-Torusfräser für Superlegierungen bis HRC 55, ø 6,0 - 10,0 mm, Schaft ø 6 - 10 mm

**Solid carbide end mill with corner radius** for superalloys up to 55 HRC, ø 6,0 - 10,0 mm, shank ø 6 - 10 mm

CLFT


<700 N/mm<sup>2</sup>

700-1100 N/mm<sup>2</sup>

1100-1300 N/mm<sup>2</sup>

30-45 HRC

45-55 HRC

INOX

AL

CU CuZn Gold PL

TI

Ni Co Legier.

Best.-Nr. / Order no.	d1	L1	L	D	ER	Z
CLFT 060 160 100	6,0	16,0	90	6	1,0	4
CLFT 080 160 050	8,0	16,0	100	8	0,5	4
CLFT 080 160 100	8,0	16,0	100	8	1,0	4
CLFT 100 260 050	10,0	26,0	110	10	0,5	4
CLFT 100 260 100	10,0	26,0	110	10	1,0	4
CLFT 100 260 150	10,0	26,0	110	10	1,5	4

Weitere Werkzeugabmessungen im Bereich d1=6,00 mm bis d1= 12,00 mm auf Anfrage verfügbar.

Other tool dimensions in the range d1=6,00 mm to d1= 12,00 mm available on request.

## VHM-Torusfräser ø 8,0 - 12,0 mm, Schaft ø 8 - 12 mm

**Solid carbide end mill with corner radius** ø 8,0 - 12,0 mm, shank ø 8 - 12 mm

SN 66


<700 N/mm<sup>2</sup>

700-1100 N/mm<sup>2</sup>

1100-1300 N/mm<sup>2</sup>

30-45 HRC

45-55 HRC

55-60 HRC

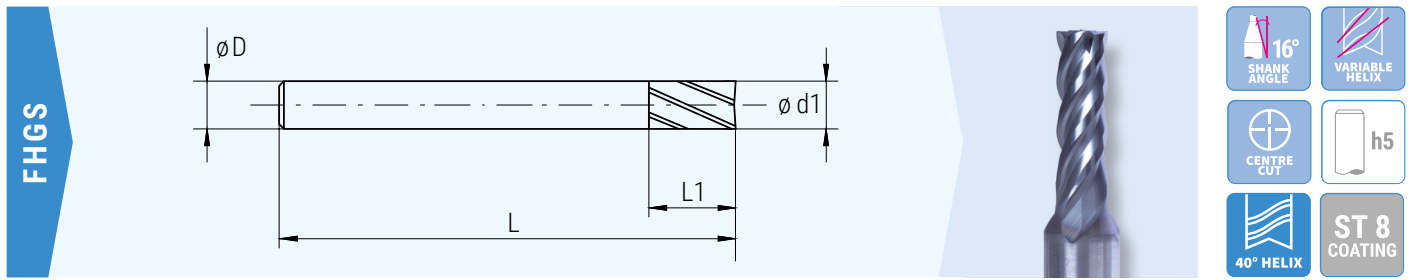
INOX

TI

CFK GFK

Best.-Nr. / Order no.	d1	L1	L2	d2	ER	Z	L	D
SN 66V 080 - 100	8,0	8,0	20,0	7,9	1,00	6	50	8
SN 66VL 080 - 100			35,0				65	
SN 66V 100 - 100	10,0	10,0	20,0	9,9	1,00	6	50	10
SN 66VL 100 - 100			40,0				75	
SN 66V 120 - 100	12,0	12,0	20,0	11,9	1,00	6	60	12
SN 66VL 120 - 100			40,0				75	

**VHM-Schafffräser** mit zwei voreilenden Zentrumschneiden (Bohren),  $\varnothing$  1,0 - 12,0 mm, Schaft  $\varnothing$  4 - 12 mm  
**Solid carbide end mills** with two leading centre cutting edges (drilling),  $\varnothing$  1,0 - 12,0 mm, shank  $\varnothing$  4 - 12 mm

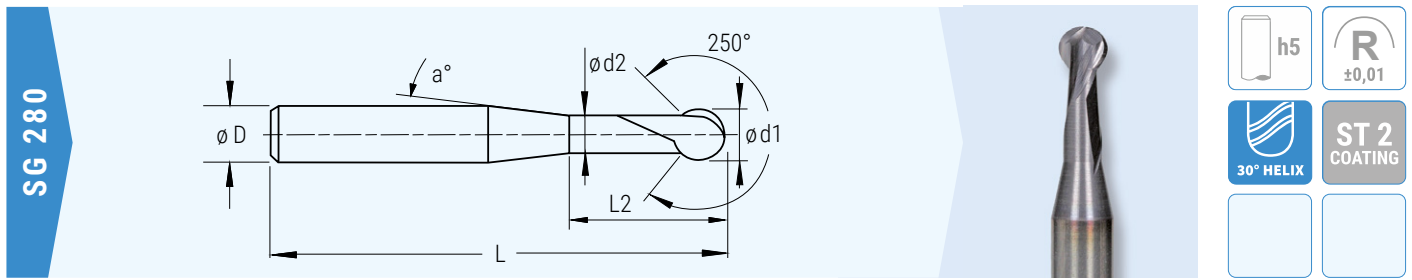


Material compatibility icons: <math><700</math> N/mm<sup>2</sup>, 700-1100 N/mm<sup>2</sup>, 1100-1300 N/mm<sup>2</sup>, 30-45 HRC, 45-55 HRC, INOX, AL, CU CuZn Gold PL, TI, CFK GFK, PLASTIC.

Best.-Nr. / Order no.	d1	L1	L	D	Z
FHGS 010 - 025	1,0	2,5	50	4	4
FHGS 015 - 040	1,5	4,0	50	4	4
FHGS 020 - 060	2,0	6,0	50	4	4
FHGS 025 - 080	2,5	8,0	50	4	4
FHGS 030 - 080	3,0	8,0	60	6	4
FHGS 035 - 100	3,5	10,0	60	6	4
FHGS 040 - 110	4,0	11,0	60	6	4
FHGS 045 - 110	4,5	11,0	60	6	4
FHGS 050 - 130	5,0	13,0	60	6	4
FHGS 055 - 130	5,5	13,0	60	6	4
FHGS 060 - 130	6,0	13,0	60	6	4
FHGS 065 - 160	6,5	16,0	70	8	4
FHGS 070 - 160	7,0	16,0	70	8	4
FHGS 075 - 160	7,5	16,0	70	8	4
FHGS 080 - 190	8,0	19,0	70	8	4
FHGS 085 - 190	8,5	19,0	80	10	4
FHGS 090 - 190	9,0	19,0	80	10	4
FHGS 095 - 190	9,5	19,0	80	10	4
FHGS 100 - 220	10,0	22,0	80	10	4
FHGS 105 - 220	10,5	22,0	100	12	4
FHGS 110 - 220	11,0	22,0	100	12	4
FHGS 115 - 220	11,5	22,0	100	12	4
FHGS 120 - 260	12,0	26,0	100	12	4

Weitere Werkzeugabmessungen im Bereich d1=1,00 mm bis d1= 20,00 mm auf Anfrage verfügbar.  
 Other tool dimensions in the range d1=1,00 mm to d1= 20,00 mm available on request.

**VHM-Kugelfräser mit 250°**  $\varnothing$  2,0 - 12,0 mm, Schaft  $\varnothing$  3 - 12 mm  
**Solid carbide ballnose end mills with 250°**  $\varnothing$  2,0 - 12,0 mm, shank  $\varnothing$  3 - 12 mm



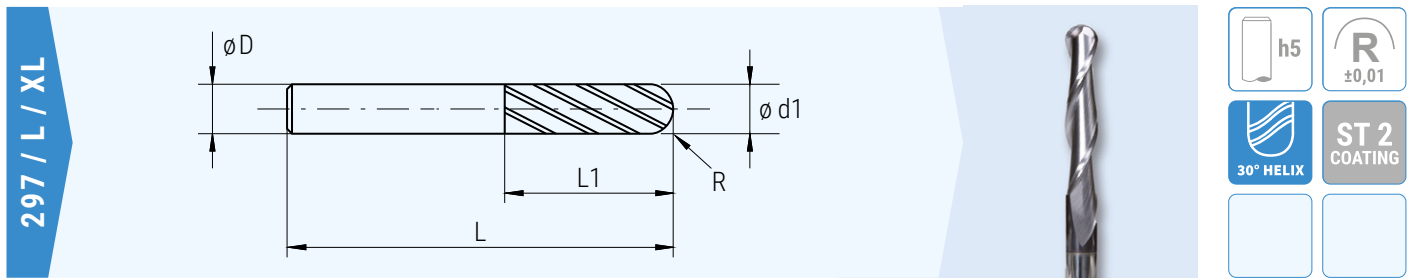
Material compatibility and specifications:

- h5
- R ±0,01
- 30° HELIX
- ST 2 COATING
- <700 N/mm<sup>2</sup>
- 700-1100 N/mm<sup>2</sup>
- 1100-1300 N/mm<sup>2</sup>
- 30-45 HRC
- 45-55 HRC
- 55-60 HRC
- 60-65 HRC
- INOX
- AL
- CU CuZn Gold PL
- TI
- CFK GFK
- PLASTIC

Best.-Nr. / Order no.	d1	D	d2	L2	L	a°	Z
SG 280 020	2,0	3	1,6	4,0	50	10	2
SG 280 030	3,0	4	2,5	6,0	50	10	2
SG 280 040	4,0	5	3,0	8,0	50	10	2
SG 280 050	5,0	6	3,7	12,0	60	10	2
SG 280 060	6,0	6	4,7	16,0	60	10	2
SG 280 080	8,0	8	6,4	20,0	70	15	2
SG 280 100	10,0	10	8,0	24,0	75	15	2
SG 280 120	12,0	12	9,6	28,0	80	15	2



**VHM-Kugelfräser** ø 1,0 - 20,0 mm, Schaft ø 3 - 20 mm  
**Solid carbide ballnose end mills** ø 1,0 - 20,0 mm, shank ø 3 - 20 mm



297 / L / XL

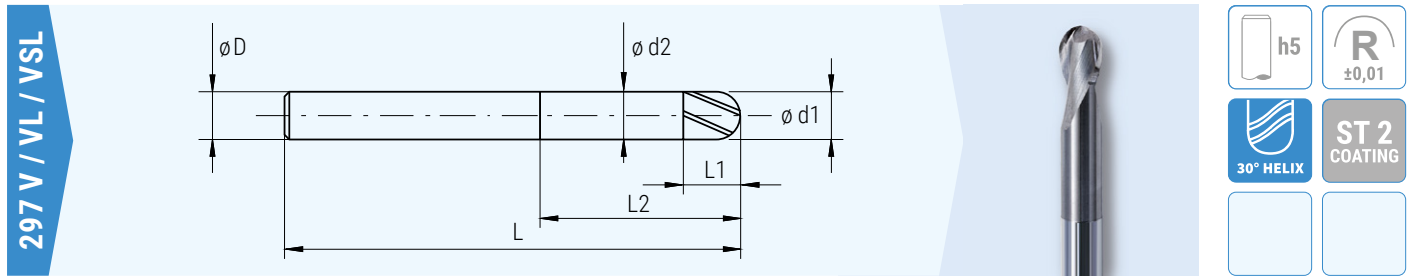
h5 R ±0,01

30° HELIX ST2 COATING

<700 N/mm<sup>2</sup> 700-1100 N/mm<sup>2</sup> 1100-1300 N/mm<sup>2</sup> 30-45 HRC 45-55 HRC INOX AL CU CuZn Gold PL TI PLASTIC

Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	L	D	R	Z																																																																																																																																																																																									
297 010	297 010 M	1,0	2,0	40	3	0,50	2																																																																																																																																																																																									
297 L 010	297 L 010 M		5,0					297 015	297 015 M	1,5	3,0	40	3	0,75	2	297 L 015	297 L 015 M	6,0	297 021	297 021 M	2,0	4,0	40	3	1,00	2	297 L 021	297 L 021 M	9,0	297 025	297 025 M	2,5	3,0	40	3	1,25	2	297 030	297 030 M	3,0	8,0	40	3	1,50	2	297 L 032	297 L 032 M	20,0	297 035	297 035 M	3,5	12,0	50	4	1,75	2	297 040	297 040 M	4,0	14,0	50	4	2,00	2	297 L 043	297 L 043 M	30,0	297 045	297 045 M	4,5	14,0	50	5	2,25	2	297 050	297 050 M	5,0	20,0	50	5	2,50	2	297 L 053	297 L 053 M	35,0	297 055	297 055 M	5,5	20,0	65	6	2,75	2	297 060	297 060 M	6,0	20,0	65	6	3,00	2	297 L 064	297 L 064 M	40,0	297 072	297 072 M	7,0	20,0	65	8	3,50	2	297 080	297 080 M	8,0	20,0	65	8	4,00	2	297 L 084	297 L 084 M	40,0	297 092	297 092 M	9,0	20,0	65	10	4,50	2	297 100	297 100 M	10,0	25,0	75	10	5,00	2	297 L 104	297 L 104 M	40,0	297 112	297 112 M	11,0	25,0	75	12	5,50	2	297 120	297 120 M	12,0	25,0	75	12	6,00	2	297 L 124	297 L 124 M	40,0	297 143	297 143 M	14,0	30,0	90	14	7,00	2	297 153	297 153 M	15,0	30,0	90	16	7,50	2	297 L 164	297 L 164 M	16,0	45,0	100	16	8,00	2	297 XL 166	297 XL 166 M	65,0	297 204	297 204 M	20,0
297 015	297 015 M	1,5	3,0	40	3	0,75	2																																																																																																																																																																																									
297 L 015	297 L 015 M		6,0					297 021	297 021 M	2,0	4,0	40	3	1,00	2	297 L 021	297 L 021 M	9,0	297 025	297 025 M	2,5	3,0	40	3	1,25	2	297 030	297 030 M	3,0	8,0	40	3	1,50	2	297 L 032	297 L 032 M	20,0	297 035	297 035 M	3,5	12,0	50	4	1,75	2	297 040	297 040 M	4,0	14,0	50	4	2,00	2	297 L 043	297 L 043 M	30,0	297 045	297 045 M	4,5	14,0	50	5	2,25	2	297 050	297 050 M	5,0	20,0	50	5	2,50	2	297 L 053	297 L 053 M	35,0	297 055	297 055 M	5,5	20,0	65	6	2,75	2	297 060	297 060 M	6,0	20,0	65	6	3,00	2	297 L 064	297 L 064 M	40,0	297 072	297 072 M	7,0	20,0	65	8	3,50	2	297 080	297 080 M	8,0	20,0	65	8	4,00	2	297 L 084	297 L 084 M	40,0	297 092	297 092 M	9,0	20,0	65	10	4,50	2	297 100	297 100 M	10,0	25,0	75	10	5,00	2	297 L 104	297 L 104 M	40,0	297 112	297 112 M	11,0	25,0	75	12	5,50	2	297 120	297 120 M	12,0	25,0	75	12	6,00	2	297 L 124	297 L 124 M	40,0	297 143	297 143 M	14,0	30,0	90	14	7,00	2	297 153	297 153 M	15,0	30,0	90	16	7,50	2	297 L 164	297 L 164 M	16,0	45,0	100	16	8,00	2	297 XL 166	297 XL 166 M	65,0	297 204	297 204 M	20,0	40,0	100	20	10,00	2						
297 021	297 021 M	2,0	4,0	40	3	1,00	2																																																																																																																																																																																									
297 L 021	297 L 021 M		9,0					297 025	297 025 M	2,5	3,0	40	3	1,25	2	297 030	297 030 M	3,0	8,0	40	3	1,50	2	297 L 032	297 L 032 M	20,0	297 035	297 035 M	3,5	12,0	50	4	1,75	2	297 040	297 040 M	4,0	14,0	50	4	2,00	2	297 L 043	297 L 043 M	30,0	297 045	297 045 M	4,5	14,0	50	5	2,25	2	297 050	297 050 M	5,0	20,0	50	5	2,50	2	297 L 053	297 L 053 M	35,0	297 055	297 055 M	5,5	20,0	65	6	2,75	2	297 060	297 060 M	6,0	20,0	65	6	3,00	2	297 L 064	297 L 064 M	40,0	297 072	297 072 M	7,0	20,0	65	8	3,50	2	297 080	297 080 M	8,0	20,0	65	8	4,00	2	297 L 084	297 L 084 M	40,0	297 092	297 092 M	9,0	20,0	65	10	4,50	2	297 100	297 100 M	10,0	25,0	75	10	5,00	2	297 L 104	297 L 104 M	40,0	297 112	297 112 M	11,0	25,0	75	12	5,50	2	297 120	297 120 M	12,0	25,0	75	12	6,00	2	297 L 124	297 L 124 M	40,0	297 143	297 143 M	14,0	30,0	90	14	7,00	2	297 153	297 153 M	15,0	30,0	90	16	7,50	2	297 L 164	297 L 164 M	16,0	45,0	100	16	8,00	2	297 XL 166	297 XL 166 M	65,0	297 204	297 204 M	20,0	40,0	100	20	10,00	2																	
297 025	297 025 M	2,5	3,0	40	3	1,25	2																																																																																																																																																																																									
297 030	297 030 M	3,0	8,0	40	3	1,50	2																																																																																																																																																																																									
297 L 032	297 L 032 M		20,0					297 035	297 035 M	3,5	12,0	50	4	1,75	2	297 040	297 040 M	4,0	14,0	50	4	2,00	2	297 L 043	297 L 043 M	30,0	297 045	297 045 M	4,5	14,0	50	5	2,25	2	297 050	297 050 M	5,0	20,0	50	5	2,50	2	297 L 053	297 L 053 M	35,0	297 055	297 055 M	5,5	20,0	65	6	2,75	2	297 060	297 060 M	6,0	20,0	65	6	3,00	2	297 L 064	297 L 064 M	40,0	297 072	297 072 M	7,0	20,0	65	8	3,50	2	297 080	297 080 M	8,0	20,0	65	8	4,00	2	297 L 084	297 L 084 M	40,0	297 092	297 092 M	9,0	20,0	65	10	4,50	2	297 100	297 100 M	10,0	25,0	75	10	5,00	2	297 L 104	297 L 104 M	40,0	297 112	297 112 M	11,0	25,0	75	12	5,50	2	297 120	297 120 M	12,0	25,0	75	12	6,00	2	297 L 124	297 L 124 M	40,0	297 143	297 143 M	14,0	30,0	90	14	7,00	2	297 153	297 153 M	15,0	30,0	90	16	7,50	2	297 L 164	297 L 164 M	16,0	45,0	100	16	8,00	2	297 XL 166	297 XL 166 M	65,0	297 204	297 204 M	20,0	40,0	100	20	10,00	2																																				
297 035	297 035 M	3,5	12,0	50	4	1,75	2																																																																																																																																																																																									
297 040	297 040 M	4,0	14,0	50	4	2,00	2																																																																																																																																																																																									
297 L 043	297 L 043 M		30,0					297 045	297 045 M	4,5	14,0	50	5	2,25	2	297 050	297 050 M	5,0	20,0	50	5	2,50	2	297 L 053	297 L 053 M	35,0	297 055	297 055 M	5,5	20,0	65	6	2,75	2	297 060	297 060 M	6,0	20,0	65	6	3,00	2	297 L 064	297 L 064 M	40,0	297 072	297 072 M	7,0	20,0	65	8	3,50	2	297 080	297 080 M	8,0	20,0	65	8	4,00	2	297 L 084	297 L 084 M	40,0	297 092	297 092 M	9,0	20,0	65	10	4,50	2	297 100	297 100 M	10,0	25,0	75	10	5,00	2	297 L 104	297 L 104 M	40,0	297 112	297 112 M	11,0	25,0	75	12	5,50	2	297 120	297 120 M	12,0	25,0	75	12	6,00	2	297 L 124	297 L 124 M	40,0	297 143	297 143 M	14,0	30,0	90	14	7,00	2	297 153	297 153 M	15,0	30,0	90	16	7,50	2	297 L 164	297 L 164 M	16,0	45,0	100	16	8,00	2	297 XL 166	297 XL 166 M	65,0	297 204	297 204 M	20,0	40,0	100	20	10,00	2																																																							
297 045	297 045 M	4,5	14,0	50	5	2,25	2																																																																																																																																																																																									
297 050	297 050 M	5,0	20,0	50	5	2,50	2																																																																																																																																																																																									
297 L 053	297 L 053 M		35,0					297 055	297 055 M	5,5	20,0	65	6	2,75	2	297 060	297 060 M	6,0	20,0	65	6	3,00	2	297 L 064	297 L 064 M	40,0	297 072	297 072 M	7,0	20,0	65	8	3,50	2	297 080	297 080 M	8,0	20,0	65	8	4,00	2	297 L 084	297 L 084 M	40,0	297 092	297 092 M	9,0	20,0	65	10	4,50	2	297 100	297 100 M	10,0	25,0	75	10	5,00	2	297 L 104	297 L 104 M	40,0	297 112	297 112 M	11,0	25,0	75	12	5,50	2	297 120	297 120 M	12,0	25,0	75	12	6,00	2	297 L 124	297 L 124 M	40,0	297 143	297 143 M	14,0	30,0	90	14	7,00	2	297 153	297 153 M	15,0	30,0	90	16	7,50	2	297 L 164	297 L 164 M	16,0	45,0	100	16	8,00	2	297 XL 166	297 XL 166 M	65,0	297 204	297 204 M	20,0	40,0	100	20	10,00	2																																																																										
297 055	297 055 M	5,5	20,0	65	6	2,75	2																																																																																																																																																																																									
297 060	297 060 M	6,0	20,0	65	6	3,00	2																																																																																																																																																																																									
297 L 064	297 L 064 M		40,0					297 072	297 072 M	7,0	20,0	65	8	3,50	2	297 080	297 080 M	8,0	20,0	65	8	4,00	2	297 L 084	297 L 084 M	40,0	297 092	297 092 M	9,0	20,0	65	10	4,50	2	297 100	297 100 M	10,0	25,0	75	10	5,00	2	297 L 104	297 L 104 M	40,0	297 112	297 112 M	11,0	25,0	75	12	5,50	2	297 120	297 120 M	12,0	25,0	75	12	6,00	2	297 L 124	297 L 124 M	40,0	297 143	297 143 M	14,0	30,0	90	14	7,00	2	297 153	297 153 M	15,0	30,0	90	16	7,50	2	297 L 164	297 L 164 M	16,0	45,0	100	16	8,00	2	297 XL 166	297 XL 166 M	65,0	297 204	297 204 M	20,0	40,0	100	20	10,00	2																																																																																													
297 072	297 072 M	7,0	20,0	65	8	3,50	2																																																																																																																																																																																									
297 080	297 080 M	8,0	20,0	65	8	4,00	2																																																																																																																																																																																									
297 L 084	297 L 084 M		40,0					297 092	297 092 M	9,0	20,0	65	10	4,50	2	297 100	297 100 M	10,0	25,0	75	10	5,00	2	297 L 104	297 L 104 M	40,0	297 112	297 112 M	11,0	25,0	75	12	5,50	2	297 120	297 120 M	12,0	25,0	75	12	6,00	2	297 L 124	297 L 124 M	40,0	297 143	297 143 M	14,0	30,0	90	14	7,00	2	297 153	297 153 M	15,0	30,0	90	16	7,50	2	297 L 164	297 L 164 M	16,0	45,0	100	16	8,00	2	297 XL 166	297 XL 166 M	65,0	297 204	297 204 M	20,0	40,0	100	20	10,00	2																																																																																																																
297 092	297 092 M	9,0	20,0	65	10	4,50	2																																																																																																																																																																																									
297 100	297 100 M	10,0	25,0	75	10	5,00	2																																																																																																																																																																																									
297 L 104	297 L 104 M		40,0					297 112	297 112 M	11,0	25,0	75	12	5,50	2	297 120	297 120 M	12,0	25,0	75	12	6,00	2	297 L 124	297 L 124 M	40,0	297 143	297 143 M	14,0	30,0	90	14	7,00	2	297 153	297 153 M	15,0	30,0	90	16	7,50	2	297 L 164	297 L 164 M	16,0	45,0	100	16	8,00	2	297 XL 166	297 XL 166 M	65,0	297 204	297 204 M	20,0	40,0	100	20	10,00	2																																																																																																																																			
297 112	297 112 M	11,0	25,0	75	12	5,50	2																																																																																																																																																																																									
297 120	297 120 M	12,0	25,0	75	12	6,00	2																																																																																																																																																																																									
297 L 124	297 L 124 M		40,0					297 143	297 143 M	14,0	30,0	90	14	7,00	2	297 153	297 153 M	15,0	30,0	90	16	7,50	2	297 L 164	297 L 164 M	16,0	45,0	100	16	8,00	2	297 XL 166	297 XL 166 M	65,0	297 204	297 204 M	20,0	40,0	100	20	10,00	2																																																																																																																																																						
297 143	297 143 M	14,0	30,0	90	14	7,00	2																																																																																																																																																																																									
297 153	297 153 M	15,0	30,0	90	16	7,50	2																																																																																																																																																																																									
297 L 164	297 L 164 M	16,0	45,0	100	16	8,00	2																																																																																																																																																																																									
297 XL 166	297 XL 166 M		65,0					297 204	297 204 M	20,0	40,0	100	20	10,00	2																																																																																																																																																																																	
297 204	297 204 M	20,0	40,0	100	20	10,00	2																																																																																																																																																																																									

**VHM-Kugelfräser** kurze Schneide, lange Ausführung,  $\varnothing$  3,0 - 12,0 mm, Schaft  $\varnothing$  3 - 12 mm  
**Solid carbide ballnose end mills** short cutting edge, long version,  $\varnothing$  3,0 - 12,0 mm, shank  $\varnothing$  3 - 12 mm

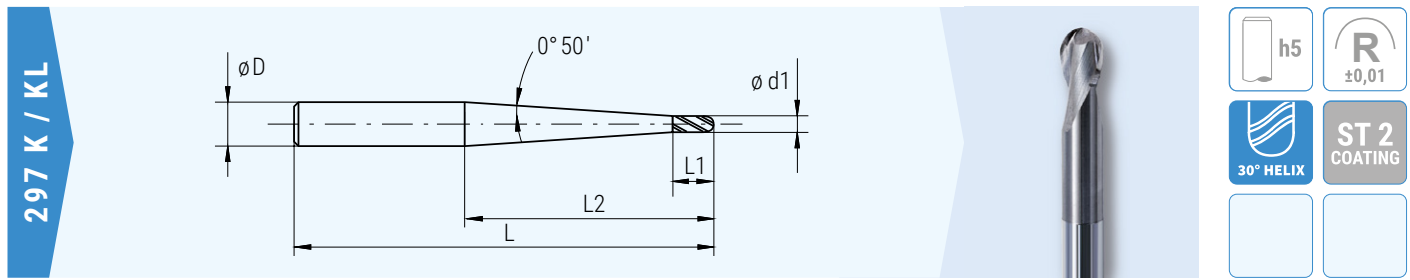


Material compatibility: <math><700</math> N/mm<sup>2</sup>, <math>700-1100</math> N/mm<sup>2</sup>, <math>1100-1300</math> N/mm<sup>2</sup>, 30-45 HRC, 45-55 HRC, INOX, AL, CU CuZn Gold PL, TI, PLASTIC.

Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	d2	L2	L	D	R	Z
297 V 030	297 V 030 M	3,0	6,0	2,90	15,0	40	3	1,50	2
297 VL 030	297 VL 030 M				30,0	60			
297 V 040	297 V 040 M	4,0	6,0	3,90	15,0	40	4	2,00	2
297 VL 040	297 VL 040 M				30,0	60			
297 V 050	297 V 050 M	5,0	8,0	4,90	15,0	40	5	2,50	2
297 VL 050	297 VL 050 M				40,0	70			
297 V 060	297 V 060 M	6,0	10,0	5,90	30,0	55	6	3,00	2
297 VL 060	297 VL 060 M				60,0	100			
297 V 080	297 V 080 M	8,0	10,0	7,80	35,0	65	8	4,00	2
297 VL 080	297 VL 080 M				70,0	120			
297 V 100	297 V 100 M	10,0	10,0	9,80	40,0	75	10	5,00	2
297 VL 100	297 VL 100 M				70,0	120			
297 VSL 100	297 VSL 100 M				100,0	150			
297 V 120	297 V 120 M	12,0	10,0	11,80	40,0	75	12	6,00	2
297 VL 120	297 VL 120 M				70,0	120			
297 VSL 120	297 VSL 120 M				100,0	150			

# VHM-Kugelfräser kurze Schneide, konischer Übergang zum Schaft, $\varnothing$ 1,0 - 6,0 mm, Schaft $\varnothing$ 3 - 8 mm

**Solid carbide ballnose end mills** short cutting edge, conical transition to shank,  $\varnothing$  1,0 - 6,0 mm, shank  $\varnothing$  3 - 8 mm

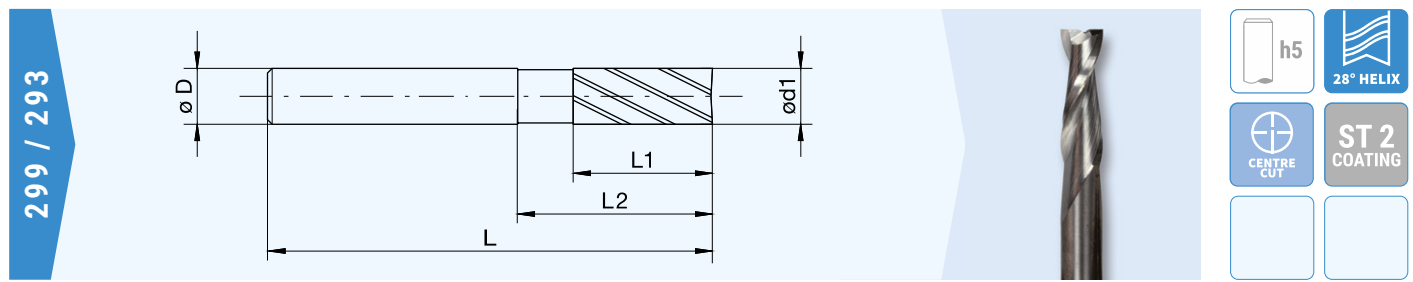


297 K / KL

<700 N/mm<sup>2</sup>
 700-1100 N/mm<sup>2</sup>
 1100-1300 N/mm<sup>2</sup>
 30-45 HRC
  INOX
  AL
  CU CuZn Gold PL
  PLASTIC

Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	L2	L	D	R	Z
297 K 010	297 K 010 M	1,0	2,0	30,0	60	3	0,50	2
297 K 015	297 K 015 M	1,5	3,0	30,0	60	3	0,75	2
297 K 020	297 K 020 M	2,0	4,0	30,0	60	3	1,00	2
297 KL 010	297 KL 010 M	1,0	2,0	70,0	100	3	0,50	2
297 KL 015	297 KL 015 M	1,5	3,0	50,0	100	3	0,75	2
297 KL 020	297 KL 020 M	2,0	4,0	70,0	100	4	1,00	2
297 KL 030	297 KL 030 M	3,0	6,0	70,0	100	5	1,50	2
297 KL 040	297 KL 040 M	4,0	8,0	70,0	100	6	2,00	2
297 KL 050	297 KL 050 M	5,0	10,0	50,0	100	6	2,50	2
297 KL 060	297 KL 060 M	6,0	10,0	70,0	100	8	3,00	2

**VHM-Schafffräser** ohne Eckenradius,  $\phi$  1,0 - 6,0 mm, Schaft  $\phi$  3 - 6 mm  
**Solid carbide end mills** without corner radius,  $\phi$  1,0 - 6,0 mm, shank  $\phi$  3 - 6 mm



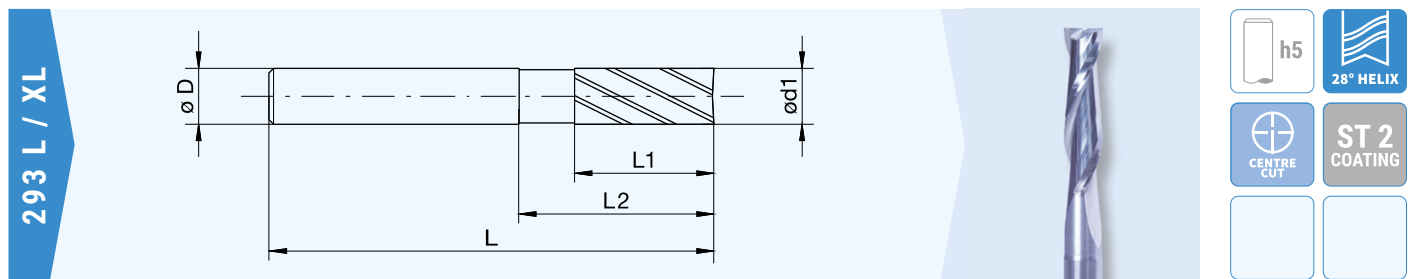
Material compatibility options: <math><700\text{ N/mm}^2</math>, 700-1100  $\text{N/mm}^2</math>, 1100-1300  $\text{N/mm}^2</math>, 30-45 HRC, INOX, AL, CU CuZn Gold PL, TI, PLASTIC.$$

Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	L	D	Z
299 010	299 010 M	1,0	2,0	40	3	2
299 015	299 015 M	1,5	3,0	40	3	2
299 020	299 020 M	2,0	4,0	40	3	2
299 025	299 025 M	2,5	5,0	40	3	2
299 030	299 030 M	3,0	6,0	40	3	2
299 040	299 040 M	4,0	8,0	50	4	2
299 050	299 050 M	5,0	11,0	50	5	2
299 060	299 060 M	6,0	13,0	50	6	2

**VHM-Schafffräser** ohne Eckenradius,  $\phi$  3,0 - 18,0 mm, Schaft  $\phi$  3 - 18 mm  
**Solid carbide end mills** without corner radius,  $\phi$  3,0 - 18,0 mm, shank  $\phi$  3 - 18 mm

Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	L	D	Z
293 030	293 030 M	3,0	10,0	40	3	Z
293 040	293 040 M	4,0	13,0	50	4	2
293 050	293 050 M	5,0	16,0	50	5	2
293 060	293 060 M	6,0	16,0	55	6	2
293 070	293 070 M	7,0	18,0	60	8	2
293 080	293 080 M	8,0	22,0	60	8	2
293 090	293 090 M	9,0	24,0	65	10	2
293 100	293 100 M	10,0	26,0	65	10	2
293 110	293 110 M	11,0	25,0	70	12	2
293 120	293 120 M	12,0	25,0	70	12	2
293 130	293 130 M	13,0	30,0	80	14	2
293 140	293 140 M	14,0	30,0	80	14	2
293 150	293 150 M	15,0	32,0	90	16	2
293 160	293 160 M	16,0	35,0	90	16	2

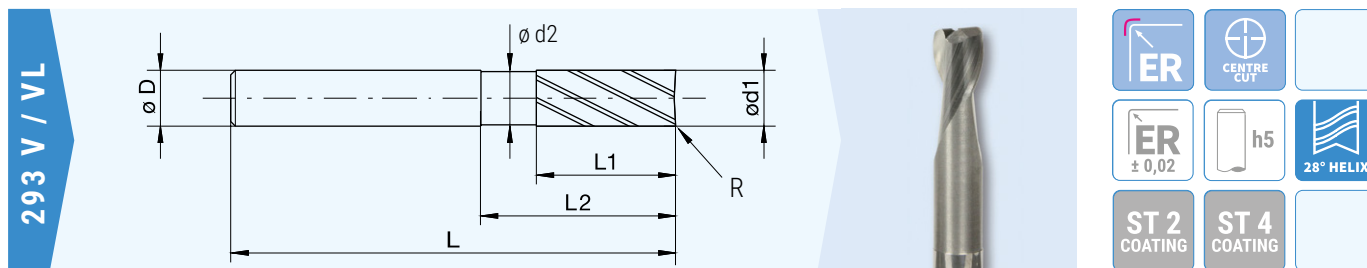
**VHM-Schaftfräser** lange Ausführung,  $\varnothing$  2,0 - 25,0 mm, Schaft  $\varnothing$  3 - 25mm  
**Solid carbide end mills** long version,  $\varnothing$  2,0 - 25,0 mm, shank  $\varnothing$  3 - 25mm



Material compatibility buttons: <math><700</math> N/mm<sup>2</sup>, 700-1100 N/mm<sup>2</sup>, 1100-1300 N/mm<sup>2</sup>, 30-45 HRC, INOX, AL, CU CuZn Gold PL, TI, PLASTIC.

Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	L2	L	D	Z
293 L 020	293 L 020 M	2,0	12,0	-	40	3	2
293 L 030	293 L 030 M	3,0	16,0	-	50	3	2
293 L 040	293 L 040 M	4,0	22,0	30,0	60	4	2
293 L 050	293 L 050 M	5,0	22,0	30,0	60	5	2
293 L 060	293 L 060 M	6,0	25,0	35,0	75	6	2
293 L 080	293 L 080 M	8,0	34,0	44,0	80	8	2
293 L 100	293 L 100 M	10,0	32,0	42,0	80	10	2
293 L 120	293 L 120 M	12,0	40,0	50,0	100	12	2
293 L 140	293 L 140 M	14,0	45,0	55,0	100	14	2
293 L 160	293 L 160 M	16,0	50,0	60,0	110	16	2
293 XL 160	293 XL 160 M	16,0	70,0	80,0	125	16	2
293 L 180	293 L 180 M	18,0	55,0	65,0	125	18	2
293 L 200	293 L 200 M	20,0	65,0	75,0	125	20	2
293 XL 200	293 XL 200 M	20,0	85,0	95,0	150	20	2
293 L 250	293 L 250 M	25,0	55,0	65,0	125	25	2
293 XL 250	293 XL 250 M	25,0	85,0	95,0	150	25	2

**VHM-Torusfräser** kurze Schneide, lange Ausführung, mit Freilegung  
**Solid carbide end mill with corner radius** short cutting edge, long version, with clearance length



293 V / VL

<700 N/mm<sup>2</sup> 700-1100 N/mm<sup>2</sup> 1100-1300 N/mm<sup>2</sup> 30-45 HRC

INOX AL CU CuZn Gold PL TI PLASTIC

ER CENTRE CUT ±0,02 h5 28° HELIX ST 2 COATING ST 4 COATING

Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	d2	L2	L	D	R	Z					
293 V 0205	293 V 0205 M	2,0	4,0	1,9	15,0	40	3	0,5	2					
293 V 0305	293 V 0305 M	3,0	6,0	2,9	15,0	40	3	0,5	2					
293 VL 0305	293 VL 0305 M				30,0	60								
293 V 0405	293 V 0405 M	4,0	6,0	3,9	15,0	40	4	0,5	2					
293 VL 0405	293 VL 0405 M				30,0	60								
293 V 0505	293 V 0505 M	5,0	6,0	4,9	15,0	40	5	0,5	2					
293 VL 0505	293 VL 0505 M				40,0	70								
293 V 0605	293 V 0605 M	6,0	10,0	5,9	30,0	55	6	0,5	2					
293 V 06010	293 V 06010 M				30,0			1,0						
293 VL 0605	293 VL 0605 M				60,0	0,5								
293 VL 06010	293 VL 06010 M				60,0	1,0								
293 V 0805	293 V 0805 M	8,0	10,0	7,8	35,0	65	8	0,5	2					
293 V 08010	293 V 08010 M				35,0			1,0						
293 VL 0805	293 VL 0805 M				70,0	0,5								
293 VL 08010	293 VL 08010 M				70,0	1,0								
293 V 1005	293 V 1005 M	10,0	10,0	9,8	40,0	75	10	0,5	2					
293 V 10010	293 V 10010 M				40,0			1,0						
293 VL 1005	293 VL 1005 M				70,0	0,5								
293 VL 10010	293 VL 10010 M				70,0	1,0								
293 VL 10210	293 VL 10210 M		25,0		100,0	150		1,0						
293 V 1205	293 V 1205 M	12,0	10,0	11,8	40,0	75	12	0,5	2					
293 V 12010	293 V 12010 M				40,0			1,0						
293 VL 1205	293 VL 1205 M				70,0	0,5								
293 VL 12010	293 VL 12010 M				70,0	1,0								
293 VL 12310	293 VL 12310 M					30,0				100,0	150		1,0	

ST4-Beschichtung auf Anfrage (+ 4,00 €)  
 ST4-Coating on request (+ 4,00 €)

**VHM-Fräser für Aluminium** Schaft HA, Spanbrecher an der Stirnschneide (ab  $\varnothing 6,0$  mm), mit Innenkühlung  
**Solid carbide end mills for aluminium** shank HA, chip breaker at the face (from  $\varnothing 6.0$  mm), internal cooling

336

40° HELIX

h6

ST 11 COATING

UNEVEN PITCH

CENTRE CUT

ALU  
GUSS  
Si  $\geq 9\%$

AL  
Si <9%

CU CuZn  
Gold PL

PLASTIC

Best.-Nr. poliert Order no. polished	Best.-Nr. beschichtet Order no. coated	d1	L1	L2	d2	L	D	Z
336 - 040	336 - 040 M	4,0	12,0	20,0	3,7	50	6	3
336 - 050	336 - 050 M	5,0	15,0	20,0	4,6	50	6	3
336 - 060	336 - 060 M	6,0	16,0	20,0	5,5	50	6	3
336 - 080	336 - 080 M	8,0	20,0	30,0	7,4	64	8	3
336 - 100	336 - 100 M	10,0	22,0	32,0	9,2	70	10	3
336 - 120	336 - 120 M	12,0	25,0	37,0	11,0	75	12	3

Weitere Werkzeugabmessungen im Bereich  $d1=4,00$  mm bis  $d1= 12,00$  mm auf Anfrage verfügbar.  
 Other tool dimensions in the range  $d1=4,00$  mm to  $d1= 12,00$  mm available on request.

**VHM-Schrupfräser für Aluminium** Schaft HA, mit Schruppverzahnung, mit Innenkühlung  
**Solid carbide roughing end mills for aluminium** shank HA, with roughing teeth, with internal cooling

337

40° HELIX

h6

ER  
 $\pm 0,01$

UNEVEN PITCH

CENTRE CUT

ST 11 COATING

ALU  
GUSS  
Si  $\geq 9\%$

AL  
Si <9%

CU CuZn  
Gold PL

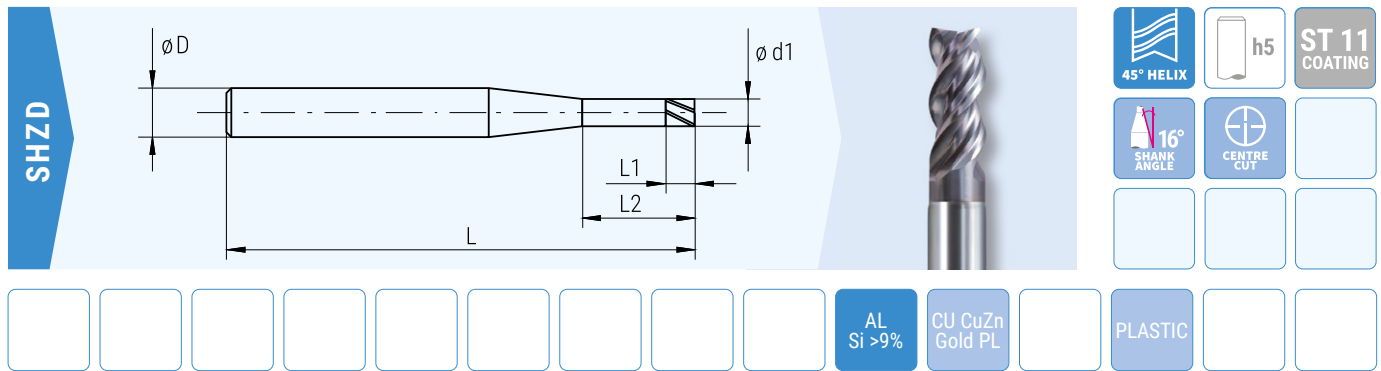
PLASTIC

Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	L2	d2	L	D	ER	Z
337 - 060 *	337 - 060 M *	6,0	13,0	24,0	5,5	60	6	0,10	3
337 - 080 *	337 - 080 M *	8,0	20,0	28,0	7,4	64	8	0,10	3
337 - 100 *	337 - 100 M *	10,0	22,0	35,0	9,2	75	10	0,10	3
337 - 120 *	337 - 12 M 0 *	12,0	26,0	40,0	11,0	75	12	0,11	3

Weitere Werkzeugabmessungen im Bereich  $d1=6,00$  mm bis  $d1= 12,00$  mm auf Anfrage verfügbar.  
 Other tool dimensions in the range  $d1=6,00$  mm to  $d1= 12,00$  mm available on request.

\* Auslaufend  
 \* Discontinued

**VHM-Hochleistungsfräser für Aluminium** Schaft HA,  $\varnothing$  1,0 - 12,0 mm, Schaft  $\varnothing$  4 - 12 mm  
**Solid carbide high-performance end mills for aluminium** shank HA,  $\varnothing$  1,0 - 12,0 mm, shank  $\varnothing$  4 - 12 mm



Best.-Nr. / Order no.	d1	L1	L2	Schaftwinkel shank angle	L	D	Z
SHZD 010 030	1,0	2,0	3,0	16°	60	4	3
SHZD 010 045	1,5	3,0	4,5	16°	60	4	3
SHZD 020 060	2,0	4,0	6,0	16°	60	4	3
SHZD 025 075	2,5	5,0	7,5	16°	60	4	3
SHZD 030 090	3,0	6,0	9,0	16°	70	6	3
SHZD 035 105	3,5	7,0	10,5	16°	70	6	3
SHZD 040 120	4,0	8,0	12,0	16°	70	6	3
SHZD 045 135	4,5	9,0	13,5	16°	70	6	3
SHZD 050 150	5,0	10,0	15,0	16°	70	6	3
SHZD 060 180	6,0	12,0	18,0	-	70	6	3
SHZD 080 240	8,0	16,0	24,0	-	80	8	3
SHZD 100 300	10,0	20,0	30,0	-	90	10	3
SHZD 120 360	12,0	24,0	36,0	-	110	12	3

Weitere Werkzeugabmessungen im Bereich  $d1=1,00$  mm bis  $d1= 12,00$  mm auf Anfrage verfügbar.  
 Other tool dimensions in the range  $d1=1,00$  mm to  $d1= 12,00$  mm available on request.



# VHM-Torusfräser für Aluminium Schaft HA, unbeschichtet, mit ungleicher Teilung

Solid carbide end mill with corner radius for aluminium shank HA, uncoated, with unequal pitch

445

40° HELIX

h6

ER  
± 0,01

UNEVEN PITCH

CENTRE CUT

ALU  
GUSS  
Si ≥9%

AL  
Si <9%

CU CuZn  
Gold PL

PLASTIC

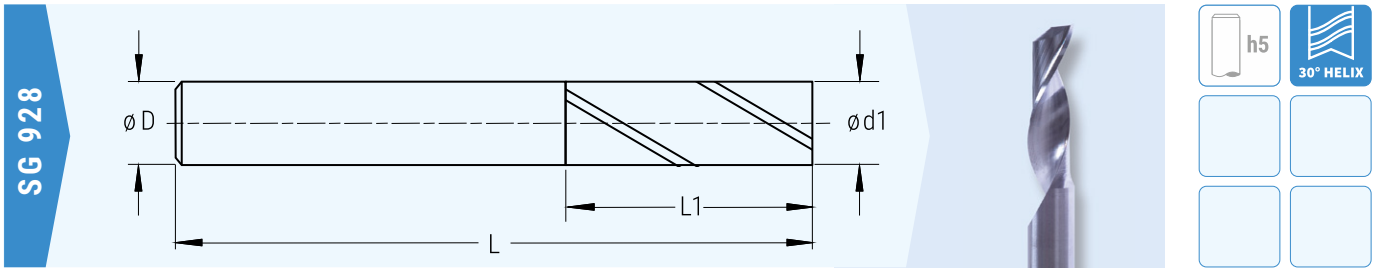
Best.-Nr. / Order no.	d1	L1	L	D	ER	Z
445 - 030 - 005	3,0	9,0	57	6	0,5	4
445 - 040 - 005	4,0	12,0	57	6	0,5	4
445 - 050 - 005	5,0	15,0	57	6	0,5	4
445 - 060 - 005	6,0	16,0	57	6	0,5	4
445 - 060 - 010	6,0	16,0	57	6	1,0	4
445 - 080 - 005	8,0	20,0	64	8	0,5	4
445 - 080 - 010	8,0	20,0	64	8	1,0	4
445 - 100 - 005	10,0	22,0	72	10	0,5	4
445 - 100 - 010	10,0	22,0	72	10	1,0	4
445 - 120 - 005	12,0	26,0	83	12	0,5	4
445 - 120 - 010	12,0	26,0	83	12	1,0	4
445 - 120 - 020	12,0	26,0	83	12	2,0	4

Weitere Werkzeugabmessungen im Bereich d1=3,00 mm bis d1= 12,00 mm sowie Halsfreilegung auf Anfrage verfügbar.

Other tool dimensions in the range d1=3,00 mm to d1= 12,00 mm and clearance length available on request.

**VHM-Einschneider** ø 1,5 - 8,0 mm, Schaft ø 2 - 8 mm

**Solid carbide single cutters** ø 1,5 - 8,0 mm, shank ø 2 - 8 mm



SG 928

AL CU CuZn Gold PL PLASTIC

Best.-Nr. / Order no.	d1	L1	L	D
SG 928 020	2,0	10,0	40	2
SG 928 030	3,0	10,0	40	3
SG 928 040	4,0	14,0	50	4
SG 928 050	5,0	16,0	60	5
SG 928 060	6,0	20,0	65	6
SG 928 080	8,0	25,0	75	8

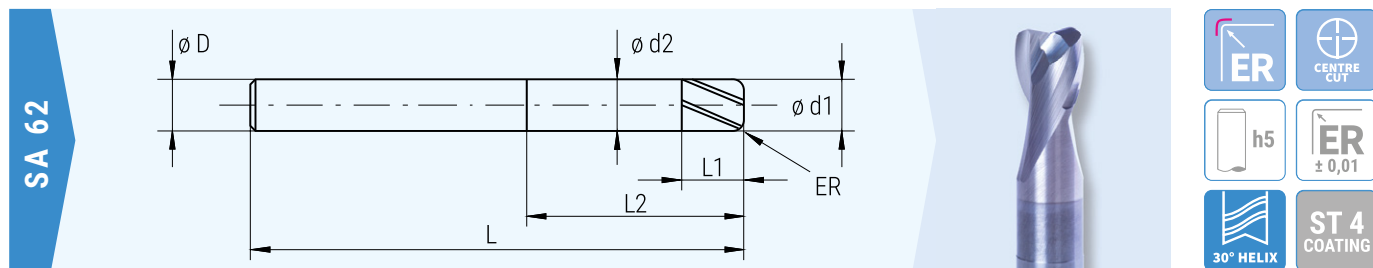
SG 928 015 - 6 *	1,5	5,0	40	6
SG 928 020 - 6	2,0	6,0	40	6
SG 928 025 - 6 *	2,5	8,0	40	6
SG 928 030 - 6	3,0	10,0	40	6
SG 928 040 - 6	4,0	12,0	40	6
SG 928 050 - 6	5,0	14,0	40	6
SG 928 060 - 6	6,0	14,0	40	6

\* Auslaufend

\* discontinued

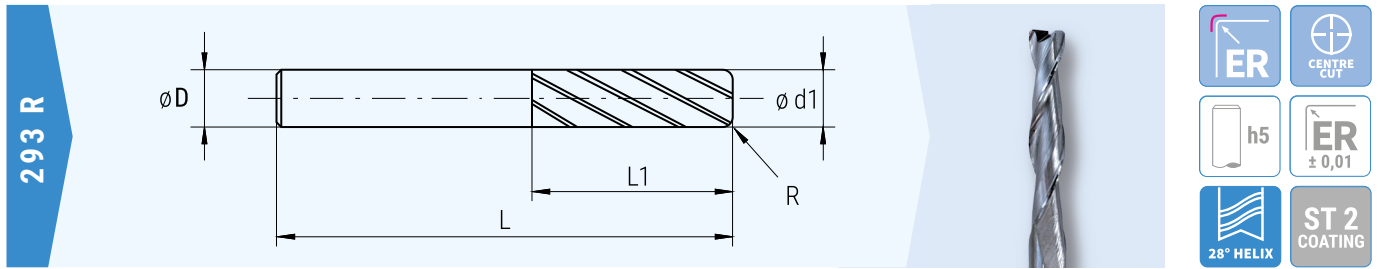
# VHM-Torusfräser $\varnothing 6,0 - 20,0$ mm, Schaft $\varnothing 6 - 20$ mm

## Solid carbide end mill with corner radius $\varnothing 6,0 - 20,0$ mm, shank $\varnothing 6 - 20$ mm



Best.-Nr. / Order no.	d1	L1	L2	d2	ER	Z	L	D
SA 62 V 060 - 100	6,0	6,0	15,0	5,8	1,0	2	50	6
SA 62 VL 060 - 100			30,0				65	
SA 62 V 080 - 100	8,0	8,0	20,0	7,8	1,0	2	50	8
SA 62 VL 080 - 100			35,0				65	
SA 62 V 100 - 100	10,0	10,0	20,0	9,8	1,0	2	50	10
SA 62 VL 100 - 100			40,0				75	
SA 62 VXL100 - 100			60,0				100	
SA 62 V 120 - 100	12,0	12,0	20,0	11,8	1,0	2	60	12
SA 62 VL 120 - 100			40,0				75	
SA 62 VXL120 - 100			60,0				100	
SA 62 V 100 - 150	10,0	10,0	20,0	9,8	1,5	2	50	10
SA 62 VL 100 - 150			40,0				75	
SA 62 V 120 - 200	12,0	12,0	20,0	11,8	2,0	2	60	12
SA 62 VL 120 - 200		12,0	40,0				75	
SA 62 VXL120 - 200		16,0	50,0				100	
SA 62 V 160 - 200	16,0	20,0	50,0	15,6	2,0	2	100	16
SA 62 VL 160 - 200			70,0				120	
SA 62 V 200 - 200	20,0	20,0	50,0	19,6	2,0	2	100	20
SA 62 VL 200 - 200			70,0				130	
SA 62 VL 120 - 400	12,0	16,0	50,0	11,6	4,0	2	100	12
SA 62 VL 160 - 400	16,0	20,0	70,0	15,6	4,0	2	120	16
SA 62 VL 200 - 400	20,0	20,0	70,0	19,6	4,0	2	130	20

**VHM-Torusfräser**  $\varnothing 2,0 - 8,0$  mm, Schaft  $\varnothing 3 - 8$  mm  
**Solid carbide end mill with corner radius**  $\varnothing 2,0 - 8,0$  mm, shank  $\varnothing 3 - 8$  mm

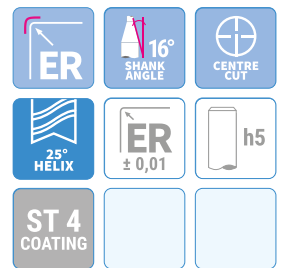
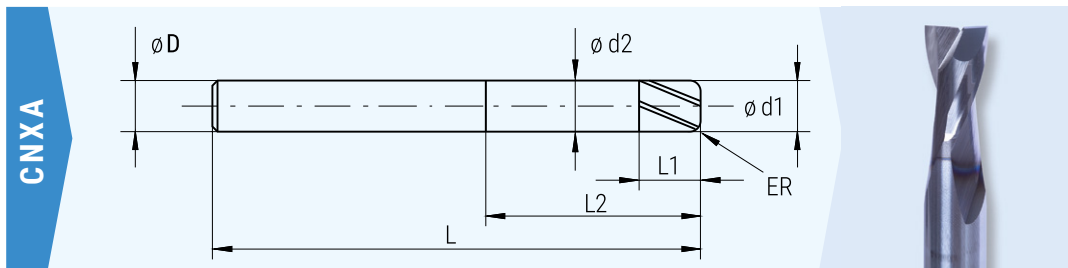


293 R

<700 N/mm<sup>2</sup>   700-1100 N/mm<sup>2</sup>   1100-1300 N/mm<sup>2</sup>   30-45 HRC   INOX   AL   CU CuZn Gold PL   TI   PLASTIC

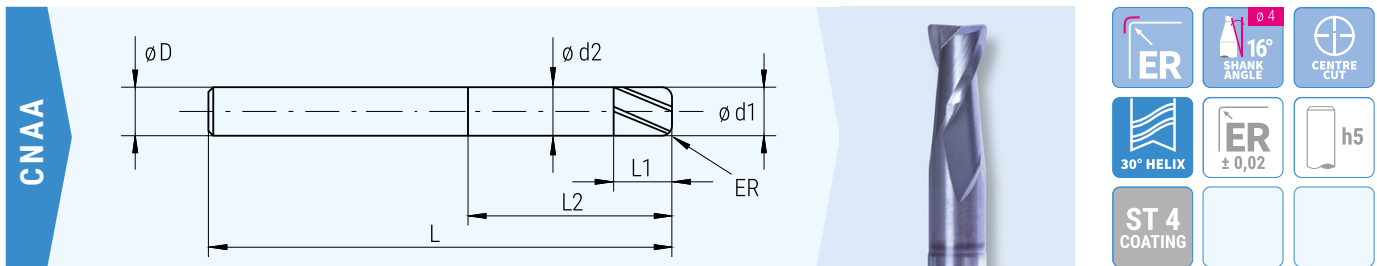
Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	L	D	R	Z
293 0203	293 0203 M	2,0	9,0	40	3	0,3	2
293 0303	293 0303 M	3,0	12,0	40	3	0,3	2
293 L 0303	293 L 0303 M		20,0	60			
293 0403	293 0403 M	4,0	14,0	50	4	0,3	2
293 L 0403	293 L 0403 M		30,0	60			
293 0505	293 0505 M	5,0	20,0	50	5	0,5	2
293 L 0505	293 L 0505 M		35,0	70			
293 0605	293 0605 M	6,0	20,0	65	6	0,5	2
293 L 0605	293 L 0605 M		40,0	100			
293 0805	293 0805 M	8,0	20,0	70	8	0,5	2
293 L 0805	293 L 0805 M		40,0	100		0,5	
293 08010	293 08010 M		20,0	70		1,0	
293 L 08010	293 L 08010 M		40,0	100		1,0	

**VHM-Schaftfräser** mit stabilisiertem Eckenradius,  $\varnothing$  2,0 - 12,0 mm, Schaft  $\varnothing$  3 - 12 mm  
**Solid carbide end mills** with stabilized corner radius,  $\varnothing$  2,0 - 12,0 mm, shank  $\varnothing$  3 - 12 mm



Best.-Nr. / Order no.	d1	L1	L2	d2	ER	L	D	Z
CNXA 020 - 060 CR 010	2,0	3,0	6,0	1,92	0,1	38	3	2
CNXA 030 - 080 CR 010	3,0	4,0	8,0	2,93	0,1	38	3	2
CNXA 040 - 120 CR 010	4,0	5,0	12,0	3,83	0,1	50	4	2
CNXA 050 - 140 CR 010	5,0	8,0	14,0	4,83	0,1	50	6	2
CNXA 060 - CR 010	6,0	13,0	-	-	0,1	50	6	2
CNXA 060 - 180 CR 010		8,0	18,0	5,73		65		
CNXA 080 - CR 010	8,0	13,0	-	-	0,1	50	8	2
CNXA 080 - 220 CR 010		10,0	22,0	7,82		80		
CNXA 100 - CR 010	10,0	16,0	-	-	0,1	60	10	2
CNXA 100 - 280 CR 010		14,0	28,0	9,82		80		
CNXA 120 - CR 010	12,0	16,0	-	-	0,1	75	12	2
CNXA 120 - 350 CR 010			35,0	11,82		90		

**VHM-Torusfräser**  $\varnothing$  4,0 - 12,0 mm, Schaft  $\varnothing$  6 - 12 mm  
**Solid carbide end mill with corner radius**  $\varnothing$  4,0 - 12,0 mm, shank  $\varnothing$  6 - 12 mm

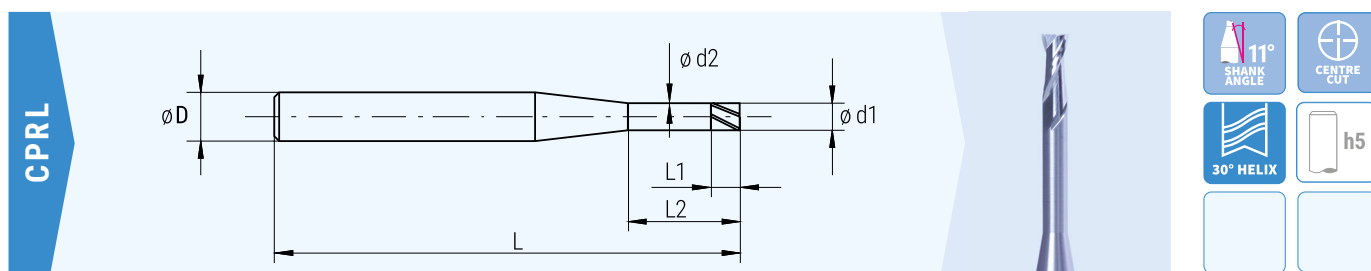


Best.-Nr. / Order no.	d1	L1	L2	d2	R	L	D	Z
CNAA 040 - 100 CR 030	4,0	5,0	10,0	3,63	0,30	50	6	2
CNAA 060 - 200 CR 025	6,0	8,0	20,0	5,43	0,25	60	6	2
CNAA 060 - 200 CR 050					0,50			
CNAA 080 - 300 CR 030	8,0	10,0	30,0	7,82	0,30	80	8	2
CNAA 080 - 300 CR 060					0,60			
CNAA 100 - 360 CR 030	10,0	12,0	36,0	9,82	0,30	80	10	2
CNAA 100 - 360 CR 080					0,80			
CNAA 120 - 400 CR 050	12,0	14,0	40,0	11,0	0,50	90	12	2
CNAA 120 - 400 CR 100					1,00			

Weitere Werkzeugabmessungen im Bereich  $d1=4,00$  mm bis  $d1= 12,00$  mm auf Anfrage verfügbar.  
 Other tool dimensions in the range  $d1=4,00$  mm to  $d1= 12,00$  mm available on request.

# VHM-Schafffräser lange Ausführung mit polierter Schneide, $\varnothing$ 0,5 - 4,0 mm, Schaft $\varnothing$ 4 und 6 mm

## Solid carbide end mills long version with polished cutting edge, $\varnothing$ 0,5 - 4,0 mm, shank $\varnothing$ 4 and 6 mm

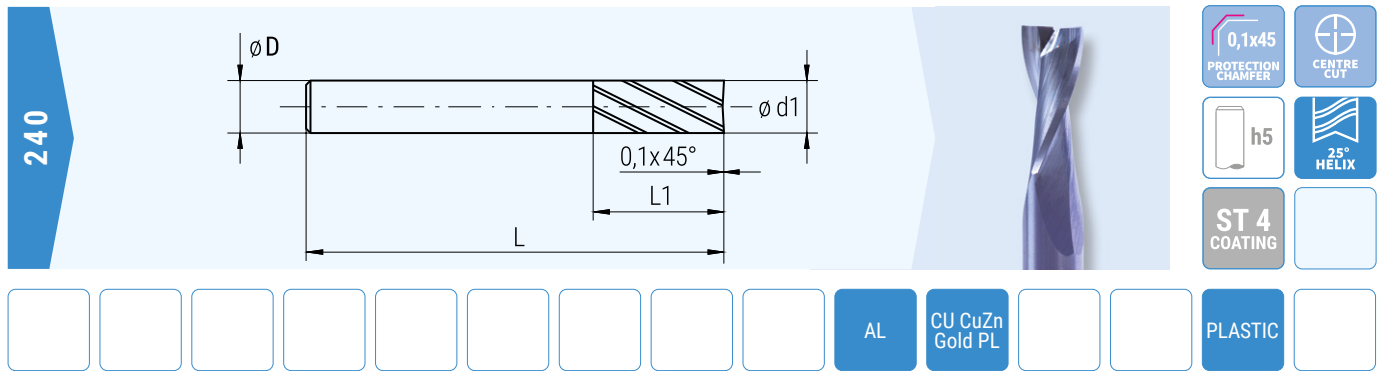


Best.-Nr. / Order no.	d1	L1	L2	d2	L	D	Z
CPRL 005 - 040	0,5	1,0	4,0	0,45	80	4	2
CPRL 005 - 060			6,0				
CPRL 005 - 080			8,0				
CPRL 005 - 100			10,0				
CPRL 010 - 060	1,0	2,0	6,0	0,90	80	4	2
CPRL 010 - 100			10,0				
CPRL 010 - 160			16,0				
CPRL 010 - 210			21,0				
CPRL 015 - 060	1,5	3,0	6,0	1,40	80	4	2
CPRL 015 - 080			8,0				
CPRL 015 - 100			10,0				
CPRL 015 - 160			16,0				
CPRL 020 - 080	2,0	4,0	8,0	1,90	80	4	2
CPRL 020 - 120			12,0				
CPRL 020 - 160			16,0				
CPRL 020 - 260			26,0				
CPRL 020 - 400			40,0		100		
CPRL 030 - 120	3,0	6,0	12,0	2,80	100	6	2
CPRL 030 - 210			21,0				
CPRL 030 - 320			32,0				
CPRL 040 - 180	4,0	8,0	18,0	3,80	100	6	2
CPRL 040 - 240			24,0				
CPRL 040 - 320			32,0				

Weitere Werkzeugabmessungen im Bereich  $d1=0,50$  mm bis  $d1=4,00$  mm auf Anfrage verfügbar.

Other tool dimensions in the range  $d1=0,50$  mm to  $d1=4,00$  mm available on request.

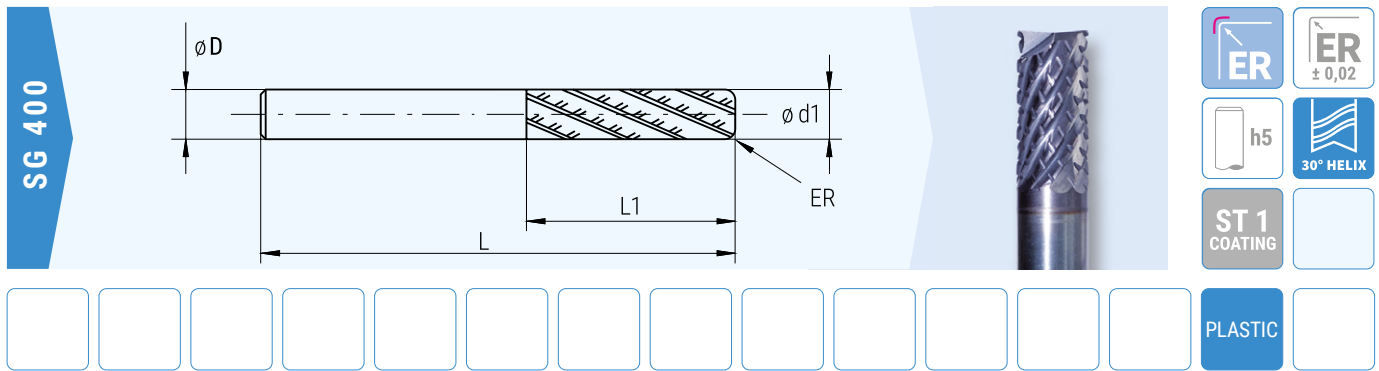
**VHM-Schaftfräser** mit Schutzfase 0,1 mm x 45°,  $\varnothing$  2,0 - 20,0 mm, Schaft  $\varnothing$  3 - 20 mm  
**Solid carbide end mills** with chamfer 0,1 mm x 45°,  $\varnothing$  2,0 - 20,0 mm, shank  $\varnothing$  3 - 20 mm



Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	L	D	Z
240 020	240 020 M	2,0	3,0	40	3	2
240 030	240 030 M	3,0	5,0	40	3	2
240 040	240 040 M	4,0	6,0	50	4	2
240 050	240 050 M	5,0	8,0	50	5	2
240 060	240 060 M	6,0	18,0	65	6	2
240 080	240 080 M	8,0	18,0	70	8	2
240 100	240 100 M	10,0	22,0	80	10	2
240 120	240 120 M	12,0	22,0	90	12	2
240 160	240 160 M	16,0	25,0	90	16	2
240 200	240 200 M	20,0	35,0	100	20	2



**VHM-Torus-Schruppfräser** mit Eckenradius, kurze und lange Ausführung,  $\varnothing$  6,0 - 12,0 mm, Schaft  $\varnothing$  6 - 12 mm  
**Solid carbide roughing end mill with corner radius** with corner radius, short and long version,  $\varnothing$  6,0 - 12,0 mm, shank  $\varnothing$  6 - 12 mm

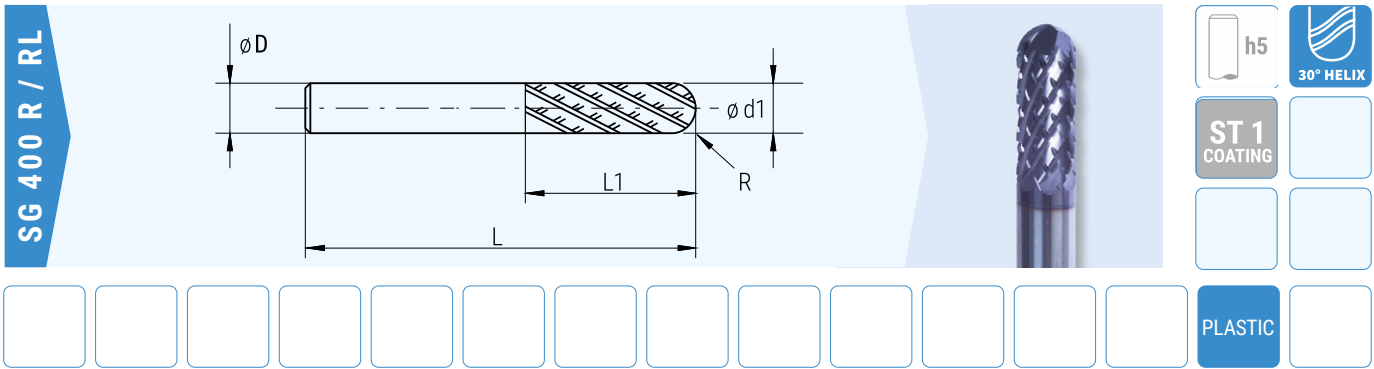


Best.-Nr. / Order no.	d1	L1	ER	L	D	Z
<b>Kurze Ausführung / short version</b>						
SG 400 - 060 *	6,0	20,0	0,5	55	6	6
SG 400 - 080 *	8,0	25,0	0,5	65	8	8
SG 400 - 100 *	10,0	25,0	0,5	75	10	8
SG 400 - 120 *	12,0	25,0	0,5	75	12	10
<b>Lange Ausführung / long version</b>						
SG 400 L - 060 *	6,0	32,0	0,5	75	6	6
SG 400 L - 080 *	8,0	40,0	0,5	80	8	8
SG 400 L - 100 *	10,0	40,0	0,5	100	10	8
SG 400 L - 120 *	12,0	40,0	0,5	100	12	10

\* Auslaufend  
 \* Discontinued

# VHM-Kugel-Schrupffräser kurze und lange Ausführung, $\varnothing$ 6,0 - 12,0 mm, Schaft $\varnothing$ 6 - 12 mm

Solid carbide ballnose roughing end mills short and long version,  $\varnothing$  6,0 - 12,0 mm, shank  $\varnothing$  6 - 12 mm



Best.-Nr. / Order no.	d1	L1	R	L	D	Z
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## Kurze Ausführung / short version

SG 400R - 060 *	6,0	20,0	3,0	55	6	6
SG 400R - 080 *	8,0	25,0	4,0	65	8	8
SG 400R - 100 *	10,0	25,0	5,0	75	10	8
SG 400R - 120 *	12,0	25,0	6,0	75	12	10

## Lange Ausführung / long version

SG 400RL - 060 *	6,0	32,0	3,0	75	6	6
SG 400RL - 080 *	8,0	40,0	4,0	80	8	8
SG 400RL - 100 *	10,0	40,0	5,0	100	10	8
SG 400RL - 120 *	12,0	40,0	6,0	100	12	10

\* Auslaufend

\* Discontinued

## VHM-Gewindefräser mit Freilegung, metrisch innen, ISO 60°, DIN 13, DIN 68

Solid carbide thread milling cutter with clearance length, inside metric ISO 60°, DIN 13, DIN 68

ST-TMSC

h6

SD  
COATING

CFK  
GFK

GRAPHIT

Best.-Nr. / Order no.	d1	L1	L	D	GG	P	Z	H
ST - TMSC - N M3	2,1	4,5	50	4	9	0,50	3	0,294
ST - TMSC - N M4	2,6	6,3	50	4	9	0,70	3	0,411
ST - TMSC - N M5	3,6	8,0	75	6	10	0,80	3	0,470
ST - TMSC - N M6	4,0	9,0	75	6	9	1,00	3	0,587
ST - TMSC - N M8	5,0	12,5	75	8	10	1,25	3	0,734
ST - TMSC - N M10	5,9	15,0	75	10	10	1,50	5	0,881
ST - TMSC - N M12	7,9	18,0	100	10	10	1,75	5	1,027

## VHM-Gewindewirbler mit Freilegung, metrisch innen

Solid carbide thread milling cutter with clearance length, inside metric

ST-TBR

h6

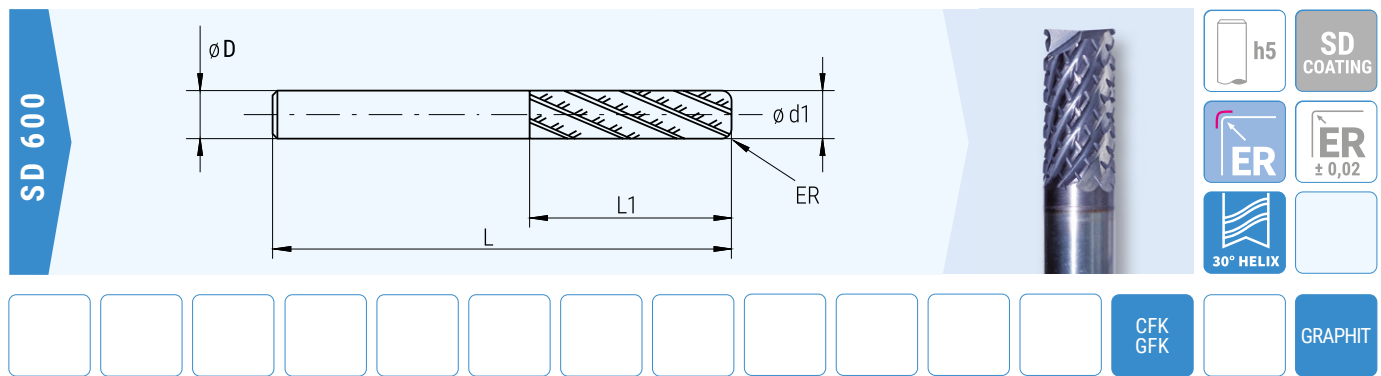
SD  
COATING

CFK  
GFK

GRAPHIT

Best.-Nr. / Order no.	d1	L1	L	D	GG	P	Z	H
ST - TBR - N M3	2,2	6,0	50	4	3	0,50	3	0,294
ST - TBR - N M4	3,1	8,0	50	4	3	0,70	3	0,411
ST - TBR - N M5	3,8	10,0	75	6	3	0,80	3	0,470
ST - TBR - N M6	4,7	12,0	75	6	3	1,00	3	0,587
ST - TBR - N M8	5,9	16,0	75	8	3	1,25	5	0,734
ST - TBR - N M10	7,9	20,0	100	8	3	1,50	5	0,881

**VHM-Torus-Schrupfräser**  $\varnothing$  6,0 - 12,0 mm, Schaft  $\varnothing$  6 - 12 mm  
**Solid carbide roughing end mill with corner radius**  $\varnothing$  6,0 - 12,0 mm, shank  $\varnothing$  6 - 12 mm



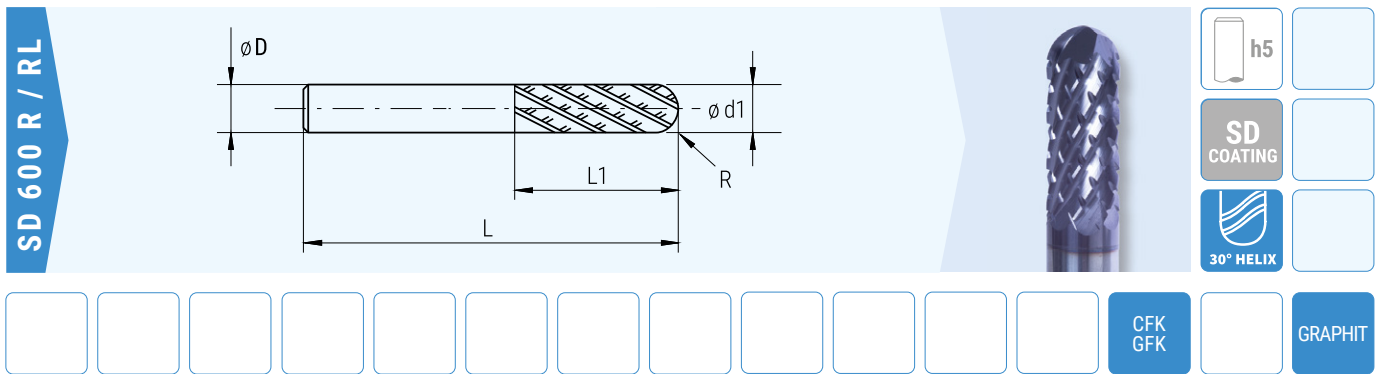
**Kurze Ausführung / short version**

Best.-Nr. / Order no.	d1	L1	ER	L	D	Z
SD 600 - 060	6,0	20,0	0,50	55	6	6
SD 600 - 080	8,0	25,0	0,50	65	8	8
SD 600 - 100	10,0	25,0	0,50	75	10	8
SD 600 - 120	12,0	25,0	0,50	75	12	10

**Lange Ausführung / long version**

Best.-Nr. / Order no.	d1	L1	ER	L	D	Z
SD 600 L - 060	6,0	32,0	0,50	75	6	6
SD 600 L - 080	8,0	40,0	0,50	80	8	8
SD 600 L - 100	10,0	40,0	0,50	100	10	8
SD 600 L - 120	12,0	40,0	0,50	100	12	10

**VHM-Kugel-Schruppfräser**  $\varnothing$  6,0 - 12,0 mm, Schaft  $\varnothing$  6 - 12 mm  
**Solid carbide ballnose roughing end mills**  $\varnothing$  6,0 - 12,0 mm, shank  $\varnothing$  6 - 12 mm



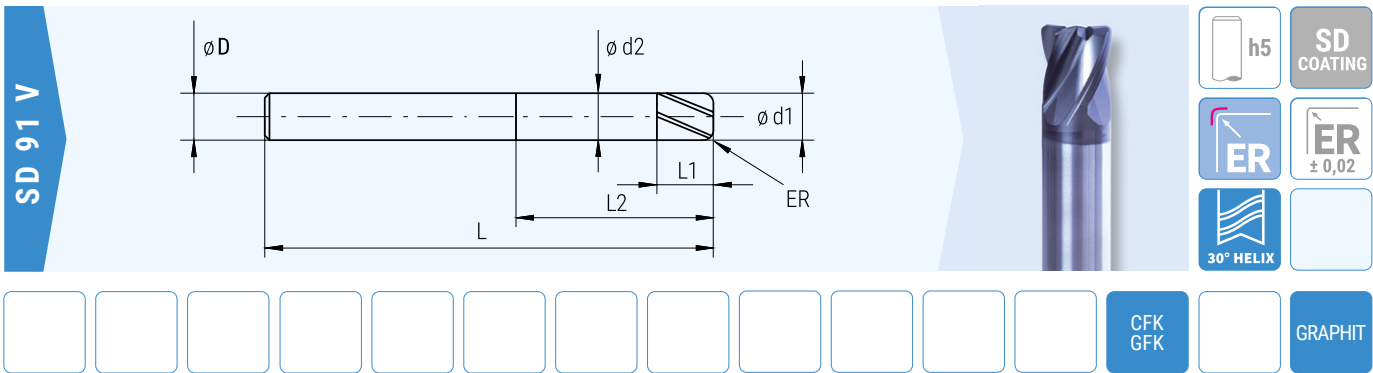
**Kurze Ausführung / short version**

Best.-Nr. / Order no.	d1	L1	R	L	D	Z
SD 600R - 060	6,0	20,0	3,00	55	6	6
SD 600R - 080	8,0	25,0	4,00	65	8	8
SD 600R - 100	10,0	25,0	5,00	75	10	8
SD 600R - 120	12,0	25,0	6,00	75	12	10

**Lange Ausführung / long version**

Best.-Nr. / Order no.	d1	L1	R	L	D	Z
SD 600RL - 060	6,0	32,0	3,00	75	6	6
SD 600RL - 080	8,0	40,0	4,00	80	8	8
SD 600RL - 100	10,0	40,0	5,00	100	10	8
SD 600RL - 120	12,0	40,0	6,00	100	12	10

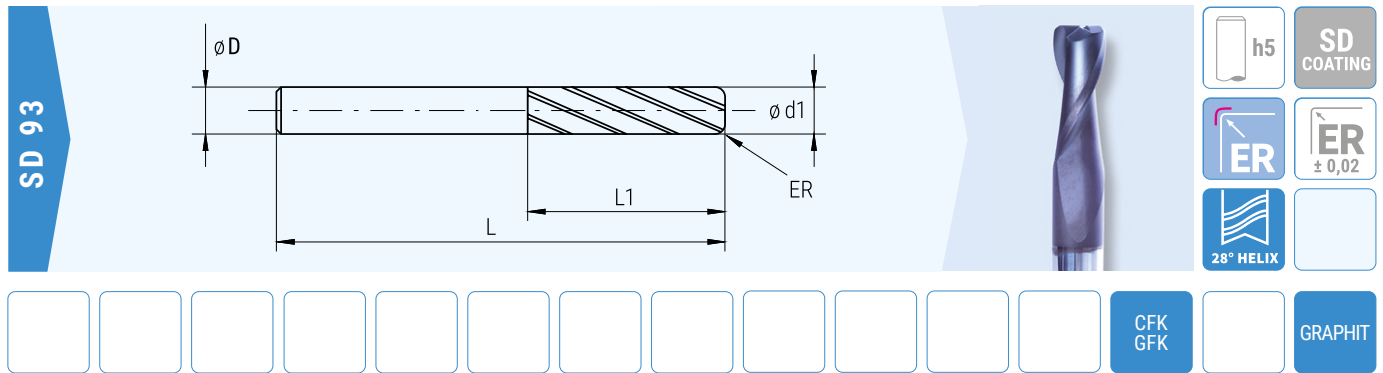
**VHM-Torusfräser**  $\varnothing$  6,0 - 12,0 mm, Schaft  $\varnothing$  6 - 12 mm  
**Solid carbide end mill with corner radius**  $\varnothing$  6,0 - 12,0 mm, shank  $\varnothing$  6 - 12 mm



Best.-Nr. / Order no.	d1	L1	d2	L2	L	D	ER	Z
SD 91 V 060 5	6,0	6,0	5,9	30,0	55	6	0,50	4
SD 91 V 060 10							1,00	
SD 91 VL 060 5			5,8	50,0	0,50			
SD 91 VL 060 10					1,00			
SD 91 V 080 5	8,0	8,0	7,8	35,0	65	8	0,50	4
SD 91 V 080 10							1,00	
SD 91 VL 080 5			50,0	80	0,50			
SD 91 VL 080 10					1,00			
SD 91 V 100 5	10,0	10,0	9,8	40,0	75	10	0,50	4
SD 91 V 100 10							1,00	
SD 91 VL 100 5			60,0	100	0,50			
SD 91 VL 100 10					1,00			
SD 91 V 120 5	12,0	12,0	11,8	40,0	75	12	0,50	4
SD 91 V 120 10							1,00	
SD 91 VL 120 5			60,0	100	0,50			
SD 91 VL 120 10					1,00			

**VHM-Torusfräser** mit langer Schneide,  $\varnothing$  2,0 - 8,0 mm, Schaft  $\varnothing$  3 - 8 mm

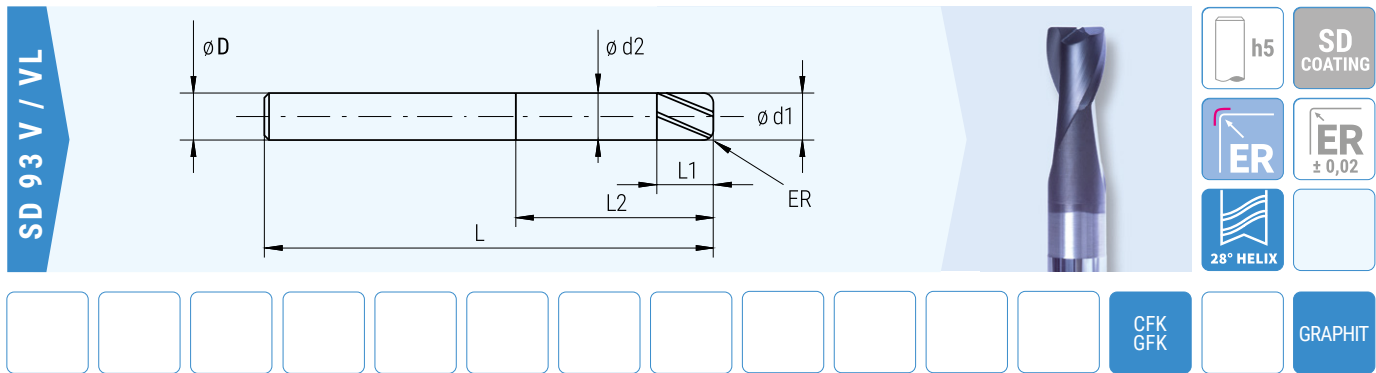
**Solid carbide end mill with corner radius** long cutting edge,  $\varnothing$  2,0 - 8,0 mm, shank  $\varnothing$  3 - 8 mm



Best.-Nr. / Order no.	d1	L1	L	D	ER	Z
SD 93 020 3	2,0	9,0	40	3	0,30	2
SD 93 030 3	3,0	12,0	40	3	0,30	2
SD 93 L 030 3		30,0	60			
SD 93 040 3	4,0	14,0	50	4	0,30	2
SD 93 L 040 3		30,0	60			
SD 93 050 5	5,0	20,0	50	5	0,50	2
SD 93 L 050 5		35,0	70			
SD 93 060 5	6,0	20,0	65	6	0,50	2
SD 93 L 060 5		40,0	100			
SD 93 080 5	8,0	20,0	70	8	0,50	2
SD 93 080 10		20,0	70		1,00	
SD 93 L 080 5		40,0	100		0,50	
SD 93 L 080 10		40,0	100		1,00	

**VHM-Torusfräser** kurze Schneide, lange Ausführung, mit Freilegung,  $\varnothing$  3,0 - 12,0 mm, Schaft  $\varnothing$  3 - 12 mm

**Solid carbide end mill with corner radius** short cutting edge, long version with clearance length,  $\varnothing$  3,0 - 12,0 mm, shank  $\varnothing$  3 - 12 mm

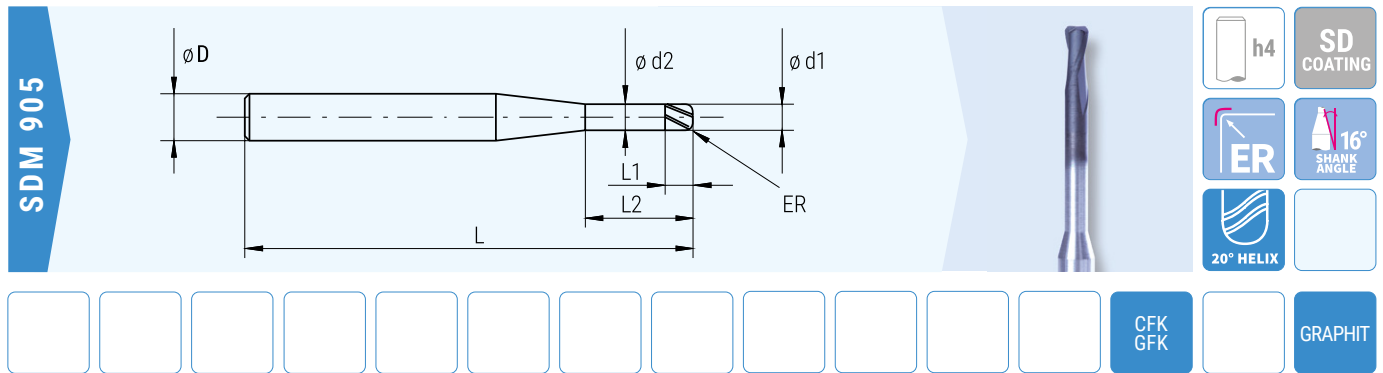


Best.-Nr. / Order no.	d1	L1	d2	L2	L	D	ER	Z
SD 93 V 030 5	3,0	6,0	2,9	15,0	40	3	0,50	2
SD 93 VL 030 5				30,0	60			
SD 93 V 040 5	4,0	6,0	3,9	15,0	40	4	0,50	2
SD 93 VL 040 5				30,0	60			
SD 93 V 050 5	5,0	6,0	4,9	15,0	40	5	0,50	2
SD 93 VL 050 5				40,0	70			
SD 93 V 0605	6,0	10,0	5,9	30,0	55	6	0,50	2
SD 93 V 060 10				1,00				
SD 93 VL 060 5			5,8	100	0,50			
SD 93 VL 060 10			60,0	100	1,00			
SD 93 V 080 5	8,0	10,0	7,8	35,0	65	8	0,50	2
SD 93 V 080 10					1,00			
SD 93 VL 080 5				70,0	120		0,50	
SD 93 VL 080 10							1,00	
SD 93 V 100 5	10,0	10,0	9,8	40,0	75	10	0,50	2
SD 93 V 100 10					1,00			
SD 93 VL 100 5		10,0	9,8	70,0	120		0,50	
SD 93 VL 100 10							1,00	
SD 93 VL 102 10							25,0	
SD 93 V 120 5	12,0	10,0	11,8	40,0	75	12	0,50	2
SD 93 V 120 10					1,00			
SD 93 VL 120 5		10,0	11,8	70,0	120		0,50	
SD 93 VL 120 10							1,00	
SD 93 VL 123 10							30,0	



**VHM-Torusfräser**  $\varnothing$  0,3 - 2,0 mm, Schaft  $\varnothing$  3 mm **MINI**

**Solid carbide end mill with corner radius**  $\varnothing$  0,3 - 2,0 mm, shank  $\varnothing$  3 mm **MINI**

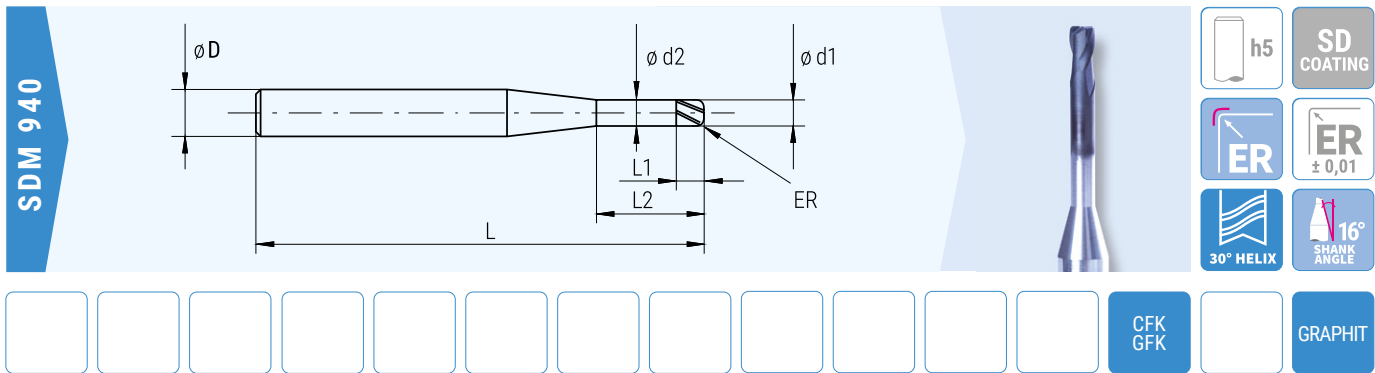


Best.-Nr. / Order no.	d1	L1	L2	d2	ER	L	D	Z
SDM 905 L003 *	0,3	0,5	1,0	0,25	-	40	3	2
SDM 905 L004	0,4	0,6	1,5	0,35	-	40	3	2
SDM 905 L005	0,5	0,7	2,5	0,45	0,05	40	3	2
SDM 905 XL 005			4,0	0,50				
SDM 905 SL 005			7,5	0,45				
SDM 905 XL006	0,6	0,9	5,0	0,55	0,05	40	3	2
SDM 905 SL006			9,0					
SDM 905 L008	0,8	1,2	4,0	0,75	0,05	40	3	2
SDM 905 XL 008			7,0					
SDM 905 SL 008 *			12,0					
SDM 905 L010	1,0	1,5	5,0	0,95	0,10	40	3	2
SDM 905 XL 010			8,5					
SDM 905 L012	1,2	1,8	6,0	1,15	0,10	40	3	2
SDM 905 XL 012			10,0					
SDM 905 L015	1,5	2,2	7,5	1,40	0,15	50	3	2
SDM 905 XL 015			12,0					
SDM 905 L020	2,0	2,2	10,0	1,90	0,15	50	3	2
SDM 905 XL 020		4,0	16,0		0,50			

\* Auslaufend / \* Discontinued

**VHM-Torusfräser**  $\varnothing 0,2 - \varnothing 6,0$  mm, Schaft  $\varnothing 4$  und  $6$  mm **MINI**

**Solid carbide end mill with corner radius**  $\varnothing 0,2 - \varnothing 6,0$  mm, shank  $\varnothing 4$  and  $6$  mm **MINI**



Best.-Nr. / Order no.	d1	L1	L2	d2	ER	L	D	Z
SDM 940 - 020 - 005	0,2	0,30	0,5	0,16	-	45	4	2
SDM 940 - 020 - 010			1,0					
SDM 940 - 020 - 015			1,5					
SDM 940 - 030 - 010	0,3	0,45	1,0	0,26	-	45	4	2
SDM 940 - 030 - 020			2,0					
SDM 940 - 030 - 030			3,0					
SDM 940 - 040 - 020	0,4	0,60	2,0	0,36	-	45	4	2
SDM 940 - 040 - 030			3,0					
SDM 940 - 040 - 040			4,0					
SDM 940 - 040 - 050			5,0					
SDM 940 - 050 - 020 R005 *	0,5	0,70	2,0	0,46	0,05	45	4	2
SDM 940 - 050 - 040 R005			4,0					
SDM 940 - 050 - 060 R005			6,0					
SDM 940 - 050 - 080 R005			8,0					
SDM 940 - 050 - 100 R005			10,0					
SDM 940 - 060 - 040 R005	0,6	0,90	4,0	0,56	0,05	45	4	2
SDM 940 - 060 - 080 R005			8,0					
SDM 940 - 060 - 100 R005			10,0					
SDM 940 - 080 - 040 R010	0,8	1,20	4,0	0,76	0,10	45	4	2
SDM 940 - 080 - 080 R010			8,0					
SDM 940 - 080 - 100 R010			10,0					
SDM 940 - 080 - 120 R010			12,0					
SDM 940 - 100 - 040 R010	1,0	1,50	4,0	0,90	0,10	45	4	2
SDM 940 - 100 - 060 R010			6,0					
SDM 940 - 100 - 080 R010			8,0					
SDM 940 - 100 - 100 R010			10,0					
SDM 940 - 100 - 120 R010			12,0					
SDM 940 - 100 - 160 R010			16,0					
SDM 940 - 100 - 200 R010	20,0							
SDM 940 - 100 - 040 R025	1,0	1,50	4,0	0,90	0,25	45	4	2
SDM 940 - 100 - 060 R025			6,0					
SDM 940 - 100 - 080 R025			8,0					
SDM 940 - 100 - 100 R025			10,0					
SDM 940 - 100 - 120 R025			12,0					
SDM 940 - 100 - 160 R025			16,0					
SDM 940 - 100 - 200 R025	20,0							
SDM 940 - 120 - 060 R010	1,2	1,80	6,0	1,08	0,10	45	4	2
SDM 940 - 120 - 100 R010			10,0					
SDM 940 - 120 - 160 R010			16,0					
SDM 940 - 120 - 060 R025	1,2	1,80	6,0	1,08	0,25	45	4	2
SDM 940 - 120 - 100 R025			10,0					
SDM 940 - 120 - 160 R025			16,0					

\* Auslaufend / \* Discontinued

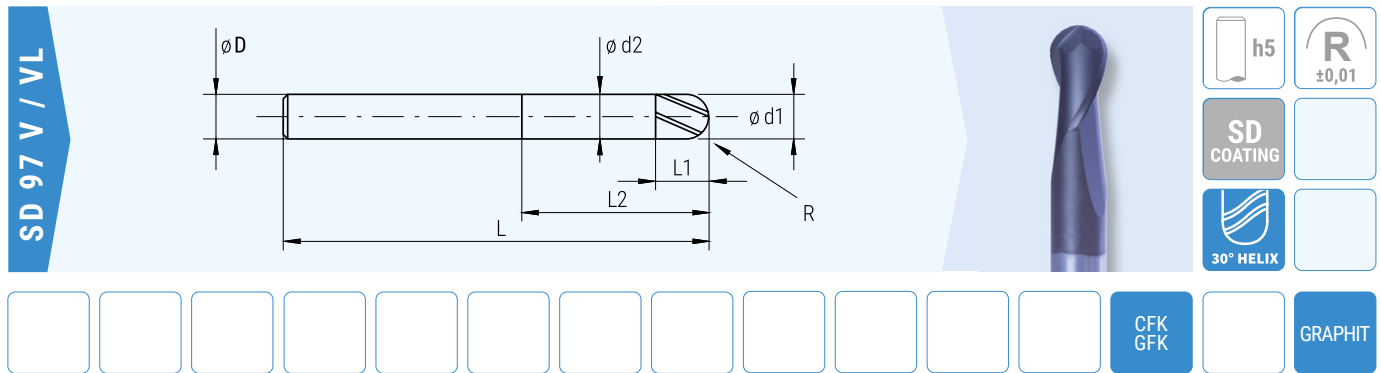
Weitere Abmessungen auf Folgeseite » / Further dimensions on next page »

Best.-Nr. / Order no.	d1	L1	L2	d2	ER	L	D	Z
SDM 940 - 140 - 060 R015	1,4	1,8	6,0	1,28	0,15	45	4	2
SDM 940 - 140 - 120 R015			12,0					
SDM 940 - 140 - 160 R015			16,0					
SDM 940 - 150 - 060 R015	1,5	2,2	6,0	1,40	0,15	45	4	2
SDM 940 - 150 - 080 R015			8,0					
SDM 940 - 150 - 100 R015			10,0					
SDM 940 - 150 - 120 R015			12,0					
SDM 940 - 150 - 160 R015			16,0					
SDM 940 - 150 - 200 R015			20,0					
SDM 940 - 150 - 300 R015			30,0					
SDM 940 - 150 - 060 R050	1,5	2,2	6,0	1,40	0,50	45	4	2
SDM 940 - 150 - 080 R050			8,0					
SDM 940 - 150 - 100 R050			10,0					
SDM 940 - 150 - 120 R050			12,0					
SDM 940 - 150 - 160 R050			16,0					
SDM 940 - 150 - 200 R050			20,0					
SDM 940 - 150 - 300 R050			30,0					
SDM 940 - 180 - 080 R020	1,8	2,7	8,0	1,70	0,20	45	4	2
SDM 940 - 180 - 120 R020			12,0					
SDM 940 - 180 - 160 R020			16,0					
SDM 940 - 180 - 200 R020			20,0					
SDM 940 - 200 - 060 R020	2,0	3,0	6,0	1,84	0,20	45	4	2
SDM 940 - 200 - 080 R020			8,0					
SDM 940 - 200 - 120 R020			12,0					
SDM 940 - 200 - 160 R020			16,0					
SDM 940 - 200 - 200 R020			20,0					
SDM 940 - 200 - 250 R020			25,0					
SDM 940 - 200 - 300 R020			30,0					
SDM 940 - 200 - 060 R050	2,0	3,0	6,0	1,84	0,50	45	4	2
SDM 940 - 200 - 080 R050			8,0					
SDM 940 - 200 - 120 R050			12,0					
SDM 940 - 200 - 160 R050			16,0					
SDM 940 - 200 - 200 R050			20,0					
SDM 940 - 200 - 250 R050			25,0					
SDM 940 - 200 - 300 R050			30,0					
SDM 940 - 250 - 100 R020	2,5	3,0	10,0	2,34	0,20	45	4	2
SDM 940 - 250 - 160 R020			16,0					
SDM 940 - 250 - 200 R020			20,0					
SDM 940 - 250 - 300 R020			30,0					
SDM 940 - 250 - 100 R050	2,5	3,0	10,0	2,34	0,50	45	4	2
SDM 940 - 250 - 160 R050			16,0					
SDM 940 - 250 - 200 R050			20,0					
SDM 940 - 250 - 300 R050			30,0					
SDM 940 - 300 - 080 R020	3,0	3,0	8,0	2,84	0,20	50	6	2
SDM 940 - 300 - 120 R020			12,0					
SDM 940 - 300 - 160 R020			16,0					
SDM 940 - 300 - 200 R020			20,0					
SDM 940 - 300 - 250 R020			25,0					
SDM 940 - 300 - 300 R020			30,0					
SDM 940 - 300 - 350 R020			35,0					
SDM 940 - 300 - 400 R020			40,0					
SDM 940 - 300 - 080 R050	3,0	3,0	8,0	2,84	0,50	50	6	2
SDM 940 - 300 - 120 R050			12,0					
SDM 940 - 300 - 160 R050			16,0					
SDM 940 - 300 - 200 R050			20,0					
SDM 940 - 300 - 250 R050			25,0					
SDM 940 - 300 - 300 R050			30,0					

Weitere Abmessungen auf Folgeseite » / Further dimensions on next page »

Best.-Nr. / Order no.	d1	L1	L2	d2	ER	L	D	Z
SDM 940 - 300 - 080 R100	3,0	3,0	8,0	2,84	1,00	50	6	2
SDM 940 - 300 - 120 R100			12,0					
SDM 940 - 300 - 160 R100			16,0					
SDM 940 - 300 - 200 R100			20,0					
SDM 940 - 300 - 250 R100			25,0					
SDM 940 - 300 - 300 R100			30,0					
SDM 940 - 400 - 040 R020	4,0	4,0	4,0	3,84	0,20	50	6	2
SDM 940 - 400 - 120 R020			12,0					
SDM 940 - 400 - 160 R020			16,0					
SDM 940 - 400 - 200 R020			20,0					
SDM 940 - 400 - 250 R020			25,0					
SDM 940 - 400 - 300 R020			30,0					
SDM 940 - 400 - 350 R020			35,0					
SDM 940 - 400 - 400 R020			40,0					
SDM 940 - 400 - 450 R020			45,0					
SDM 940 - 400 - 500 R020			50,0					
SDM 940 - 400 - 120 R050	4,0	4,0	12,0	3,84	0,50	50	6	2
SDM 940 - 400 - 160 R050			16,0					
SDM 940 - 400 - 200 R050			20,0					
SDM 940 - 400 - 250 R050			25,0					
SDM 940 - 400 - 300 R050			30,0					
SDM 940 - 400 - 400 R050			40,0					
SDM 940 - 400 - 500 R050	50,0							
SDM 940 - 400 - 120 R100	4,0	4,0	12,0	3,84	1,00	50	6	2
SDM 940 - 400 - 160 R100			16,0					
SDM 940 - 400 - 200 R100			20,0					
SDM 940 - 400 - 250 R100			25,0					
SDM 940 - 400 - 300 R100			30,0			70		
SDM 940 - 500 - 050 R020	5,0	5,0	5,0	4,84	0,20	50	6	2
SDM 940 - 500 - 160 R020			16,0					
SDM 940 - 500 - 250 R020			25,0					
SDM 940 - 500 - 400 R020			40,0					
SDM 940 - 500 - 160 R050	5,0	5,0	16,0	4,84	0,50	60	6	2
SDM 940 - 500 - 250 R050			25,0					
SDM 940 - 500 - 400 R050			40,0					
SDM 940 - 500 - 160 R100	5,0	5,0	16,0	4,84	1,00	60	6	2
SDM 940 - 500 - 250 R100			25,0					
SDM 940 - 500 - 400 R100			40,0					
SDM 940 - 600 - 060 R020	6,0	6,0	6,0	5,84	0,20	50	6	2
SDM 940 - 600 - 200 R020			20,0					
SDM 940 - 600 - 300 R020			30,0					
SDM 940 - 600 - 500 R020			50,0					
SDM 940 - 600 - 200 R050	6,0	6,0	20	5,84	0,50	80	6	2
SDM 940 - 600 - 300 R050			30					
SDM 940 - 600 - 500 R050			50					
SDM 940 - 600 - 200 R100	6,0	6,0	20	5,84	1,00	80	6	2
SDM 940 - 600 - 300 R100			30					
SDM 940 - 600 - 500 R100			50					

**VHM-Kugelfräser** kurze Schneide, lange Ausführung, mit Freilegung,  $\varnothing$  3,0 - 12,0 mm, Schaft  $\varnothing$  3 - 12 mm  
**Solid carbide ballnose end mills** short cutting edge with clearance length,  $\varnothing$  3,0 - 12,0 mm, shank  $\varnothing$  3 - 12 mm



Best.-Nr. / Order no.	d1	L1	d2	L2	L	D	R	Z
SD97 V 030	3,0	6,0	2,9	15,0	40	3	1,50	2
SD97 VL 030				30,0	60			
SD97 V 040	4,0	6,0	3,9	15,0	40	4	2,00	2
SD97 VL 040				30,0	60			
SD97 V 050	5,0	8,0	4,9	15,0	40	5	2,50	2
SD97 VL 050				40,0	70			
SD97 V 060	6,0	10,0	5,9	30,0	55	6	3,00	2
SD97 VL 060			5,8	60,0	100			
SD97 V 080	8,0	10,0	7,8	35,0	65	8	4,00	2
SD97 VL 080				70,0	120			
SD 97 V 100	10,0	10,0	9,8	40,0	75	10	5,00	2
SD 97 VL 100		10,0	9,8	70,0	120			
SD 97 VSL 100		25,0	9,6	100,0	150			
SD 97 V 120	12,0	10,0	11,8	40,0	75	12	6,00	2
SD 97 VL 120		10,0	11,8	70,0	120			
SD 97 VSL 120		25,0	11,6	100,0	150			

# VHM-Kugel-Schruppfräser $\varnothing$ 1,0 - 12,0 mm, Schaft $\varnothing$ 3 - 12 mm

## Solid carbide ballnose roughing end mills $\varnothing$ 1,0 - 12,0 mm, shank $\varnothing$ 3 - 12 mm

SD 97 / SD 97 L

h5

R  
 $\pm 0,01$

SD  
COATING

30°  
HELIX

CFK  
GFK

GRAPHIT

Best.-Nr. / Order no.	d1	L1	L	D	R	Z
SD 97 010	1,0	2,0	40	3	0,50	2
SD 97 L 010		5,0				
SD 97 015	1,5	3,0	40	3	0,75	2
SD 97 L 015		6,0				
SD 97 021	2,0	4,0	40	3	1,00	2
SD 97 L 021		9,0				
SD 97 025	2,5	3,0	40	3	1,25	2
SD 97 030	3,0	8,0	40	3	1,50	2
SD 97 L 032		20,0	60			
SD 97 040	4,0	14,0	50	4	2,00	2
SD 97 L 043		30,0	60			
SD 97 050	5,0	20,0	50	5	2,50	2
SD 97 L 053		35,0	70			
SD 97 060	6,0	20,0	65	6	3,00	2
SD 97 L 064		40,0	100			
SD 97 080	8,0	20,0	65	8	4,00	2
SD 97 L 084		40,0	100			
SD 97 100	10,0	25,0	75	10	5,00	2
SD 97 L 104		40,0	100			
SD 97 120	12,0	25,0	75	12	6,00	2
SD 97 L 124		45,0	100			

**VHM-Kugelfräser** kurze Schneide, konischer Übergang zum Schaft,  $\varnothing$  1,0 - 6,0 mm, Schaft  $\varnothing$  3 - 8 mm

**Solid carbide ballnose end mills** short cutting edge, conical transition to shank,  $\varnothing$  1,0 - 6,0 mm, shank  $\varnothing$  3 - 8 mm

SD 97 K / KL

h5

R  
±0,01

SD  
COATING

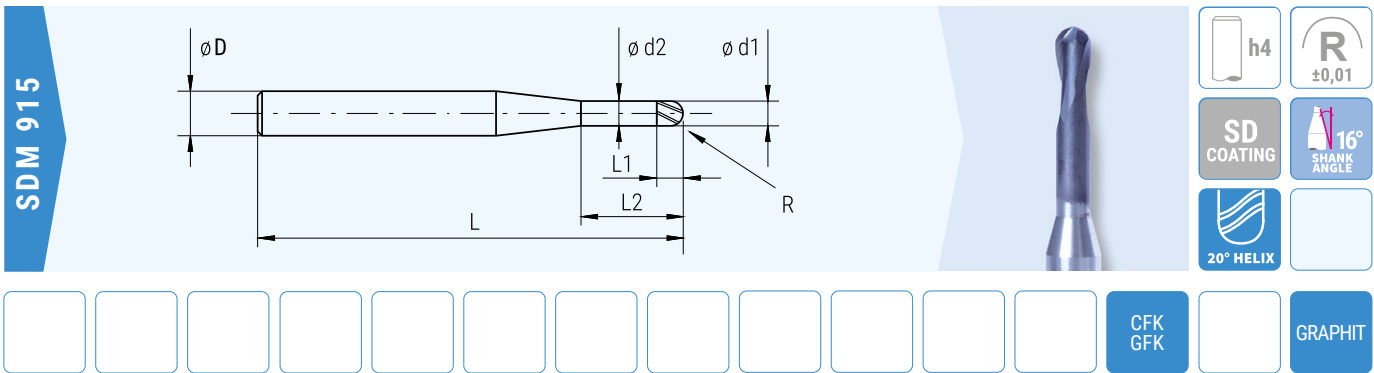
30° HELIX

CFK  
GFK

GRAPHIT

Best.-Nr. / Order no.	d1	R	L1	L2	L	D	Z
SD 97 K 010	1,0	0,50	2,0	30,0	60	3	2
SD 97 K 015	1,5	0,75	3,0	30,0	60	3	2
SD 97 K 020	2,0	1,00	4,0	30,0	60	3	2
SD 97 KL 010	1,0	0,50	2,0	70,0	100	3	2
SD 97 KL 015	1,5	0,75	3,0	50,0	100	3	2
SD 97 KL 020	2,0	1,00	4,0	70,0	100	4	2
SD 97 KL 030	3,0	1,50	6,0	70,0	100	5	2
SD 97 KL 040	4,0	2,00	8,0	70,0	100	6	2
SD 97 KL 050	5,0	2,50	10,0	50,0	100	6	2
SD 97 KL 060	6,0	3,00	10,0	70,0	100	8	2

**VHM-Kugelfräser**  $\varnothing$  0,2 - 2,0 mm, Schaft  $\varnothing$  3 mm **MINI**  
**Solid carbide ballnose end mills**  $\varnothing$  0,2 - 2,0 mm, shank  $\varnothing$  3 mm **MINI**



Best.-Nr. / Order no.	d1	L1	L2	d2	R	L	D	Z
SDM 915 L003	0,3	0,3	1,0	0,25	0,15	40	3	2
SDM 915 004 *	0,4	0,4	-	-	0,20	40	3	2
SDM 915 L004			1,5	0,35				
SDM 915 L005	0,5	0,5	2,5	0,45	0,25	40	3	2
SDM 915 XL 005			4,0					
SDM 915 SL 005			7,5					
SDM 915 XL 006	0,6	0,6	5,0	0,55	0,30	40	3	2
SDM 915 SL 006			9,0					
SDM 915 L008	0,8	0,8	4,0	0,75	0,40	40	3	2
SDM 915 XL 008			7,0					
SDM 915 SL 008			12,0					
SDM 915 L010	1,0	1,0	5,0	0,95	0,50	40	3	2
SDM 915 XL 010			8,5					
SDM 915 SL 010			15,0					
SDM 915 L012	1,2	1,2	6,0	1,15	0,60	40	3	2
SDM 915 XL 012			10,0					
SDM 915 XL 015	1,5	1,5	12,0	1,40	0,75	50	3	2
SDM 915 SL 015			20,0					
SDM 915 L020	2,0	2,0	10,0	1,90	1,00	50	3	2
SDM 915 XL 020			16,0					

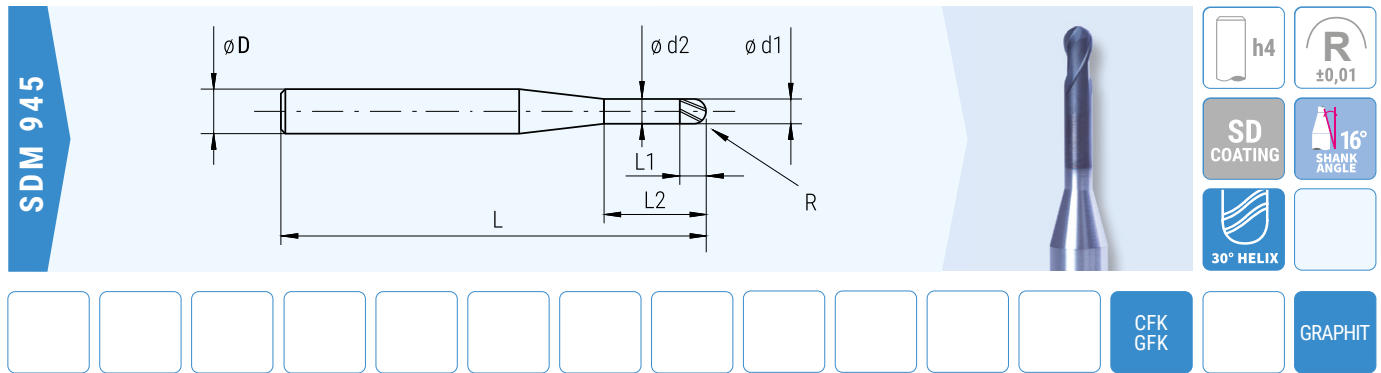
\* Auslaufend.

\* Discontinued.



**VHM-Kugelfräser**  $\varnothing$  0,2 - 6,0 mm, Schaft  $\varnothing$  4 und 6 mm **MINI**

**Solid carbide ballnose end mills**  $\varnothing$  0,2 - 6,0 mm, shank  $\varnothing$  4 and 6 mm **MINI**

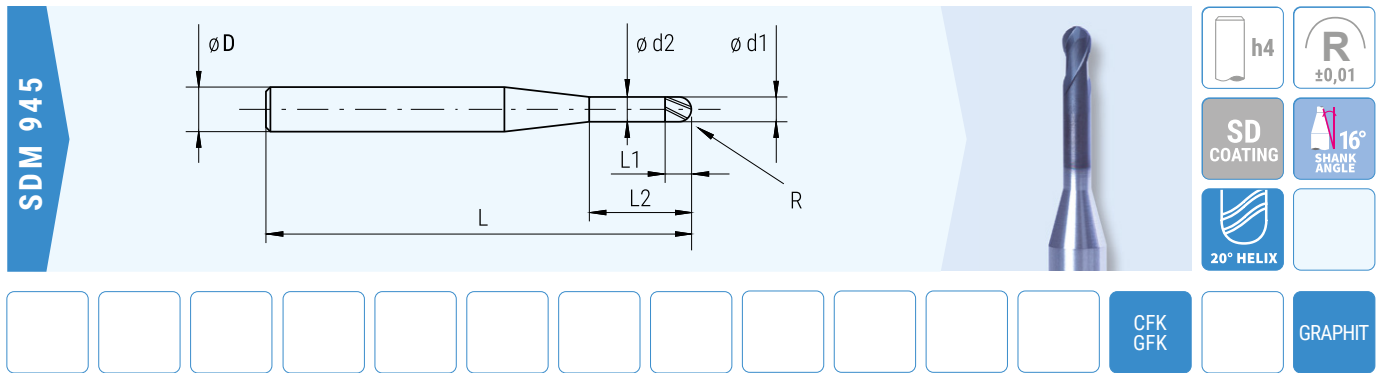


Best.-Nr. / Order no.	d1	L1	L2	d2	R	L	D	Z
SDM 945 - 020 - 005	0,2	0,16	0,5	0,14	0,10	45	4	2
SDM 945 - 020 - 010			1,0					
SDM 945 - 020 - 015			1,5					
SDM 945 - 020 - 020			2,0					
SDM 945 - 020 - 030			3,0					
SDM 945 - 030 - 010	0,3	0,24	1,0	0,24	0,15	45	4	2
SDM 945 - 030 - 020			2,0					
SDM 945 - 030 - 030			3,0					
SDM 945 - 040 - 010	0,4	0,32	1,0	0,34	0,20	45	4	2
SDM 945 - 040 - 020			2,0					
SDM 945 - 040 - 030			3,0					
SDM 945 - 040 - 050			5,0					
SDM 945 - 050 - 020 *	0,5	0,40	2,0	0,44	0,25	45	4	2
SDM 945 - 050 - 030			3,0					
SDM 945 - 050 - 060			6,0					
SDM 945 - 050 - 100			10,0					
SDM 945 - 060 - 030	0,6	0,48	3,0	0,54	0,30	45	4	2
SDM 945 - 060 - 060			6,0					
SDM 945 - 060 - 100			10,0					
SDM 945 - 060 - 120			12,0					
SDM 945 - 080 - 020	0,8	0,64	2,0	0,74	0,40	45	4	2
SDM 945 - 080 - 040			4,0					
SDM 945 - 080 - 080			8,0					
SDM 945 - 080 - 120			12,0					
SDM 945 - 100 - 025	1,0	0,80	2,5	0,92	0,50	45	4	2
SDM 945 - 100 - 050			5,0					
SDM 945 - 100 - 100			10,0					
SDM 945 - 100 - 120			12,0					
SDM 945 - 100 - 160			16,0					
SDM 945 - 100 - 200			20,0					
SDM 945 - 120 - 060	1,2	0,96	6,0	1,08	0,60	45	4	2
SDM 945 - 120 - 100			10,0					
SDM 945 - 120 - 160			16,0					
SDM 945 - 120 - 200			20,0					

\* Auslaufend.  
\* Discontinued.

Weitere Abmessungen auf Folgeseite »  
Further dimensions on next page »

**VHM-Kugelfräser**  $\varnothing$  0,2 - 6,0 mm, Schaft  $\varnothing$  4 und 6 mm **MINI**  
**Solid carbide ballnose end mills**  $\varnothing$  0,2 - 6,0 mm, shank  $\varnothing$  4 and 6 mm **MINI**



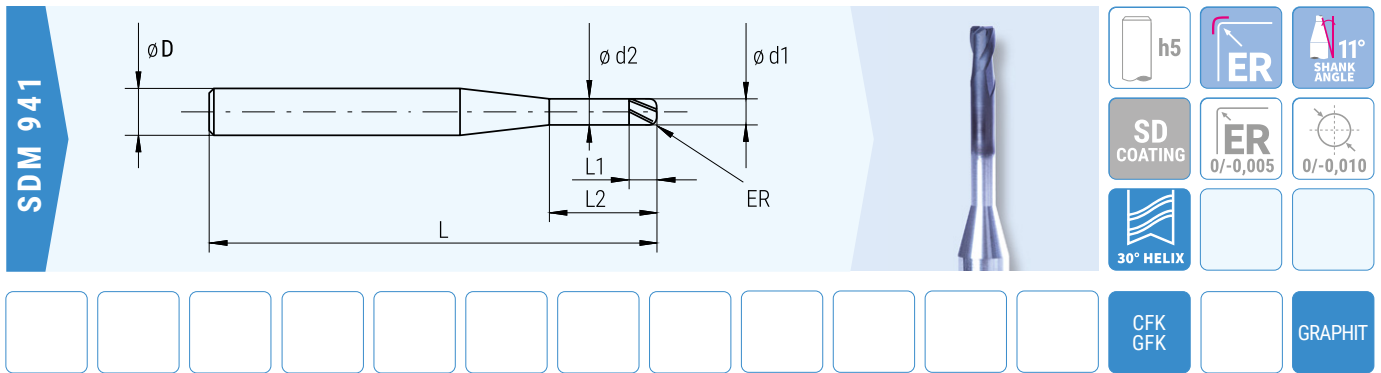
Best.-Nr. / Order no.	d1	L1	L2	d2	R	L	D	Z
SDM 945 - 150 - 030	1,5	1,12	3,0	1,38	0,75	45	4	2
SDM 945 - 150 - 060			6,0					
SDM 945 - 150 - 100			10,0					
SDM 945 - 150 - 160			16,0					
SDM 945 - 150 - 200			20,0					
SDM 945 - 180 - 080	1,8	1,44	8,0	1,68	0,90	45	4	2
SDM 945 - 180 - 120 *			12,0					
SDM 945 - 180 - 200			20,0					
SDM 945 - 200 - 040	2,0	1,60	4,0	1,80	1,00	45	4	2
SDM 945 - 200 - 080			8,0					
SDM 945 - 200 - 100			10,0					
SDM 945 - 200 - 120			12,0					
SDM 945 - 200 - 160			16,0					
SDM 945 - 200 - 200			20,0					
SDM 945 - 200 - 250			25,0					
SDM 945 - 200 - 300			30,0					
SDM 945 - 200 - 400			40,0					
SDM 945 - 300 - 160			3,0					
SDM 945 - 300 - 250	25,0							
SDM 945 - 300 - 400	40,0							
SDM 945 - 400 - 160	4,0	3,20	16,0	3,80	2,00	70	6	2
SDM 945 - 400 - 300			30,0					
SDM 945 - 400 - 500			50,0					
SDM 945 - 500 - 200 *	5,0	4,00	20,0	4,80	2,50	70	6	2
SDM 945 - 500 - 300			30,0					
SDM 945 - 600 - 300	6,0	4,80	30,0	5,80	3,00	80	6	2
SDM 945 - 600 - 500			50,0					

\* Auslaufend.

\* Discontinued.

**VHM-Torusfräser Präzisionsausführung**,  $\phi$  0,2 -  $\phi$  6,0 mm, Schaft  $\phi$  4 und 6 mm **MINI**

**Solid carbide end mill with corner radius precision design**,  $\phi$  0,2 -  $\phi$  6,0 mm, shank  $\phi$  4 and 6 mm **MINI**



Best. - Nr. / Order no.	d1	L1	L2	d2	L	D	ER / R	Z
SDM941 - 0020 - 0030 - 0005	0,2	0,30	0,5	0,16	45	4	-	2
SDM941 - 0020 - 0030 - 0010			1,0					
SDM941 - 0020 - 0030 - 0015			1,5					
SDM941 - 0030 - 0045 - 0010	0,3	0,45	1,0	0,26	45	4	-	2
SDM941 - 0030 - 0045 - 0020			2,0					
SDM941 - 0030 - 0045 - 0030			3,0					
SDM941 - 0040 - 0060 - 0020	0,4	0,60	2,0	0,36	45	4	-	2
SDM941 - 0040 - 0060 - 0030			3,0					
SDM941 - 0040 - 0060 - 0040			4,0					
SDM941 - 0040 - 0060 - 0050			5,0					
SDM941 - 0050 - 0070 - 0020R005	0,5	0,70	2,0	0,46	45	4	0,05	2
SDM941 - 0050 - 0070 - 0040R005			4,0					
SDM941 - 0050 - 0070 - 0060R005			6,0					
SDM941 - 0050 - 0070 - 0080R005			8,0					
SDM941 - 0050 - 0070 - 0100R005			10,0					
SDM941 - 0060 - 0090 - 0040R005	0,6	0,90	4,0	0,56	45	4	0,05	2
SDM941 - 0060 - 0090 - 0060R005			6,0					
SDM941 - 0060 - 0090 - 0080R005			8,0					
SDM941 - 0060 - 0090 - 0100R005			10,0					
SDM941 - 0080 - 0120 - 0040R010	0,8	1,20	4,0	0,76	45	4	0,10	2
SDM941 - 0080 - 0120 - 0060R010			6,0					
SDM941 - 0080 - 0120 - 0080R010			8,0					
SDM941 - 0080 - 0120 - 0100R010			10,0					
SDM941 - 0080 - 0120 - 0120R010			12,0					
SDM941 - 0100 - 0150 - 0040R010	1,0	1,50	4,0	0,90	45	4	0,10	2
SDM941 - 0100 - 0150 - 0060R010			6,0					
SDM941 - 0100 - 0150 - 0080R010			8,0					
SDM941 - 0100 - 0150 - 0100R010			10,0					
SDM941 - 0100 - 0150 - 0120R010			12,0					
SDM941 - 0100 - 0150 - 0160R010			16,0					
SDM941 - 0100 - 0150 - 0200R010	20,0							
SDM941 - 0100 - 0150 - 0040R020	1,0	1,50	4,0	0,90	45	4	0,20	2
SDM941 - 0100 - 0150 - 0060R020			6,0					
SDM941 - 0100 - 0150 - 0080R020			8,0					
SDM941 - 0100 - 0150 - 0100R020			10,0					
SDM941 - 0100 - 0150 - 0120R020			12,0					
SDM941 - 0100 - 0150 - 0160R020			16,0					
SDM941 - 0100 - 0150 - 0200R020			20,0					

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Best. - Nr. / Order no.	d1	L1	L2	d2	L	D	ER / R	Z
SDM941 - 0100 - 0150 - 0040R025	1,0	1,50	4,0	0,90	45	4	0,25	2
SDM941 - 0100 - 0150 - 0060R025			6,0					
SDM941 - 0100 - 0150 - 0080R025			8,0					
SDM941 - 0100 - 0150 - 0100R025			10,0					
SDM941 - 0100 - 0150 - 0120R025			12,0					
SDM941 - 0100 - 0150 - 0160R025			16,0					
SDM941 - 0100 - 0150 - 0200R025			20,0					
SDM941 - 0120 - 0180 - 0060R010	1,2	1,80	6,0	1,08	45	4	0,10	2
SDM941 - 0120 - 0180 - 0100R010			10,0					
SDM941 - 0120 - 0180 - 0120R010			12,0					
SDM941 - 0120 - 0180 - 0160R010			16,0					
SDM941 - 0120 - 0180 - 0060R020	1,2	1,80	6,0	1,08	45	4	0,20	2
SDM941 - 0120 - 0180 - 0100R020			10,0					
SDM941 - 0120 - 0180 - 0120R020			12,0					
SDM941 - 0120 - 0180 - 0160R020			16,0					
SDM941 - 0120 - 0180 - 0060R025	1,2	1,80	6,0	1,08	45	4	0,25	2
SDM941 - 0120 - 0180 - 0100R025			10,0					
SDM941 - 0120 - 0180 - 0160R025			16,0					
SDM941 - 0140 - 0180 - 0060R010	1,4	1,80	6,0	1,28	45	4	0,10	2
SDM941 - 0140 - 0180 - 0100R010			10,0					
SDM941 - 0140 - 0180 - 0140R010			14,0					
SDM941 - 0140 - 0180 - 0160R010			16,0					
SDM941 - 0140 - 0180 - 0060R015	1,4	1,80	6,0	1,28	45	4	0,15	2
SDM941 - 0140 - 0180 - 0100R015			10,0					
SDM941 - 0140 - 0180 - 0160R015			16,0					
SDM941 - 0140 - 0180 - 0060R020	1,4	1,80	6,0	1,28	45	4	0,20	2
SDM941 - 0140 - 0180 - 0100R020			10,0					
SDM941 - 0140 - 0180 - 0140R020			14,0					
SDM941 - 0140 - 0180 - 0160R020			16,0					
SDM941 - 0150 - 0220 - 0060R015	1,5	2,20	6,0	1,40	45	4	0,15	2
SDM941 - 0150 - 0220 - 0080R015			8,0					
SDM941 - 0150 - 0220 - 0100R015			10,0					
SDM941 - 0150 - 0220 - 0120R015			12,0					
SDM941 - 0150 - 0220 - 0160R015			16,0					
SDM941 - 0150 - 0220 - 0200R015			20,0					
SDM941 - 0150 - 0220 - 0300R015			30,0					
SDM941 - 0150 - 0220 - 0060R020	1,5	2,20	6,0	1,40	45	4	0,20	2
SDM941 - 0150 - 0220 - 0080R020			8,0					
SDM941 - 0150 - 0220 - 0100R020			10,0					
SDM941 - 0150 - 0220 - 0120R020			12,0					
SDM941 - 0150 - 0220 - 0160R020			16,0					
SDM941 - 0150 - 0220 - 0200R020			20,0					
SDM941 - 0150 - 0220 - 0300R020			30,0					
SDM941 - 0150 - 0220 - 0060R050	1,5	2,20	6,0	1,40	45	4	0,50	2
SDM941 - 0150 - 0220 - 0080R050			8,0					
SDM941 - 0150 - 0220 - 0100R050			10,0					
SDM941 - 0150 - 0220 - 0120R050			12,0					
SDM941 - 0150 - 0220 - 0160R050			16,0					
SDM941 - 0150 - 0220 - 0200R050			20,0					
SDM941 - 0150 - 0220 - 0300R050			30,0					

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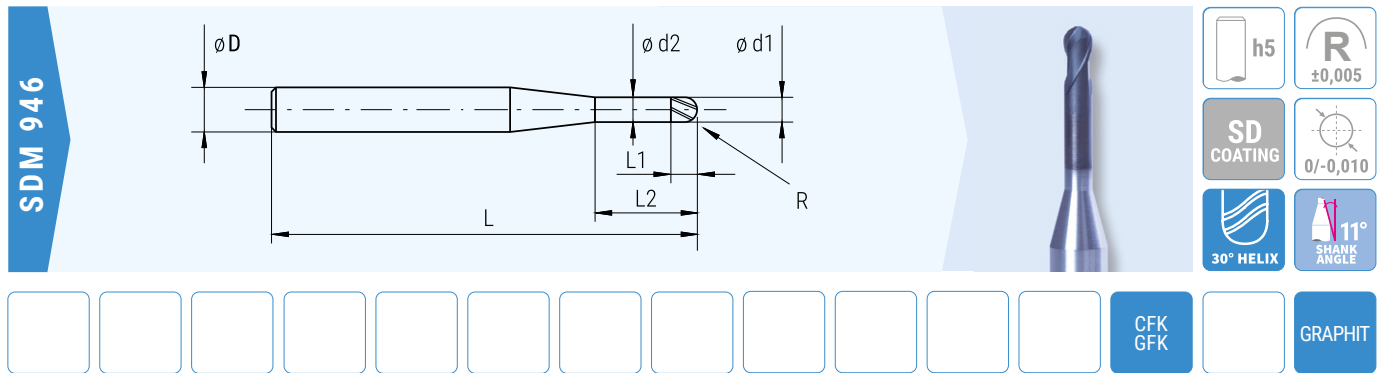
Best. - Nr. / Order no.	d1	L1	L2	d2	L	D	ER / R	Z
SDM941 - 0180 - 0270 - 0080R020	1,8	2,70	8,0	1,70	45	4	0,20	2
SDM941 - 0180 - 0270 - 0120R020			12,0					
SDM941 - 0180 - 0270 - 0160R020			16,0					
SDM941 - 0180 - 0270 - 0200R020			20,0					
SDM941 - 0180 - 0270 - 0180R020			18,0					
SDM941 - 0200 - 0300 - 0060R020	2,0	3,00	6,0	1,84	45	4	0,20	2
SDM941 - 0200 - 0300 - 0080R020			8,0					
SDM941 - 0200 - 0300 - 0120R020			12,0					
SDM941 - 0200 - 0300 - 0160R020			16,0					
SDM941 - 0200 - 0300 - 0200R020			20,0					
SDM941 - 0200 - 0300 - 0250R020			25,0					
SDM941 - 0200 - 0300 - 0300R020			30,0					
SDM941 - 0200 - 0300 - 0060R050	2,0	3,00	6,0	1,84	45	4	0,50	2
SDM941 - 0200 - 0300 - 0080R050			8,0					
SDM941 - 0200 - 0300 - 0120R050			12,0					
SDM941 - 0200 - 0300 - 0160R050			16,0					
SDM941 - 0200 - 0300 - 0200R050			20,0					
SDM941 - 0200 - 0300 - 0250R050			25,0					
SDM941 - 0200 - 0300 - 0300R050			30,0					
SDM941 - 0250 - 0300 - 0100R020	2,5	3,00	10,0	2,34	45	4	0,20	2
SDM941 - 0250 - 0300 - 0160R020			16,0					
SDM941 - 0250 - 0300 - 0200R020			20,0					
SDM941 - 0250 - 0300 - 0300R020			30,0					
SDM941 - 0250 - 0300 - 0100R050	2,5	3,00	10,0	2,34	45	4	0,50	2
SDM941 - 0250 - 0300 - 0160R050			16,0					
SDM941 - 0250 - 0300 - 0200R050			20,0					
SDM941 - 0250 - 0300 - 0300R050			30,0					
SDM941 - 0300 - 0300 - 0080R020	3,0	3,00	8,0	2,84	50	6	0,20	2
SDM941 - 0300 - 0300 - 0120R020			12,0					
SDM941 - 0300 - 0300 - 0160R020			16,0					
SDM941 - 0300 - 0300 - 0200R020			20,0					
SDM941 - 0300 - 0300 - 0250R020			25,0					
SDM941 - 0300 - 0300 - 0300R020			30,0					
SDM941 - 0300 - 0300 - 0350R020			35,0					
SDM941 - 0300 - 0300 - 0400R020			40,0					
SDM941 - 0300 - 0300 - 0080R050	3,0	3,00	8,0	2,84	50	6	0,50	2
SDM941 - 0300 - 0300 - 0120R050			12,0					
SDM941 - 0300 - 0300 - 0160R050			16,0					
SDM941 - 0300 - 0300 - 0200R050			20,0					
SDM941 - 0300 - 0300 - 0250R050			25,0					
SDM941 - 0300 - 0300 - 0300R050			30,0					
SDM941 - 0300 - 0300 - 0080R100	3,0	3,00	8,0	2,84	50	6	1,00	2
SDM941 - 0300 - 0300 - 0120R100			12,0					
SDM941 - 0300 - 0300 - 0160R100			16,0					
SDM941 - 0300 - 0300 - 0200R100			20,0					
SDM941 - 0300 - 0300 - 0250R100			25,0					
SDM941 - 0300 - 0300 - 0300R100			30,0					

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Best. - Nr. / Order no.	d1	L1	L2	d2	L	D	ER / R	Z
SDM941 - 0400 - 0400 - 0040R020	4,0	4,00	-	-	50	6	0,20	2
SDM941 - 0400 - 0400 - 0120R020			12,0	3,84				
SDM941 - 0400 - 0400 - 0160R020			16,0					
SDM941 - 0400 - 0400 - 0200R020			20,0					
SDM941 - 0400 - 0400 - 0250R020			25,0					
SDM941 - 0400 - 0400 - 0300R020			30,0					
SDM941 - 0400 - 0400 - 0350R020			35,0					
SDM941 - 0400 - 0400 - 0400R020			40,0					
SDM941 - 0400 - 0400 - 0450R020			45,0					
SDM941 - 0400 - 0400 - 0500R020			50,0					
SDM941 - 0400 - 0400 - 0120R050			4,0		4,00			
SDM941 - 0400 - 0400 - 0160R050	16,0	60						
SDM941 - 0400 - 0400 - 0200R050	20,0							
SDM941 - 0400 - 0400 - 0250R050	25,0	70						
SDM941 - 0400 - 0400 - 0300R050	30,0							
SDM941 - 0400 - 0400 - 0400R050	40,0							
SDM941 - 0400 - 0400 - 0500R050	50,0							
SDM941 - 0400 - 0400 - 0120R100	4,0	4,00	12,0	3,84	50	6	1,00	2
SDM941 - 0400 - 0400 - 0160R100			16,0		60			
SDM941 - 0400 - 0400 - 0200R100			20,0					
SDM941 - 0400 - 0400 - 0250R100			25,0					
SDM941 - 0400 - 0400 - 0300R100			30,0					
SDM941 - 0500 - 0500 - 0050R020	5,0	5,00	-	-	50	6	0,20	2
SDM941 - 0500 - 0500 - 0160R020			16,0	4,84	60			
SDM941 - 0500 - 0500 - 0250R020			25,0					
SDM941 - 0500 - 0500 - 0400R020			40,0					
SDM941 - 0500 - 0500 - 0500R020			50,0					
SDM941 - 0500 - 0500 - 0160R050	5,0	5,00	16,0	4,84	60	6	0,50	2
SDM941 - 0500 - 0500 - 0250R050			25,0					
SDM941 - 0500 - 0500 - 0400R050			40,0					
SDM941 - 0500 - 0500 - 0500R050			50,0					
SDM941 - 0500 - 0500 - 0160R100	5,0	5,00	16,0	4,84	60	6	1,00	2
SDM941 - 0500 - 0500 - 0250R100			25,0					
SDM941 - 0500 - 0500 - 0400R100			40,0					
SDM941 - 0500 - 0500 - 0500R100			50,0					
SDM941 - 0600 - 0600 - 0060R020	6,0	6,00	-	-	50	6	0,20	2
SDM941 - 0600 - 0600 - 0200R020			20,0	5,84	80			
SDM941 - 0600 - 0600 - 0300R020			30,0					
SDM941 - 0600 - 0600 - 0500R020			50,0					
SDM941 - 0600 - 0600 - 0600R020			60,0					
SDM941 - 0600 - 0600 - 0200R050			20,0					
SDM941 - 0600 - 0600 - 0300R050	30,0							
SDM941 - 0600 - 0600 - 0500R050	50,0							
SDM941 - 0600 - 0600 - 0200R100	6,0	6,00	20,0	5,84	80	6	1,00	2
SDM941 - 0600 - 0600 - 0300R100			30,0					
SDM941 - 0600 - 0600 - 0500R100			50,0					
SDM941 - 0600 - 0600 - 0600R100			60,0					

**VHM-Kugelfräser Präzisionsausführung**,  $\varnothing$  0,2 - 6,0 mm, Schaft  $\varnothing$  4 und 6 mm **MINI**

**Solid carbide ballnose end mills precision design**,  $\varnothing$  0,2 - 6,0 mm, shank  $\varnothing$  4 and 6 mm **MINI**

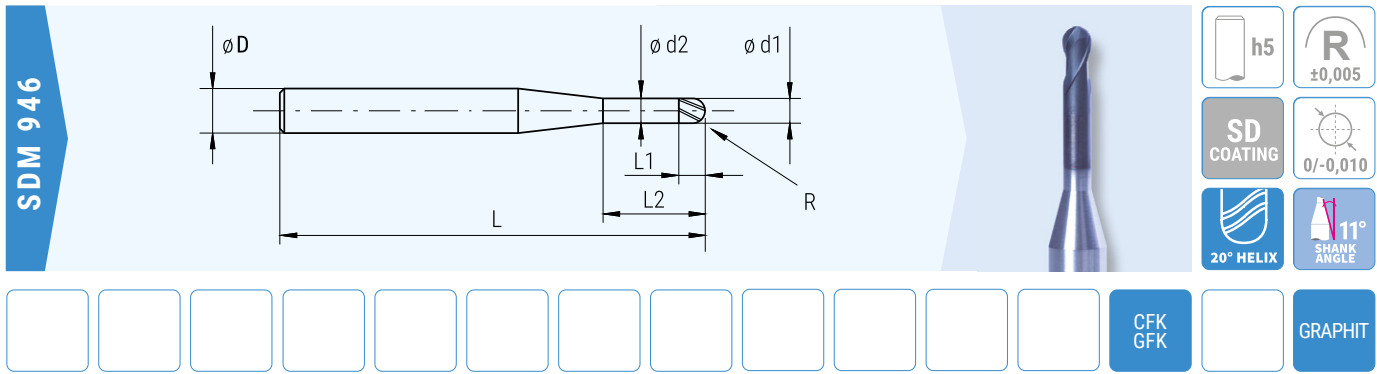


Best.-Nr. / Order no.	d1	L1	L2	d2	L	D	ER / R	Z
SDM 946 - 0020 - 0016 - 0005	0,2	0,16	0,5	0,14	45	4	0,10	2
SDM 946 - 0020 - 0016 - 0010			1,0					
SDM 946 - 0020 - 0016 - 0015			1,5					
SDM 946 - 0020 - 0016 - 0020			2,0					
SDM 946 - 0020 - 0016 - 0030			3,0					
SDM 946 - 0030 - 0024 - 0010	0,3	0,24	1,0	0,24	45	4	0,15	2
SDM 946 - 0030 - 0024 - 0020			2,0					
SDM 946 - 0030 - 0024 - 0030			3,0					
SDM 946 - 0040 - 0032 - 0010	0,4	0,32	1,0	0,34	45	4	0,20	2
SDM 946 - 0040 - 0032 - 0020			2,0					
SDM 946 - 0040 - 0032 - 0030			3,0					
SDM 946 - 0040 - 0032 - 0050			5,0					
SDM 946 - 0040 - 0032 - 0040			4,0					
SDM 946 - 0050 - 0040 - 0020	0,5	0,40	2,0	0,44	45	4	0,25	2
SDM 946 - 0050 - 0040 - 0030			3,0					
SDM 946 - 0050 - 0040 - 0050			5,0					
SDM 946 - 0050 - 0040 - 0060			6,0					
SDM 946 - 0050 - 0040 - 0100			10,0					
SDM 946 - 0060 - 0048 - 0030	0,6	0,48	3,0	0,54	45	4	0,30	2
SDM 946 - 0060 - 0048 - 0060			6,0					
SDM 946 - 0060 - 0048 - 0100			10,0					
SDM 946 - 0060 - 0048 - 0120			12,0					
SDM 946 - 0080 - 0064 - 0020			0,8		0,64			
SDM 946 - 0080 - 0064 - 0040	4,0							
SDM 946 - 0080 - 0064 - 0080	8,0							
SDM 946 - 0080 - 0064 - 0120	12,0							
SDM 946 - 0100 - 0080 - 0025	1,0	0,80		2,5		0,92	45	4
SDM 946 - 0100 - 0080 - 0050			5,0					
SDM 946 - 0100 - 0080 - 0100			10,0					
SDM 946 - 0100 - 0080 - 0160			16,0					
SDM 946 - 0100 - 0080 - 0200			20,0					
SDM 946 - 0120 - 0096 - 0060	1,2	0,96	6,0	1,08	45	4	0,60	2
SDM 946 - 0120 - 0096 - 0100			10,0					
SDM 946 - 0120 - 0096 - 0120			12,0					
SDM 946 - 0120 - 0096 - 0160			16,0					
SDM 946 - 0120 - 0096 - 0200			20,0					

Weitere Abmessungen auf Folgeseite » / Further dimensions on next page »

**VHM-Kugelfräser** Präzisionsausführung,  $\varnothing$  0,2 - 6,0 mm, Schaft  $\varnothing$  4 und 6 mm **MINI**

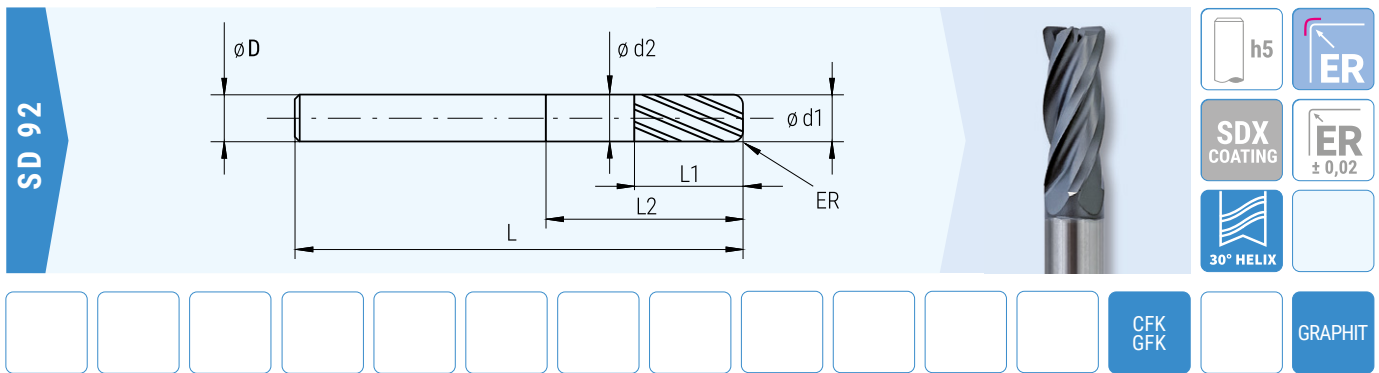
**Solid carbide ballnose end mills** precision design,  $\varnothing$  0,2 - 6,0 mm, shank  $\varnothing$  4 and 6 mm **MINI**



Best.-Nr. / Order no.	d1	L1	L2	d2	L	D	ER / R	Z
SDM 946 - 0150 - 0112 - 0030	1,5	1,12	3,0	1,38	45	4	0,75	2
SDM 946 - 0150 - 0112 - 0060			6,0					
SDM 946 - 0150 - 0112 - 0100			10,0					
SDM 946 - 0150 - 0112 - 0160			16,0					
SDM 946 - 0150 - 0112 - 0200			20,0					
SDM 946 - 0180 - 0144 - 0080	1,8	1,44	8,0	1,68	45	4	0,90	2
SDM 946 - 0180 - 0144 - 0120			12,0					
SDM 946 - 0180 - 0144 - 0180			18,0					
SDM 946 - 0180 - 0144 - 0200			20,0					
SDM 946 - 0200 - 0160 - 0040	2,0	1,60	4,0	1,80	45	4	1,00	2
SDM 946 - 0200 - 0160 - 0080			8,0					
SDM 946 - 0200 - 0160 - 0100			10,0					
SDM 946 - 0200 - 0160 - 0120			12,0					
SDM 946 - 0200 - 0160 - 0160			16,0					
SDM 946 - 0200 - 0160 - 0200			20,0					
SDM 946 - 0200 - 0160 - 0250			25,0					
SDM 946 - 0200 - 0160 - 0300			30,0					
SDM 946 - 0200 - 0160 - 0400			40,0					
SDM 946 - 0300 - 0240 - 0160	3,0	2,40	16,0	2,80	60	6	1,50	2
SDM 946 - 0300 - 0240 - 0250			25,0		70			
SDM 946 - 0300 - 0240 - 0300			30,0		80			
SDM 946 - 0300 - 0240 - 0400			40,0					
SDM 946 - 0400 - 0320 - 0160	4,0	3,20	16,0	3,80	70	6	2,00	2
SDM 946 - 0400 - 0320 - 0200			20,0					
SDM 946 - 0400 - 0320 - 0300			30,0					
SDM 946 - 0400 - 0320 - 0400			40,0					
SDM 946 - 0400 - 0320 - 0500			50,0					
SDM 946 - 0500 - 0400 - 0200	5,0	4,00	20,0	4,80	70	6	2,50	2
SDM 946 - 0500 - 0400 - 0300			30,0		80			
SDM 946 - 0500 - 0400 - 0500			50,0		90			
SDM 946 - 0600 - 0480 - 0300	6,0	4,80	30,0	5,80	80	6	3,00	2
SDM 946 - 0600 - 0480 - 0300L060			30,0		60			
SDM 946 - 0600 - 0480 - 0400			40,0		80			
SDM 946 - 0600 - 0480 - 0500			50,0		120			
SDM 946 - 0600 - 0480 - 0600L100			60,0		100			
SDM 946 - 0600 - 0480 - 0600			60,0		120			

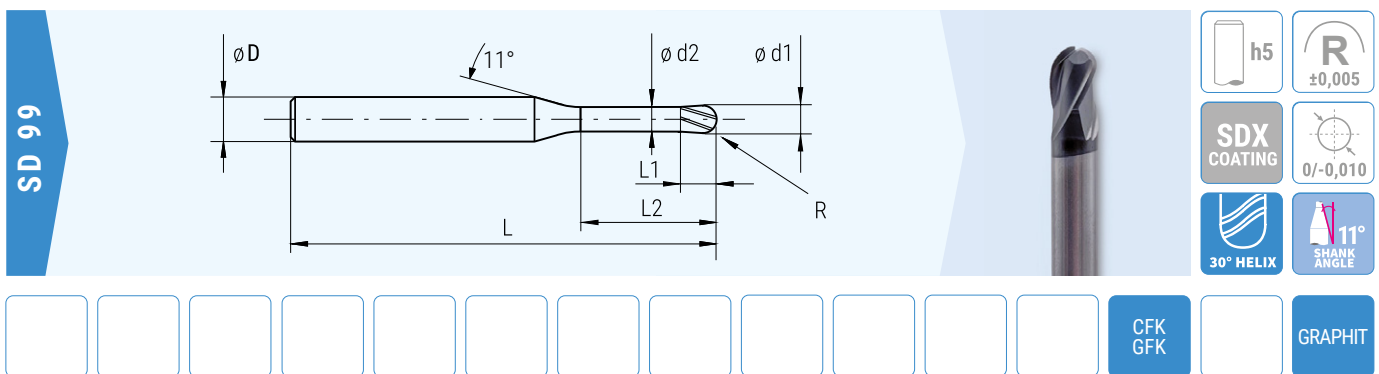


**VHM-Torusfräser, Vierschneider** Präzisionsausführung  $\varnothing$  6,0 - 10,0 mm, Schaft  $\varnothing$  6 - 10 mm  
**Solid carbide end mill with corner radius, 4 flutes** precision design,  $\varnothing$  6,0 - 10,0 mm, shank  $\varnothing$  6 - 10 mm



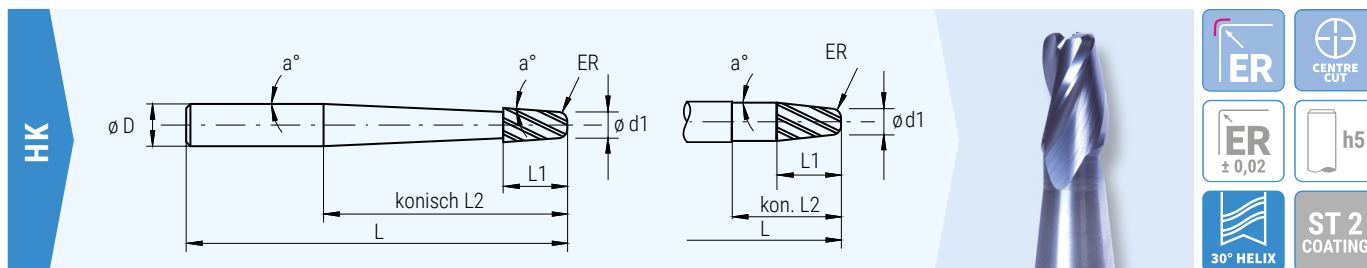
Best.-Nr. / Order no.	d1	L1	L2	d2	L	D	ER	Z
SD 92 - 0600 - 1500 - 0600R050	6	15	60	5,8	100	6	0,5	4
SD 92 - 0600 - 1500 - 0600R100			1,0					
SD 92 - 0800 - 1600 - 0550R050	8	16	55	7,8	100	8	0,5	4
SD 92 - 0800 - 1600 - 0850R050			85		120			
SD 92 - 0800 - 2000 - 0800R050			20					
SD 92 - 0800 - 1000 - 0800R100	8	10	80	7,8	120	8	1,0	4
SD 92 - 0800 - 2000 - 0800R100		20						
SD 92 - 1000 - 2500 - 0600R100	10	25	60	9,8	100	10	1,0	4
SD 92 - 1000 - 2500 - 1000R100			100		150			

**VHM-Kugelfräser, 3-Schneider** Präzisionsausführung  $\varnothing$  1,0 - 6,0 mm, Schaft  $\varnothing$  4 - 6 mm  
**Solid carbide ballnose end mill, 3 flutes** precision design,  $\varnothing$  1,0 - 6,0 mm, shank  $\varnothing$  4 - 6 mm



Best.-Nr. / Order no.	d1	L1	L2	d2	L	D	R	Z
SD 99 - 0100 - 0120 - 0100	1	1,2	10	0,92	60	4	0,5	3
SD 99 - 0200 - 0240 - 0160	2	2,4	16	1,80	60	4	1,0	3
SD 99 - 0200 - 0240 - 0200			20					
SD 99 - 0300 - 0360 - 0240	3	3,6	24	2,80	60	6	1,5	3
SD 99 - 0300 - 0360 - 0300			80					
SD 99 - 0400 - 0480 - 0400	4	4,8	40	3,80	80	6	2,0	3
SD 99 - 0400 - 0480 - 0300			30					
SD 99 - 0600 - 0720 - 0450	6	7,2	45	5,70	80	6	3,0	3
SD 99 - 0600 - 0720 - 0600			60		100			

**VHM-Konusfräser** mit Eckenradius,  $\phi$  2,5 - 9,5 mm, Schaft  $\phi$  3 - 16 mm  
**Solid carbide cone cutters** with corner radius,  $\phi$  2,5 - 9,5 mm, shank  $\phi$  3 - 16 mm



<700 N/mm <sup>2</sup>	700- 1100 N/mm <sup>2</sup>	1100- 1300 N/mm <sup>2</sup>	30-45 HRC	45-55 HRC	55-60 HRC			INOX	AL	CU CuZn Gold PL	TI	CFK GFK	PLASTIC	
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Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	L2	ER	Z	L	D
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**1° je Seite / per page**

HK 010 - 025 R 020	HK 010 - 025 R 020 SN	2,5	6,0	20,0	0,2	3	40	3
HK 010 - 028 R 020	HK 010 - 028 R 020 SN	2,8	6,0	10,0	0,2	3	40	3
HK 010 - 038 R 020	HK 010 - 038 R 020 SN	3,8	6,0	10,0	0,2	3	50	4
HK 010 - 055 R 050	HK 010 - 055 R 050 SN	5,5	15,0	$\infty^*$	0,5	3	55	6
HK 010 - 055 R 100	HK 010 - 055 R 100 SN				1,0			
HK 010 - 075 R 050	HK 010 - 075 R 050 SN	7,5	15,0	$\infty^*$	0,5	3	65	8
HK 010 - 075 R 100	HK 010 - 075 R 100 SN				1,0			
HK 010 - 095 R 100 - 3	HK 010 - 095 R 100 - 3 SN	9,5	15,0	$\infty^*$	1,0	3	75	10
HK 010 - 095 R 100 - 4	HK 010 - 095 R 100 - 4 SN					4		

**1,5° je Seite / per page**

HK 015 - 025 R 020	HK 015 - 025 R 020 SN	2,5	6,0	12,0	0,2	3	40	3
HK 015 - 028 R 020	HK 015 - 028 R 020 SN	2,8	6,0	25,0	0,2	3	50	4
HK 015 - 038 R 020	HK 015 - 038 R 020 SN	3,8	6,0	25,0	0,2	3	50	5
HK 015 - 055 R 050	HK 015 - 055 R 050 SN	5,5	10,0	$\infty^*$	0,5	3	55	6
HK 015 - 055 R 100	HK 015 - 055 R 100 SN				1,0			
HK 015 - 075 R 050	HK 015 - 075 R 050 SN	7,5	10,0	$\infty^*$	0,5	3	65	8
HK 015 - 075 R 100	HK 015 - 075 R 100 SN				1,0			
HK 015 - 095 R 100 - 3	HK 015 - 095 R 100 - 3 SN	9,5	10,0	$\infty^*$	1,0	3	75	10
HK 015 - 095 R 100 - 4	HK 015 - 095 R 100 - 4 SN					4		

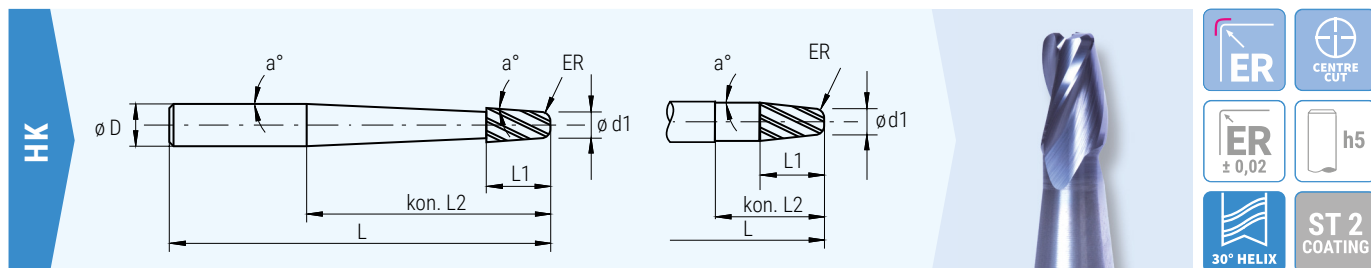
**2° je Seite / per page**

HK 020 - 025 R 020	HK 020 - 025 R 020 SN	2,5	6,0	24,0	0,2	3	50	4
HK 020 - 028 R 020	HK 020 - 028 R 020 SN	2,8	6,0	20,0	0,2	3	50	4
HK 020 - 038 R 020	HK 020 - 038 R 020 SN	3,8	6,0	20,0	0,2	3	50	5
HK 020 - 055 R 050	HK 020 - 055 R 050 SN	5,5	6,0	$\infty^*$	0,5	3	55	6
HK 020 - 055 R 100	HK 020 - 055 R 100 SN				1,0			
HK 020 - 075 R 050	HK 020 - 075 R 050 SN	7,5	6,0	$\infty^*$	0,5	3	65	8
HK 020 - 075 R 100	HK 020 - 075 R 100 SN				1,0			
HK 020 - 095 R 100 - 3	HK 020 - 095 R 100 - 3 SN	9,5	6,0	$\infty^*$	1,0	3	75	10
HK 020 - 095 R 100 - 4	HK 020 - 095 R 100 - 4 SN					4		

$\infty^*$  = Tauchtiefe ist frei

$\infty^*$  = depth is free

**VHM-Konusfräser** mit Eckenradius,  $\varnothing$  2,5 - 9,5 mm, Schaft  $\varnothing$  3 - 16 mm  
**Solid carbide cone cutters** with corner radius,  $\varnothing$  2,5 - 9,5 mm, shank  $\varnothing$  3 - 16 mm



<700 N/mm <sup>2</sup>	700-1100 N/mm <sup>2</sup>	1100-1300 N/mm <sup>2</sup>	30-45 HRC	45-55 HRC	55-60 HRC			INOX	AL	CU CuZn Gold PL	TI	CFK GFK	PLASTIC	
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Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	L2	ER	Z	L	D
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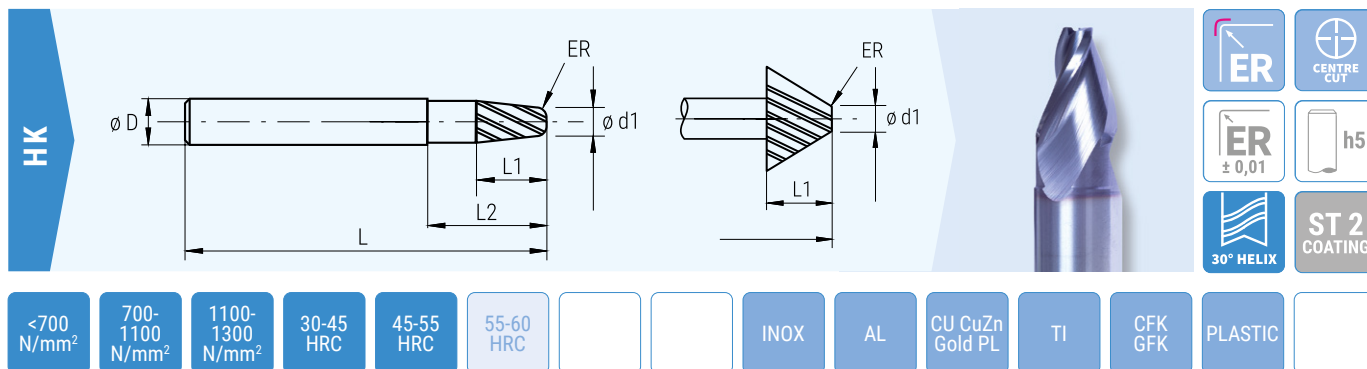
3° je Seite / per page								
HK 030 - 025 R 020	HK 030 - 025 R 020 SN	2,5	6,0	15,0	0,2	3	50	4
HK 030 - 028 R 020	HK 030 - 028 R 020 SN	2,8	6,0	12,0	0,2	3	50	4
HK 030 - 038 R 020	HK 030 - 038 R 020 SN	3,8	6,0	12,0	0,2	3	50	5
HK 030 - 055 R 050	HK 030 - 055 R 050 SN	5,5	10,0	24,0	0,5	3	65	8
HK 030 - 055 R 100	HK 030 - 055 R 100 SN				1,0			8
HK 030 - 075 R 050	HK 030 - 075 R 050 SN	7,5	10,0	24,0	0,5	3	75	10
HK 030 - 075 R 100	HK 030 - 075 R 100 SN				1,0			
HK 030 - 095 R 100 - 3	HK 030 - 095 R 100 - 3 SN	9,5	10,0	24,0	1,0	3	75	12
HK 030 - 095 R 100 - 4	HK 030 - 095 R 100 - 4 SN					4		

5° je Seite / per page								
HK 050 - 025 R 020	HK 050 - 025 R 020 SN	2,5	6,0	20,0	0,2	3	55	6
HK 050 - 028 R 020	HK 050 - 028 R 020 SN	2,8	6,0	18,0	0,2	3	55	6
HK 050 - 038 R 020	HK 050 - 038 R 020 SN	3,8	12,0	$\infty^*$	0,2	3	55	6
HK 050 - 055 R 050	HK 050 - 055 R 050 SN	5,5	14,0	$\infty^*$	0,5	3	65	8
HK 050 - 055 R 100	HK 050 - 055 R 100 SN				1,0			8
HK 050 - 075 R 050	HK 050 - 075 R 050 SN	7,5	14,0	$\infty^*$	0,5	3	75	10
HK 050 - 075 R 100	HK 050 - 075 R 100 SN				1,0			
HK 050 - 095 R 100-3	HK 050 - 095 R 100-3 SN	9,5	14,0	$\infty^*$	1,0	3	75	12
HK 050 - 095 R 100-4	HK 050 - 095 R 100-4 SN					4		

10° je Seite / per page								
HK 100 - 025 R 020	HK 100 - 025 R 020 SN	2,5	15,0	$\infty^*$	0,2	3	65	8
HK 100 - 040 R 050	HK 100 - 040 R 050 SN	4,0	15,0	$\infty^*$	0,5	3	75	10
HK 100 - 060 R 050	HK 100 - 060 R 050 SN	6,0	15,0	$\infty^*$	0,5	3	75	12
HK 100 - 080 R 050	HK 100 - 080 R 050 SN	8,0	20,0	$\infty^*$	0,5	4	75	16

$\infty^*$  = Tauchtiefe ist frei  
 $\infty^*$  = depth is free

**VHM-Konusfräser** mit Eckenradius,  $\varnothing$  2,5 - 9,5 mm, Schaft  $\varnothing$  3 - 16 mm  
**Solid carbide cone cutters** with corner radius,  $\varnothing$  2,5 - 9,5 mm, shank  $\varnothing$  3 - 16 mm



Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	L2	ER	Z	L	D
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**15° je Seite / per page**

HK 150 - 025 R 020	HK 150 - 025 R 020 SN	2,5	10,0	$\infty^*$	0,2	3	65	8
HK 150 - 040 R 050	HK 150 - 040 R 050 SN	4,0	15,0	$\infty^*$	0,5	3	75	12
HK 150 - 061 R 050	HK 150 - 061 R 050 SN	6,0	10,0	$\infty^*$	0,5	3	75	12
HK 150 - 062 R 050	HK 150 - 062 R 050 SN	6,0	18,0	$\infty^*$	0,5	3	75	16
HK 150 - 080 R 050	HK 150 - 080 R 050 SN	8,0	15,0	$\infty^*$	0,5	4	75	16

**20° je Seite / per page**

HK 200 - 025 R 020	HK 200 - 025 R 020 SN	2,5	10,0	$\infty^*$	0,2	3	80	10
HK 200 - 045 R 050	HK 200 - 045 R 050 SN	4,5	16,0	$\infty^*$	0,5	4	80	16

**30° je Seite / per page**

HK 300 - 025 R 020	HK 300 - 025 R 020 SN	2,5	8,0	$\infty^*$	0,2	3	75	12
HK 300 - 045 R 050	HK 300 - 045 R 050 SN	4,5	12,0	$\infty^*$	0,5	4	75	16

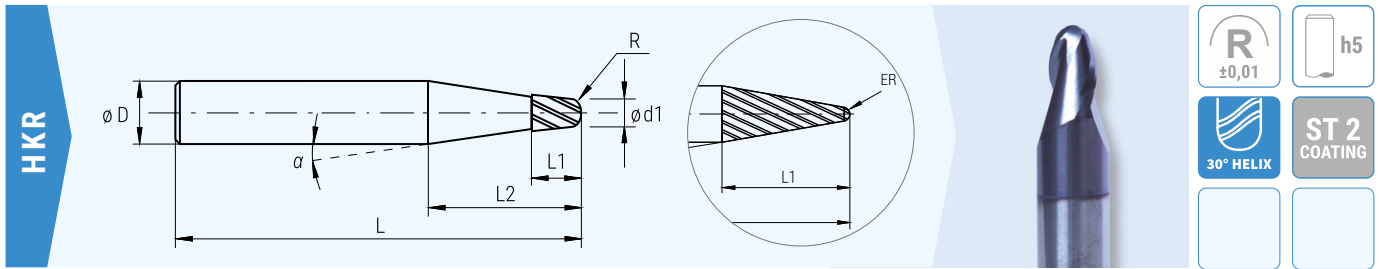
**45° je Seite / per page**

HK 450 - 025 R 020	HK 450 - 025 R 020 SN	2,5	6,0	$\infty^*$	0,2	3	80	16
HK 450 - 045 R 050	HK 450 - 045 R 050 SN	4,5	12,0	$\infty^*$	0,5	4	80	16

$\infty^*$  = Tauchtiefe ist frei

$\infty^*$  = depth is free

**VHM-Konusfräser** mit Vollradius,  $\varnothing$  2,0 - 4,0 mm, Schaft  $\varnothing$  6 und 8 mm  
**Solid carbide cone cutters** with full radius,  $\varnothing$  2,0 - 4,0 mm, shank  $\varnothing$  6 and 8 mm



<b>R</b> ±0,01	h5
<b>30° HELIX</b>	<b>ST 2 COATING</b>

<700 N/mm <sup>2</sup>	700-1100 N/mm <sup>2</sup>	1100-1300 N/mm <sup>2</sup>	30-45 HRC	45-55 HRC	55-60 HRC			INOX	AL	CU CuZn Gold PL	TI	CFK GFK	PLASTIC	
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Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	R	L1	L2	Z	L	D
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**α 5° je Seite / per page**

HKR 050 - R1	HKR 050 - R1 SN	2,0	1,0	5,0	15	2	50	6
HKR 050 - R2	HKR 050 - R2 SN	4,0	2,0	5,0	∞*	2	50	6

**α 10° je Seite / per page**

HKR 100 - R1	HKR 100 - R1 SN	2,0	1,0	5,0	∞*	2	50	6
HKR 100 - R1,5	HKR 100 - R1,5 SN	3,0	1,5	5,0	∞*	2	50	6

**α 15° je Seite / per page**

HKR 150 - R1	HKR 150 - R1 SN	2,0	1,0	5,0	∞*	2	50	6
HKR 150 - R1,5	HKR 150 - R1,5 SN	3,0	1,5	5,0	∞*	2	50	6

**α 30° je Seite / per page**

HKR 300 - R1	HKR 300 - R1 SN	2,0	1,0	5,0	∞*	2	50	8
HKR 300 - R1,5	HKR 300 - R1,5 SN	3,0	1,5	5,0	∞*	2	50	8

∞\* = Tauchtiefe über den größten Durchmesser  
 ∞\* = depth over the largest diameter

**VHM-T-Nutenfräser**  $\varnothing$  8,0 und 12,0 mm, Schaft  $\varnothing$  4 und 6 mm  
**Solid carbide slot milling cutters**  $\varnothing$  8,0 and 12,0 mm, shank  $\varnothing$  4 and 6 mm

**SG 370 B**

h5 ST 1 COATING

<700 N/mm<sup>2</sup> 700-1100 N/mm<sup>2</sup> 1100-1300 N/mm<sup>2</sup> 30-45 HRC 45-55 HRC 55-60 HRC INOX AL CU CuZn Gold PL TI CFK GFK PLASTIC

Best.-Nr. / Order no.	d1	D	L1	L	Z	Tauchtiefe / depth	R
SG 370 B 080 - 20	8,0	4,0	2,0	42	4	1,5	0,1
SG 370 B 080 - 40			4,0	44			
SG 370 B 120 - 20	12,0	6,0	2,0	52	4	2,5	0,1
SG 370 B 120 - 40			4,0	54			
SG 370 B 120 - 60			6,0	56			

**Anwendung:** Nutenfräsen, Hinterschneidung  
 Applications: Slot milling, undercutting

› Weitere Abmessungen auf Anfrage  
 › Further dimensions on request

**VHM-Spitznutenfräser**  $\varnothing$  8,0 und 12,0 mm, Schaft  $\varnothing$  4 und 6 mm  
**Solid carbide groove milling cutters**  $\varnothing$  8,0 and 12,0 mm, shank  $\varnothing$  4 and 6 mm

**SG 370 C**

h5 ST 1 COATING

<700 N/mm<sup>2</sup> 700-1100 N/mm<sup>2</sup> 1100-1300 N/mm<sup>2</sup> 30-45 HRC 45-55 HRC 55-60 HRC INOX AL CU CuZn Gold PL TI CFK GFK PLASTIC

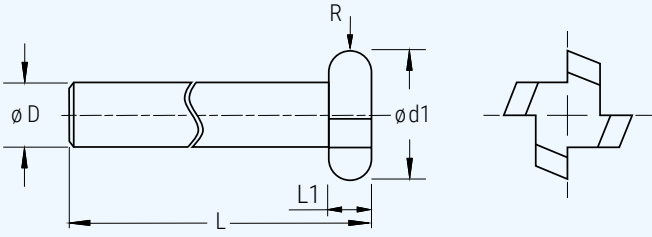

Best.-Nr. / Order no.	d1	D	$\alpha$	L1	L	Z	Tauchtiefe / depth	R
SG 370 C 080 - 30	8,0	4,0	30°	4,0	44	4	1,8	0,15
SG 370 C 120 - 30	12,0	6,0	30°	3,6	58	4	2,8	0,15
SG 370 C 080 - 45	8,0	4,0	45°	4,0	42	4	1,8	0,15
SG 370 C 120 - 45	12,0	6,0	45°	6,0	56	4	2,8	0,15

**Anwendung:** Hinterschneidungen, Entgraten, Schmiernuten, Anfasen  
 Applications: Undercuts, deburring, lubrication grooves, chamfering

› Weitere Abmessungen auf Anfrage  
 › Further dimensions on request

**VHM-Radiusnutenfräser**  $\varnothing$  8,0 und 12,0 mm, Schaft  $\varnothing$  4 und 6 mm  
**Solid carbide groove milling cutters**  $\varnothing$  8,0 and 12,0 mm, shank  $\varnothing$  4 and 6 mm

**SG 370 D**

h5 ST 1 COATING

<700 N/mm<sup>2</sup> 700-1100 N/mm<sup>2</sup> 1100-1300 N/mm<sup>2</sup> 30-45 HRC 45-55 HRC 55-60 HRC INOX AL CU CuZn Gold PL TI CFK GFK PLASTIC

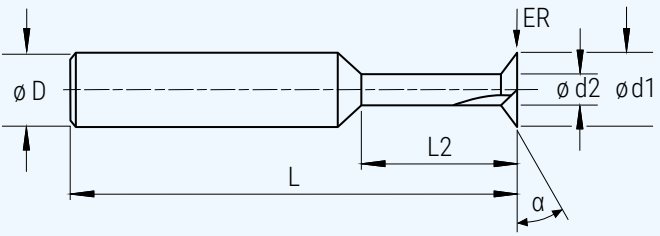

Best.-Nr. / Order no.	d1	D	L1	R	L	Z	Tauchtiefe / depth
SG 370 D 080 - 20	8,0	4,0	2,0	1,0	44	4	1,5
SG 370 D 080 - 40			4,0	2,0	48		
SG 370 D 120 - 20	12,0	6,0	2,0	1,0	54	4	2,5
SG 370 D 120 - 40			4,0	2,0	58		
SG 370 D 120 - 60			6,0	3,0	62		

**Anwendung:** Radiusnuten, Hinterschnidungen  
 Application: Radius grooves, undercuts

> Weitere Abmessungen auf Anfrage  
 > Further dimensions on request

**VHM-Hinterschnittfräser 30°**  $\varnothing$  2,0 - 12,0 mm, Schaft  $\varnothing$  4 - 12 mm  
**Solid carbide undercut milling cutters 30°**  $\varnothing$  2,0 - 12,0 mm, shank  $\varnothing$  4 - 12 mm

**SG 380**

h5 ST 1 COATING

<700 N/mm<sup>2</sup> 700-1100 N/mm<sup>2</sup> 1100-1300 N/mm<sup>2</sup> 30-45 HRC 45-55 HRC 55-60 HRC INOX AL CU CuZn Gold PL TI CFK GFK PLASTIC

Best.-Nr. / Order no.	d1	a°	ER	d2	L2	D	L	Z
SG 380 020	2,0	30	0,10	1,0	6,0	4	40	2
SG 380 030	3,0	30	0,10	1,4	9,0	4	40	2
SG 380 040	4,0	30	0,15	1,8	12,0	6	50	2
SG 380 060	6,0	30	0,20	2,5	18,0	8	50	2
SG 380 120	12,0	30	0,20	5,0	30,0	12	65	2

**Anwendung:** Hinterschnidungen, Entgraten von 30°, Kopieren, Gewindefreistriche, 5-Achs-Fräsen  
 Applications: Undercuts, deburring of 30°, copying, thread undercuts, 5 axis milling

**VHM-NC-Entgrater** mit 60° und 90°, ø 6,0 - 12,0 mm, Schaft ø 6 - 12 mm  
**Solid carbide NC deburrer** width 60° and 90°, ø 6,0 - 12,0 mm, shank ø 6 - 12 mm

SG 350

h5

ST 2 COATING

POINT ANGLE 60°

POINT ANGLE 90°

<700 N/mm<sup>2</sup>

700-1100 N/mm<sup>2</sup>

1100-1300 N/mm<sup>2</sup>

30-45 HRC

45-55 HRC

55-60 HRC

INOX

AL

CU CuZn Gold PL

TI

CFK GFK

PLASTIC

Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	Winkel / angle	d1	L2	L	D
SG 350 - 06 - 60	SG 350 - 06 - 60 M	60°	6,0	-	55	6
SG 350 - 08 - 60	SG 350 - 08 - 60 M	60°	8,0	-	60	8
SG 350 - 04 - 90	SG 350 - 04 - 90 M	90°	4,0	20,0	55	6
SG 350 - 06 - 90	SG 350 - 06 - 90 M	90°	6,0	-	55	6
SG 350 - 08 - 90	SG 350 - 08 - 90 M	90°	8,0	-	60	8
SG 350 - 10 - 90	SG 350 - 10 - 90 M	90°	10,0	-	60	10
SG 350 - 12 - 90	SG 350 - 12 - 90 M	90°	12,0	-	65	12

- › Auf starre und schwingungsarme Aufspannung des Werkstückes achten!
- › Ensure that the workpiece is clamped in a rigid and low-vibration manner.

**VHM-NC-Entgrater** mit Weldon-Schaft, mit 60° und 90°, ø 6,0 - 12,0 mm, Schaft ø 6 - 12 mm  
**Solid carbide NC deburrer** with Weldon shank, width 60° and 90°, ø 6,0 - 12,0 mm, shank ø 6 - 12 mm

SG 350 W

h5

ST 2 COATING

POINT ANGLE 60°

POINT ANGLE 90°

<700 N/mm<sup>2</sup>

700-1100 N/mm<sup>2</sup>

1100-1300 N/mm<sup>2</sup>

30-45 HRC

45-55 HRC

55-60 HRC

INOX

AL

CU CuZn Gold PL

TI

CFK GFK

PLASTIC

Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	Winkel / angle	d1	L2	L	D
SG 350 - W06 - 60	SG 350 - W06 - 60 M	60°	6,0	-	55	6
SG 350 - W08 - 60	SG 350 - W08 - 60 M	60°	8,0	-	60	8
SG 350 - W04 - 90	SG 350 - W04 - 90 M	90°	4,0	20,0	55	6
SG 350 - W06 - 90	SG 350 - W06 - 90 M	90°	6,0	-	55	6
SG 350 - W08 - 90	SG 350 - W08 - 90 M	90°	8,0	-	60	8
SG 350 - W10 - 90	SG 350 - W10 - 90 M	90°	10,0	-	60	10
SG 350 - W12 - 90	SG 350 - W12 - 90 M	90°	12,0	-	65	12

- › Auf starre und schwingungsarme Aufspannung des Werkstückes achten!
- › Ensure that the workpiece is clamped in a rigid and low-vibration manner.



**VHM-Viertelkreisfräser** Zweischneider,  $\phi$  1,5 - 2,5 mm, Schaft  $\phi$  4 - 8 mm  
**Solid carbide quarter circle cutters** 2 flutes,  $\phi$  1,5 - 2,5 mm, shank  $\phi$  4 - 8 mm

231

16° SHANK ANGLE

h5

IR  $\pm 0,01$

ST 1 COATING

<700 N/mm<sup>2</sup>

700-1100 N/mm<sup>2</sup>

1100-1300 N/mm<sup>2</sup>

30-45 HRC

45-55 HRC

55-60 HRC

INOX

AL

CU CuZn Gold PL

TI

PLASTIC

Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	R	d2	L1	D	L
231 025	231 025 M	1,5	0,25	2,0	1,8	4	50
231 050	231 050 M	1,5	0,50	2,5	2,2	4	50
231 075	231 075 M	2,0	0,75	3,5	5,0	4	50
231 100	231 100 M	2,0	1,00	4,0	3,5	6	55
231 150	231 150 M	2,5	1,50	5,5	5,8	6	55
231 200	231 200 M	2,5	2,00	6,5	6,8	8	60

**VHM-Viertelkreisfräser** Vierschneider,  $\phi$  3,5 - 5,5 mm, Schaft  $\phi$  6 - 16 mm  
**Solid carbide quarter circle cutters** 4 flutes,  $\phi$  3,5 - 5,5 mm, shank  $\phi$  6 - 16 mm

431

h5

IR  $\pm 0,01$

ST 2 COATING

<700 N/mm<sup>2</sup>

700-1100 N/mm<sup>2</sup>

1100-1300 N/mm<sup>2</sup>

30-45 HRC

45-55 HRC

55-60 HRC

INOX

AL

CU CuZn Gold PL

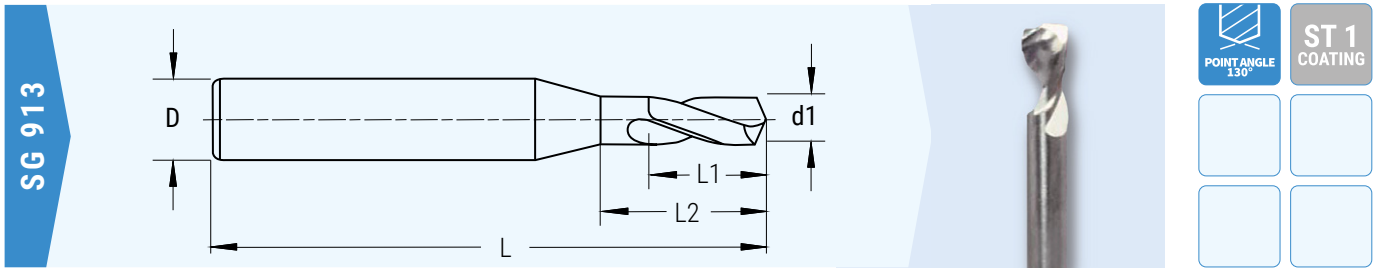
TI

PLASTIC

Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	R	d2	L1	D	L
431 100	431 100 M	3,5	1,0	5,5	4,8	6	55
431 150	431 150 M	3,5	1,5	6,5	5,8	8	60
431 200	431 200 M	3,5	2,0	7,5	5,8	8	60
431 250	431 250 M	3,5	2,5	8,5	7,8	10	70
431 300	431 300 M	3,5	3,0	9,5	8,8	10	70
431 400	431 400 M	3,5	4,0	11,5	10,8	12	80
431 500	431 500 M	5,5	5,0	15,5	16,0	16	80

# VHM-NC-Anbohrer, Spitzenwinkel 130° ø 0,25 - 1,5 mm, Schaft ø 1,5 mm **MINI**

Solid carbide NC pilot drills, point angle 130° ø 0,25 - 1,5 mm, shank ø 1,5 mm **MINI**



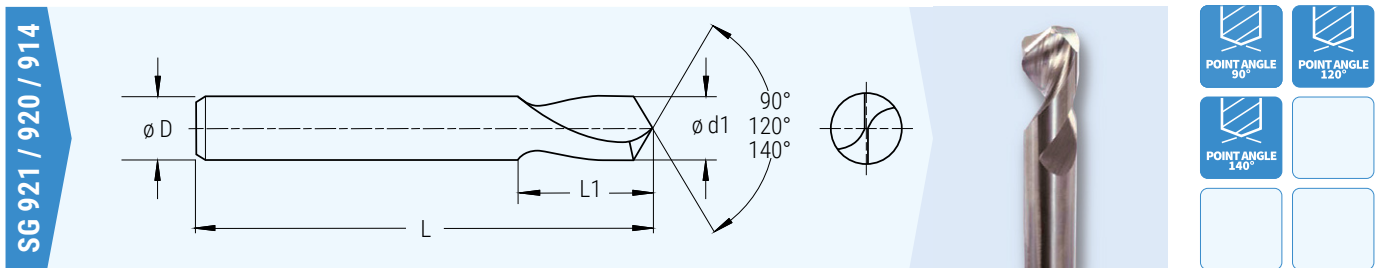
<700 N/mm <sup>2</sup>	700-1100 N/mm <sup>2</sup>	1100-1300 N/mm <sup>2</sup>	30-45 HRC	45-55 HRC	55-60 HRC			INOX	AL	CU CuZn Gold PL	TI	CFK GFK	PLASTIC	
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Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	L2	D	L
SG 913 025	SG 913 025 M	0,25	0,6	0,9	1,5	25
SG 913 030	SG 913 030 M	0,3	0,9	1,2	1,5	25
SG 913 040	SG 913 040 M	0,4	0,9	1,6	1,5	25
SG 913 050	SG 913 050 M	0,5	1,0	1,8	1,5	25
SG 913 060	SG 913 060 M	0,6	1,2	2,0	1,5	25
SG 913 080	SG 913 080 M	0,8	1,5	2,5	1,5	25
SG 913 100	SG 913 100 M	1,0	2,0	3,2	1,5	25
SG 913 120	SG 913 120 M	1,2	2,3	3,5	1,5	25
SG 913 150	SG 913 150 M	1,5	3,0	4,2	1,5	25

Mindestabnahme: eine Verpackungseinheit - 10 Stück

Minimum purchase: one packaging unit - 10 pieces

**VHM-NC-Anbohrer, Spitzenwinkel 90° / 120° / 140°** ø 3,0 - 12,0 mm, Schaft ø 3 - 12 mm  
**Solid carbide NC pilot drills, point angle 90° / 120° / 140°** ø 3,0 - 12,0 mm, shank ø 3 - 12 mm



<700 N/mm <sup>2</sup>	700- 1100 N/mm <sup>2</sup>	1100- 1300 N/mm <sup>2</sup>	30-45 HRC	45-55 HRC	55-60 HRC			INOX	AL	CU CuZn Gold PL	TI	CFK GFK	PLASTIC	
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Best.-Nr. / Order no.	d1	L1	L	D
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SG 921 - 90° Spitzenwinkel / point angle				
SG 921 031	3,0	6,0	40	3
SG 921 041	4,0	8,0	50	4
SG 921 051	5,0	11,0	50	5
SG 921 061	6,0	13,0	50	6
SG 921 L061			100	
SG 921 081	8,0	20,0	65	8
SG 921 101	10,0	25,0	75	10
SG 921 121	12,0	25,0	75	12

SG 920 - 120° Spitzenwinkel / point angle				
SG 920 031	3,0	6,0	40	3
SG 920 041	4,0	8,0	50	4
SG 920 051	5,0	11,0	50	5
SG 920 061	6,0	13,0	50	6
SG 920 L061			100	
SG 920 081	8,0	20,0	65	8
SG 920 101	10,0	25,0	75	10
SG 920 121	12,0	25,0	75	12

SG 914 - 140° Spitzenwinkel / point angle				
SG 914 030	3,0	6,0	40	3
SG 914 040	4,0	8,0	50	4
SG 914 050	5,0	11,0	50	5
SG 914 060	6,0	13,0	50	6
SG 914 080	8,0	20,0	65	8
SG 914 100	10,0	25,0	75	10
SG 914 120	12,0	25,0	75	12

**HSS-E NC-Anbohrer 90°** ø 3,0 - 25,0 mm, Schaft ø 3 - 25 mm

**HSS-E NC pilot drills 90°** ø 3,0 - 25,0 mm, shank ø 3 - 25 mm

SG 809

POINT ANGLE  
90°

ST 2  
COATING

<700  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

INOX

AL

CU CuZn  
Gold PL

TI

PLASTIC

Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	L	D
SG 809 - 03	SG 809 - 03 M	3,0	10,0	50	3
SG 809 - 04	SG 809 - 04 M	4,0	12,0	52	4
SG 809 - 05	SG 809 - 05 M	5,0	15,0	60	5
SG 809 - 06	SG 809 - 06 M	6,0	20,0	66	6
SG 809 - 08	SG 809 - 08 M	8,0	25,0	79	8
SG 809 - 10	SG 809 - 10 M	10,0	25,0	89	10
SG 809 - 12	SG 809 - 12 M	12,0	30,0	102	12
SG 809 - 16	SG 809 - 16 M	16,0	35,0	115	16
SG 809 - 20	SG 809 - 20 M	20,0	40,0	131	20
SG 809 - 25	SG 809 - 25 M	25,0	45,0	138	25

**HSS-E NC-Anbohrer 120°**  $\varnothing$  3,0 - 25,0 mm, Schaft  $\varnothing$  3 - 25 mm  
**HSS-E NC pilot drills 120°**  $\varnothing$  3,0 - 25,0 mm, shank  $\varnothing$  3 - 25 mm

SG 812

POINT ANGLE  
120°

ST 2  
COATING

<700  
N/mm<sup>2</sup>

700-  
1100  
N/mm<sup>2</sup>

1100-  
1300  
N/mm<sup>2</sup>

30-45  
HRC

INOX

AL

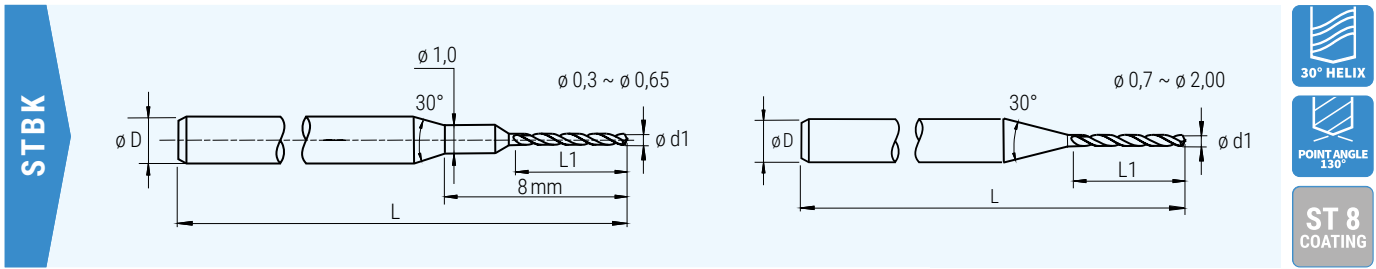
CU CuZn  
Gold PL

TI

PLASTIC

Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	L1	L	D
SG 812 - 03	SG 812 - 03 M	3,0	10,0	50	3
SG 812 - 04	SG 812 - 04 M	4,0	12,0	52	4
SG 812 - 05	SG 812 - 05 M	5,0	15,0	60	5
SG 812 - 06	SG 812 - 06 M	6,0	20,0	66	6
SG 812 - 08	SG 812 - 08 M	8,0	25,0	79	8
SG 812 - 10	SG 812 - 10 M	10,0	25,0	89	10
SG 812 - 12	SG 812 - 12 M	12,0	30,0	102	12
SG 812 - 16	SG 812 - 16 M	16,0	35,0	115	16
SG 812 - 20	SG 812 - 20 M	20,0	40,0	131	20
SG 812 - 25	SG 812 - 25 M	25,0	45,0	138	25

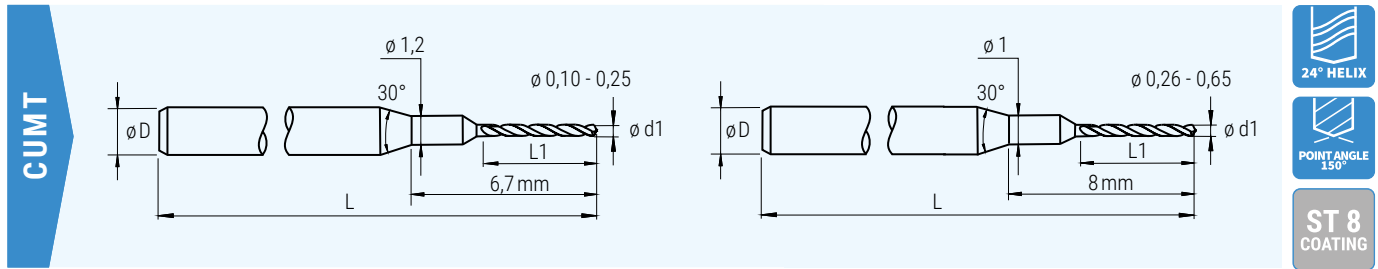
**VHM-Spiralbohrer 5xD, 130° Spitzenwinkel**  $\varnothing$  0,3 - 2,0 mm, Schaft  $\varnothing$  3 mm, 2 Schneiden  
**Solid carbide twist drills 5xD, 130° point angle**  $\varnothing$  0,3 - 2,0 mm, shank  $\varnothing$  3 mm, 2 flutes



Material and application options: <math>< 700 \text{ N/mm}^2</math>, 700-1100  $\text{N/mm}^2</math>, 1100-1300  $\text{N/mm}^2</math>, 30-45 HRC, 45-55 HRC, INOX, AL, CU CuZn Gold PL, TI, CFK GFK, PLASTIC.$$

Best.-Nr. / Order no.	d1	L1	L	D
STBK 2030 - 015	0,30	1,50	38	3
STBK 2035 - 018	0,35	1,80	38	3
STBK 2040 - 020	0,40	2,00	38	3
STBK 2045 - 023	0,45	2,30	38	3
STBK 2050 - 025	0,50	2,50	38	3
STBK 2055 - 028	0,55	2,80	38	3
STBK 2060 - 030	0,60	3,00	38	3
STBK 2065 - 033	0,65	3,30	38	3
STBK 2070 - 035	0,70	3,35	38	3
STBK 2075 - 038	0,75	3,38	38	3
STBK 2080 - 040	0,80	4,00	38	3
STBK 2085 - 043	0,85	4,30	38	3
STBK 2090 - 045	0,90	4,50	38	3
STBK 2095 - 048	0,95	4,80	38	3
STBK 2100 - 050	1,00	5,00	38	3
STBK 2105 - 053	1,05	5,30	38	3
STBK 2110 - 055	1,10	5,50	38	3
STBK 2115 - 058	1,15	5,80	38	3
STBK 2120 - 060	1,20	6,00	38	3
STBK 2125 - 063	1,25	6,30	38	3
STBK 2130 - 065	1,30	6,50	38	3
STBK 2135 - 068	1,35	6,80	38	3
STBK 2140 - 070	1,40	7,00	38	3
STBK 2145 - 073	1,45	7,30	38	3
STBK 2150 - 075	1,50	7,50	38	3
STBK 2155 - 078	1,55	7,80	38	3
STBK 2160 - 080	1,60	8,00	38	3
STBK 2165 - 083	1,65	8,30	38	3
STBK 2170 - 085	1,70	8,50	38	3
STBK 2175 - 088	1,75	8,80	38	3
STBK 2180 - 090	1,80	9,00	38	3
STBK 2185 - 093	1,85	9,30	38	3
STBK 2190 - 095	1,90	9,50	38	3
STBK 2195 - 098	1,95	9,80	38	3
STBK 2200 - 100	2,00	10,0	38	3

**VHM-Spiralbohrer, 150° Spitzenwinkel**  $\varnothing$  0,1 - 3,0 mm, Schaft  $\varnothing$  3 mm, 2 Schneiden  
**Solid carbide twist drills, 150° point angle**  $\varnothing$  0,1 - 3,0 mm, shank  $\varnothing$  3 mm, 2 flutes

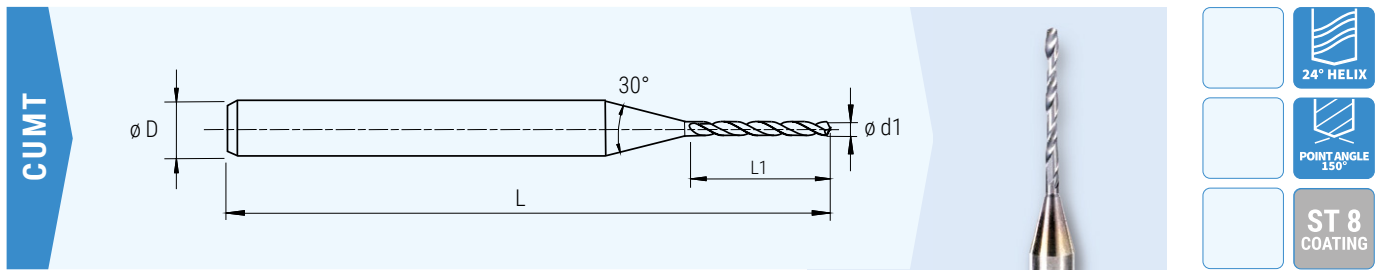


Material selection buttons: <700 N/mm<sup>2</sup>, 700-1100 N/mm<sup>2</sup>, 1100-1300 N/mm<sup>2</sup>, 30-45 HRC, 45-55 HRC, INOX, AL, CU CuZn Gold PL, TI, CFK GFK, PLASTIC

Best.-Nr. / Order no.	d1	L1	L	D
CUMT D 010	0,10	1,2	38	3
CUMT D 011	0,11	1,2	38	3
CUMT D 012	0,12	1,4	38	3
CUMT D 013	0,13	1,4	38	3
CUMT D 014	0,14	1,4	38	3
CUMT D 015	0,15	2,0	38	3
CUMT D 016	0,16	2,0	38	3
CUMT D 017	0,17	2,0	38	3
CUMT D 018	0,18	2,0	38	3
CUMT D 019	0,19	2,0	38	3
CUMT D 020	0,20	2,5	38	3
CUMT D 021	0,21	2,5	38	3
CUMT D 022	0,22	2,5	38	3
CUMT D 023	0,23	2,5	38	3
CUMT D 024	0,24	2,5	38	3
CUMT D 025	0,25	3,0	38	3
CUMT D 026	0,26	3,0	38	3
CUMT D 027	0,27	3,0	38	3
CUMT D 028	0,28	3,0	38	3
CUMT D 029	0,29	3,0	38	3
CUMT D 030	0,30	5,0	38	3
CUMT D 031	0,31	5,0	38	3
CUMT D 032	0,32	5,0	38	3
CUMT D 033	0,33	5,0	38	3
CUMT D 034	0,34	5,0	38	3
CUMT D 035	0,35	6,0	38	3
CUMT D 036	0,36	6,0	38	3
CUMT D 037	0,37	6,0	38	3

Best.-Nr. / Order no.	d1	L1	L	D
CUMT D 038	0,38	6,0	38	3
CUMT D 039	0,39	6,0	38	3
CUMT D 040	0,40	7,0	38	3
CUMT D 041	0,41	7,0	38	3
CUMT D 042	0,42	7,0	38	3
CUMT D 043	0,43	7,0	38	3
CUMT D 044	0,44	7,0	38	3
CUMT D 045	0,45	7,0	38	3
CUMT D 046	0,46	7,0	38	3
CUMT D 047	0,47	7,0	38	3
CUMT D 048	0,48	7,0	38	3
CUMT D 049	0,49	7,0	38	3
CUMT D 050	0,50	7,0	38	3
CUMT D 051	0,51	7,0	38	3
CUMT D 052	0,52	7,0	38	3
CUMT D 053	0,53	7,0	38	3
CUMT D 054	0,54	7,0	38	3
CUMT D 055	0,55	7,0	38	3
CUMT D 056	0,56	7,0	38	3
CUMT D 057	0,57	7,0	38	3
CUMT D 058	0,58	7,0	38	3
CUMT D 059	0,59	7,0	38	3
CUMT D 060	0,60	7,0	38	3
CUMT D 061	0,61	7,0	38	3
CUMT D 062	0,62	7,0	38	3
CUMT D 063	0,63	7,0	38	3
CUMT D 064	0,64	7,0	38	3
CUMT D 065	0,65	7,0	38	3

**VHM-Spiralbohrer, 150° Spitzenwinkel**  $\varnothing 0,1 - 3,0$  mm, Schaft  $\varnothing 3$  mm, 2 Schneiden  
**Solid carbide twist drills, 150° point angle**  $\varnothing 0,1 - 3,0$  mm, shank  $\varnothing 3$  mm, 2 flutes



**CUMT**

<700 N/mm<sup>2</sup>  
  700-1100 N/mm<sup>2</sup>  
  1100-1300 N/mm<sup>2</sup>  
  30-45 HRC  
  45-55 HRC  
   
   
   
  INOX  
  AL  
  CU CuZn Gold PL  
  TI  
  CFK GFK  
  PLASTIC  

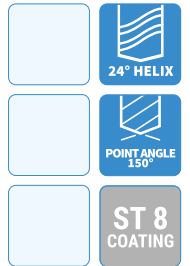
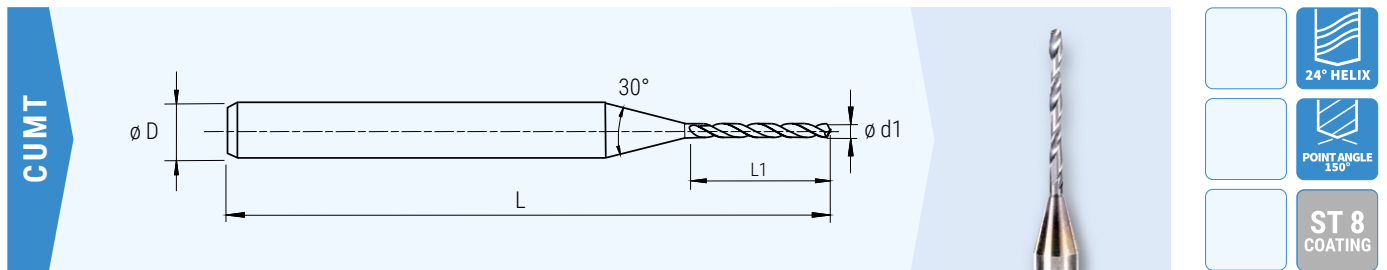
24° HELIX  
 POINT ANGLE 150°  
 ST 8 COATING

Best.-Nr. / Order no.	d1	L1	L	D
CUMT D 066	0,66	7	38	3
CUMT D 067	0,67	7	38	3
CUMT D 068	0,68	7	38	3
CUMT D 069	0,69	7	38	3
CUMT D 070	0,70	8	38	3
CUMT D 071	0,71	8	38	3
CUMT D 072	0,72	8	38	3
CUMT D 073	0,73	8	38	3
CUMT D 074	0,74	8	38	3
CUMT D 075	0,75	8	38	3
CUMT D 076	0,76	8	38	3
CUMT D 077	0,77	8	38	3
CUMT D 078	0,78	8	38	3
CUMT D 079	0,79	8	38	3
CUMT D 080	0,80	10	38	3
CUMT D 081	0,81	10	38	3
CUMT D 082	0,82	10	38	3
CUMT D 083	0,83	10	38	3
CUMT D 084	0,84	10	38	3
CUMT D 085	0,85	10	38	3
CUMT D 086	0,86	10	38	3
CUMT D 087	0,87	10	38	3
CUMT D 088	0,88	10	38	3
CUMT D 089	0,89	10	38	3
CUMT D 090	0,90	10	38	3
CUMT D 091	0,91	10	38	3

Best.-Nr. / Order no.	d1	L1	L	D
CUMT D 092	0,92	10	38	3
CUMT D 093	0,93	10	38	3
CUMT D 094	0,94	10	38	3
CUMT D 095	0,95	10	38	3
CUMT D 096	0,96	10	38	3
CUMT D 097	0,97	10	38	3
CUMT D 098	0,98	10	38	3
CUMT D 099	0,99	10	38	3
CUMT D 100	1,00	10	38	3
CUMT D 101	1,01	10	38	3
CUMT D 102	1,02	10	38	3
CUMT D 103	1,03	10	38	3
CUMT D 104	1,04	10	38	3
CUMT D 105	1,05	10	38	3
CUMT D 106	1,06	10	38	3
CUMT D 107	1,07	10	38	3
CUMT D 108	1,08	10	38	3
CUMT D 109	1,09	10	38	3
CUMT D 110	1,10	10	38	3
CUMT D 111	1,11	10	38	3
CUMT D 112	1,12	10	38	3
CUMT D 113	1,13	10	38	3
CUMT D 114	1,14	10	38	3
CUMT D 115	1,15	10	38	3
CUMT D 116	1,16	10	38	3
CUMT D 117	1,17	10	38	3



**VHM-Spiralbohrer, 150° Spitzenwinkel**  $\varnothing$  0,1 - 3,0 mm, Schaft  $\varnothing$  3 mm, 2 Schneiden  
**Solid carbide twist drills, 150° point angle**  $\varnothing$  0,1 - 3,0 mm, shank  $\varnothing$  3 mm, 2 flutes

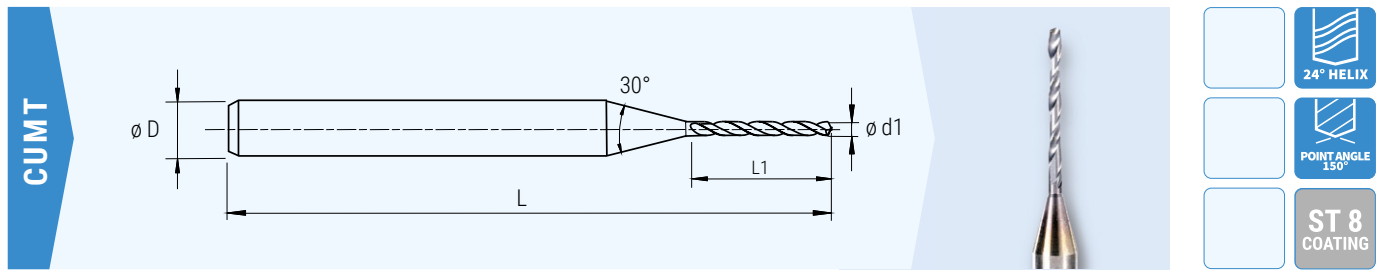


Material selection buttons: <700 N/mm<sup>2</sup>, 700-1100 N/mm<sup>2</sup>, 1100-1300 N/mm<sup>2</sup>, 30-45 HRC, 45-55 HRC, INOX, AL, CU CuZn Gold PL, TI, CFK GFK, PLASTIC.

Best.-Nr. / Order no.	d1	L1	L	D
CUMT D 118	1,18	10	38	3
CUMT D 119	1,19	10	38	3
CUMT D 120	1,20	10	38	3
CUMT D 121	1,21	10	38	3
CUMT D 122	1,22	10	38	3
CUMT D 123	1,23	10	38	3
CUMT D 124	1,24	10	38	3
CUMT D 125	1,25	10	38	3
CUMT D 126	1,26	10	38	3
CUMT D 127	1,27	10	38	3
CUMT D 128	1,28	10	38	3
CUMT D 129	1,29	10	38	3
CUMT D 130	1,30	10	38	3
CUMT D 131	1,31	10	38	3
CUMT D 132	1,32	10	38	3
CUMT D 133	1,33	10	38	3
CUMT D 134	1,34	10	38	3
CUMT D 135	1,35	10	38	3
CUMT D 136	1,36	10	38	3
CUMT D 137	1,37	10	38	3
CUMT D 138	1,38	10	38	3
CUMT D 139	1,39	10	38	3
CUMT D 140	1,40	10	38	3
CUMT D 141	1,41	10	38	3
CUMT D 142	1,42	10	38	3
CUMT D 143	1,43	10	38	3
CUMT D 144	1,44	10	38	3

Best.-Nr. / Order no.	d1	L1	L	D
CUMT D 145	1,45	10	38	3
CUMT D 146	1,46	10	38	3
CUMT D 147	1,47	10	38	3
CUMT D 148	1,48	10	38	3
CUMT D 149	1,49	10	38	3
CUMT D 150	1,50	10	38	3
CUMT D 151	1,51	10	38	3
CUMT D 152	1,52	10	38	3
CUMT D 153	1,53	10	38	3
CUMT D 154	1,54	10	38	3
CUMT D 155	1,55	10	38	3
CUMT D 156	1,56	10	38	3
CUMT D 157	1,57	10	38	3
CUMT D 158	1,58	10	38	3
CUMT D 159	1,59	10	38	3
CUMT D 160	1,60	12	38	3
CUMT D 161	1,61	12	38	3
CUMT D 162	1,62	12	38	3
CUMT D 163	1,63	12	38	3
CUMT D 164	1,64	12	38	3
CUMT D 165	1,65	12	38	3
CUMT D 166	1,66	12	38	3
CUMT D 167	1,67	12	38	3
CUMT D 168	1,68	12	38	3
CUMT D 169	1,69	12	38	3
CUMT D 170	1,70	12	38	3
CUMT D 171	1,71	12	38	3

**VHM-Spiralbohrer, 150° Spitzenwinkel**  $\varnothing 0,1 - 3,0$  mm, Schaft  $\varnothing 3$  mm, 2 Schneiden  
**Solid carbide twist drills, 150° point angle**  $\varnothing 0,1 - 3,0$  mm, shank  $\varnothing 3$  mm, 2 flutes



<700 N/mm<sup>2</sup>  
  700-1100 N/mm<sup>2</sup>  
  1100-1300 N/mm<sup>2</sup>  
  30-45 HRC  
  45-55 HRC  
   
   
   
  INOX  
  AL  
  CU CuZn Gold PL  
  TI  
  CFK GFK  
  PLASTIC  
   
  24° HELIX  
  POINT ANGLE 150°  
  ST 8 COATING

Best.-Nr. / Order no.	d1	L1	L	D
CUMT D 172	1,72	12	38	3
CUMT D 173	1,73	12	38	3
CUMT D 174	1,74	12	38	3
CUMT D 175	1,75	12	38	3
CUMT D 176	1,76	12	38	3
CUMT D 177	1,77	12	38	3
CUMT D 178	1,78	12	38	3
CUMT D 179	1,79	12	38	3
CUMT D 180	1,80	12	38	3
CUMT D 181	1,81	12	38	3
CUMT D 182	1,82	12	38	3
CUMT D 183	1,83	12	38	3
CUMT D 184	1,84	12	38	3
CUMT D 185	1,85	12	38	3
CUMT D 186	1,86	12	38	3
CUMT D 187	1,87	12	38	3
CUMT D 188	1,88	12	38	3
CUMT D 189	1,89	12	38	3
CUMT D 190	1,90	12	38	3
CUMT D 191	1,91	12	38	3
CUMT D 192	1,92	12	38	3
CUMT D 193	1,93	12	38	3
CUMT D 194	1,94	12	38	3
CUMT D 195	1,95	12	38	3
CUMT D 196	1,96	12	38	3
CUMT D 197	1,97	12	38	3
CUMT D 198	1,98	12	38	3

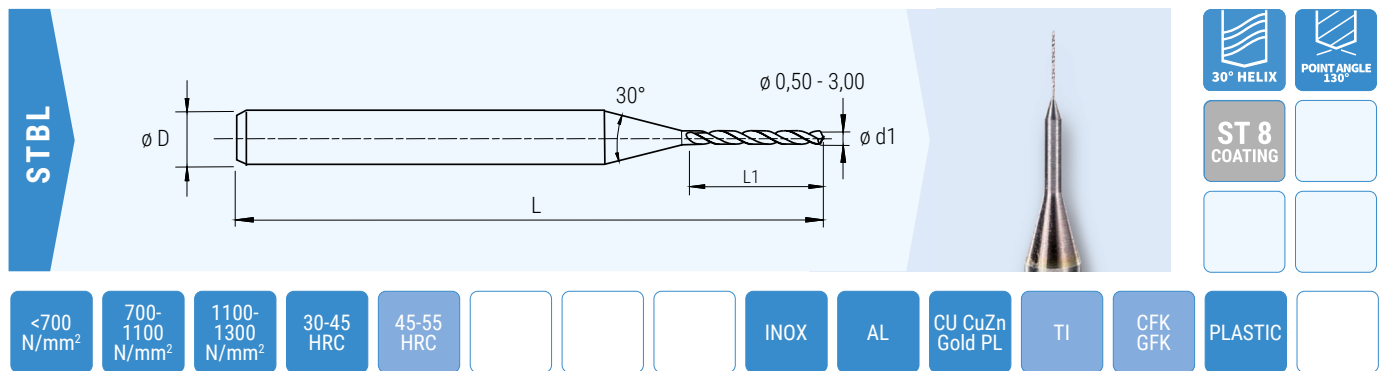
Best.-Nr. / Order no.	d1	L1	L	D
CUMT D 199	1,99	12	38	3
CUMT D 200	2,00	12	38	3
CUMT D 205	2,05	12	38	3
CUMT D 210	2,10	12	38	3
CUMT D 215	2,15	12	38	3
CUMT D 220	2,20	12	38	3
CUMT D 225	2,25	12	38	3
CUMT D 230	2,30	12	38	3
CUMT D 235	2,35	12	38	3
CUMT D 240	2,40	12	38	3
CUMT D 245	2,45	12	38	3
CUMT D 250	2,50	12	38	3
CUMT D 255	2,55	12	38	3
CUMT D 260	2,60	12	38	3
CUMT D 265	2,65	12	38	3
CUMT D 270	2,70	12	38	3
CUMT D 275	2,75	12	38	3
CUMT D 280	2,80	12	38	3
CUMT D 285	2,85	12	38	3
CUMT D 290	2,90	12	38	3
CUMT D 295	2,95	12	38	3
CUMT D 300	3,00	12	38	3

# VHM-Spiralbohrer 15 x D, 130° Spitzenwinkel

ø 0,5 - 3,0 mm, Schaft ø 3 mm, 2 Schneiden

## Solid carbide twist drills

130° point angle, gradation 0,05 mm, ø 0,5 - 3,0 mm, Schaft ø 3 mm, 2 flutes



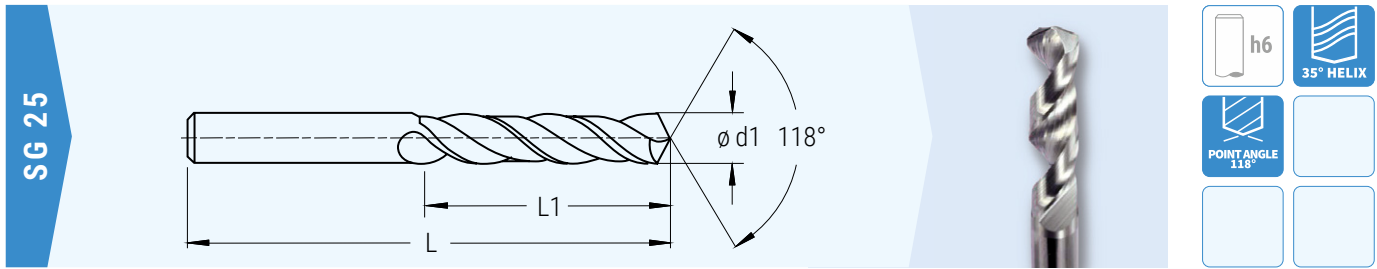
Material and coating options:

- <700 N/mm<sup>2</sup>
- 700-1100 N/mm<sup>2</sup>
- 1100-1300 N/mm<sup>2</sup>
- 30-45 HRC
- 45-55 HRC
- INOX
- AL
- CU CuZn Gold PL
- TI
- CFK GFK
- PLASTIC

Best.-Nr. / Order no.	d1	L1	L	D
STBL 2050 - 075	0,50	7,50	38	3
STBL 2055 - 083	0,55	8,30	38	3
STBL 2060 - 090	0,60	9,00	45	3
STBL 2065 - 098	0,65	9,80	45	3
STBL 2070 - 105	0,70	10,50	45	3
STBL 2075 - 113	0,75	11,30	45	3
STBL 2080 - 120	0,80	12,00	45	3
STBL 2085 - 128	0,85	12,80	45	3
STBL 2090 - 135	0,90	13,50	45	3
STBL 2095 - 143	0,95	14,30	45	3
STBL 2100 - 150	1,00	15,00	50	3
STBL 2105 - 158	1,05	15,80	50	3
STBL 2110 - 165	1,10	16,50	50	3
STBL 2115 - 173	1,15	17,30	50	3
STBL 2120 - 180	1,20	18,00	50	3
STBL 2125 - 188	1,25	18,80	50	3
STBL 2130 - 195	1,30	19,50	50	3
STBL 2135 - 203	1,35	20,30	60	3
STBL 2140 - 210	1,40	21,00	60	3
STBL 2145 - 218	1,45	21,80	60	3
STBL 2150 - 225	1,50	22,50	60	3

Best.-Nr. / Order no.	d1	L1	L	D
STBL 2155 - 233	1,55	23,30	60	3
STBL 2160 - 240	1,60	24,00	60	3
STBL 2165 - 248	1,65	24,80	60	3
STBL 2170 - 255	1,70	25,50	60	3
STBL 2175 - 263	1,75	26,30	60	3
STBL 2180 - 270	1,80	27,00	60	3
STBL 2185 - 278	1,85	27,80	60	3
STBL 2190 - 285	1,90	28,50	60	3
STBL 2195 - 293	1,95	29,30	60	3
STBL 2200 - 300	2,00	30,00	60	3
STBL 2210 - 315	2,10	31,50	80	3
STBL 2220 - 330	2,20	33,00	80	3
STBL 2230 - 345	2,30	34,50	80	3
STBL 2240 - 360	2,40	36,00	80	3
STBL 2250 - 375	2,50	37,50	80	3
STBL 2260 - 390	2,60	39,00	80	3
STBL 2270 - 405	2,70	40,50	80	3
STBL 2280 - 420	2,80	42,00	80	3
STBL 2290 - 435	2,90	43,50	80	3
STBL 2300 - 450	3,00	45,00	80	3

**VHM-Spiralbohrer DIN 6539** 118° Spitzenwinkel, ø 0,3 - 16,0 mm  
**Solid carbide twist drills DIN 6539** 118° point angle, ø 0,3 - 16,0 mm



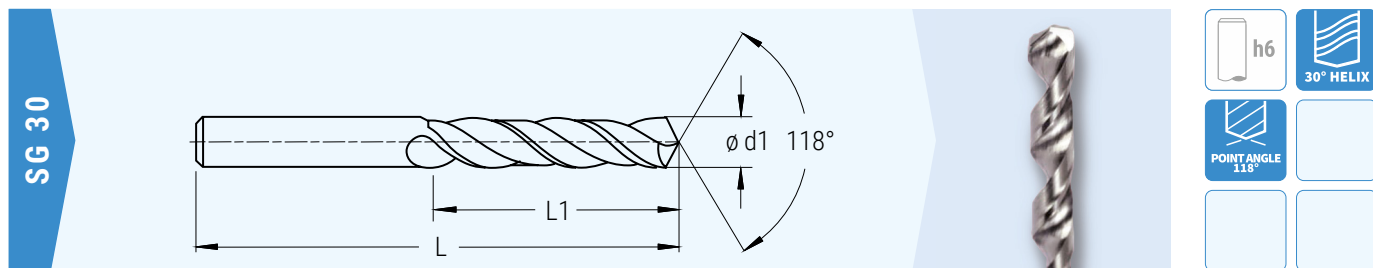
Material selection buttons: <700 N/mm<sup>2</sup>, 700-1100 N/mm<sup>2</sup>, 1100-1300 N/mm<sup>2</sup>, 30-45 HRC, INOX, AL, CU CuZn Gold PL, CFK GFK, PLASTIC.

d1	L1	L
0,30	1,0	19
0,40	2,0	19
0,50	3,0	20
0,60	3,0	21
0,70	4,0	23
0,80	5,0	24
0,90	5,0	25
1,00	6,0	26
1,10	7,0	28
1,20	8,0	30
1,30	8,0	30
1,40 - 1,50	9,0	32
1,60 - 1,70	10,0	34
1,80 - 1,90	11,0	36
2,00	12,0	38
2,10	12,0	38
2,20 - 2,30	13,0	40
2,40 - 2,50	14,0	43
2,60	14,0	43
* 2,70 - 3,00	16,0	46
* 3,10 - 3,30	18,0	49
* 3,40 - 3,70	20,0	52
* 3,80 - 4,00	22,0	55
4,10 - 4,20	22,0	55
* 4,30 - 4,50	24,0	58
4,60 - 4,70	24,0	58
* 4,80 - 5,00	26,0	62

d1	L1	L
* 5,10 - 5,30	26,0	62
5,40 - 5,50	28,0	66
* 5,60 - 6,00	28,0	66
* 6,10 - 6,30	31,0	70
6,40 - 6,50	31,0	70
6,60 - 6,70	31,0	70
* 6,80 - 7,00	34,0	74
* 7,10 - 7,50	34,0	74
7,60 - 7,70	37,0	79
* 7,80 - 8,00	37,0	79
* 8,10 - 8,50	37,0	79
8,60 - 8,70	40,0	84
* 8,80 - 9,00	40,0	84
* 9,10 - 9,50	40,0	84
* 9,60 - 10,00	43,0	89
10,20	43,0	89
10,50	43,0	89
11,00	47,0	95
11,50	47,0	95
12,00	51,0	102
12,50	51,0	102
13,00	51,0	102
13,50	54,0	102
14,00	54,0	107
15,00	56,0	111
16,00	58,0	115

\* Zwischenmaße auf Anfrage  
 \* Other dimensions on request

**VHM-Spiralbohrer DIN 338** 118° Spitzenwinkel, ø 1,0 - 13,0 mm  
**Solid carbide twist drills DIN 338** 118° point angle, ø 1,0 - 13,0 mm

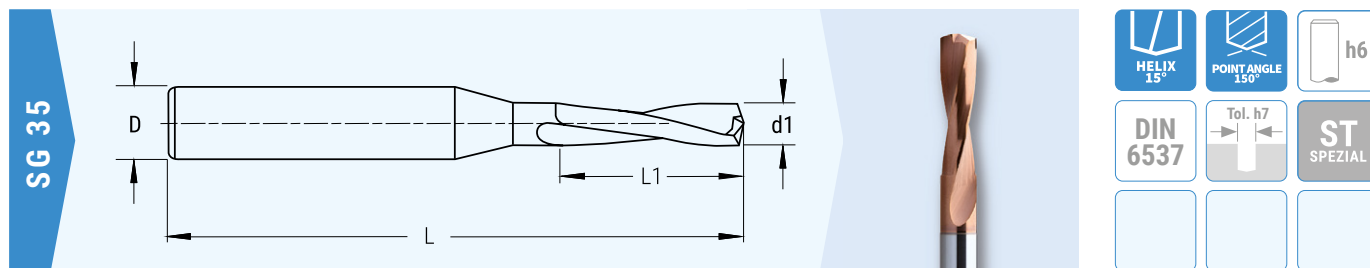


Material selection buttons: <700 N/mm<sup>2</sup>, 700-1100 N/mm<sup>2</sup>, 1100-1300 N/mm<sup>2</sup>, 30-45 HRC, INOX, AL, CU CuZn Gold PL, CFK GFK, PLASTIC.

d1	L1	L
1,00	12,0	34
1,10	14,0	36
1,20	16,0	38
1,30	16,0	38
1,40 - 1,50	18,0	40
1,60 - 1,70	20,0	43
1,80 - 1,90	22,0	46
2,00	24,0	49
2,10	24,0	49
2,20 - 2,30	27,0	53
2,40	30,0	57
2,50	30,0	57
2,60	30,0	57
2,70 - 2,80	33,0	61
2,90	33,0	61
3,00	33,0	61
3,10 - 3,20	36,0	65
3,30	36,0	65
3,40	39,0	70
3,50	39,0	70
3,60 - 3,70	39,0	70
3,80 - 3,90	43,0	75
4,00	43,0	75
4,10 - 4,20	43,0	75
4,30 - 4,40	47,0	80
4,50	47,0	80
4,60	47,0	80

d1	L1	L
4,70	47,0	80
4,80 - 4,90	52,0	86
5,00	52,0	86
5,10 - 5,30	52,0	86
5,40	57,0	93
5,50	57,0	93
5,60 - 5,70	57,0	93
5,80 - 5,90	57,0	93
6,00	57,0	93
6,10 - 6,40	63,0	101
6,50	63,0	101
6,60 - 6,70	63,0	101
6,80 - 7,00	69,0	109
7,50	69,0	109
7,80	75,0	117
8,00	75,0	117
8,50	75,0	117
9,00	81,0	125
9,50	81,0	125
10,00	87,0	133
10,20	87,0	133
10,50	87,0	133
11,00	94,0	142
11,50	94,0	142
12,00	101,0	151
12,50	101,0	151
13,00	101,0	151

**VHM-Spiralbohrer 3xD** für Hartbearbeitung von HRC 55 bis HRC 70,  $\varnothing$  3,0 - 12,0 mm, Schaft  $\varnothing$  6,0 - 12,0 mm  
**Solid carbide twist drills 3xD** for hard materials from HRC 55 to HRC 70,  $\varnothing$  3,0 - 12,0 mm, shank  $\varnothing$  6,0 - 12,0 mm

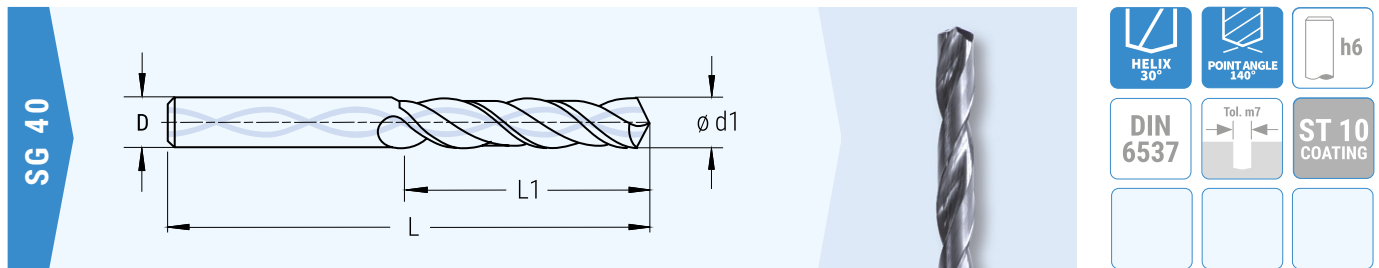


Best.-Nr. / Order no.	d1	L1	L	D
SG 35 3	3,0	14,0	62	6
SG 35 3,8	3,8	17,0	66	6
SG 35 4,0	4,0	17,0	66	6
SG 35 4,8	4,8	20,0	66	6
SG 35 5,0	5,0	20,0	66	6
SG 35 5,8	5,8	20,0	66	6
SG 35 6,0	6,0	20,0	66	6
SG 35 6,8	6,8	29,0	79	8
SG 35 7	7,0	29,0	79	8
SG 35 7,8	7,8	29,0	79	8
SG 35 8	8,0	29,0	79	8
SG 35 8,8	8,8	35,0	89	10
SG 35 9	9,0	35,0	89	10
SG 35 9,8	9,8	35,0	89	10
SG 35 10	10,0	35,0	89	10
SG 35 10,8	10,8	40,0	102	12
SG 35 11	11,0	40,0	102	12
SG 35 11,8	11,8	40,0	102	12
SG 35 12	12,0	40,0	102	12

Weitere Werkzeugabmessungen im Bereich d1=3,00 mm bis d1= 12,00 mm auf Anfrage verfügbar.  
 Other tool dimensions in the range d1=3,00 mm to d1= 12,00 mm available on request.

**VHM-Universalbohrer 5xD** mit Innenkühlung,  $\phi$  1,0 - 12,0 mm, Schaft  $\phi$  3,0 - 12,0 mm

**Solid carbide universal twist drills 5xD** with inner coolant supply,  $\phi$  1,0 - 12,0 mm, shank  $\phi$  3,0 - 12,0 mm



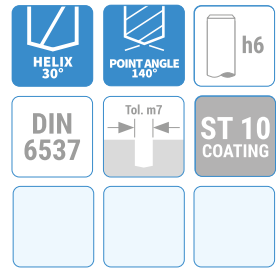
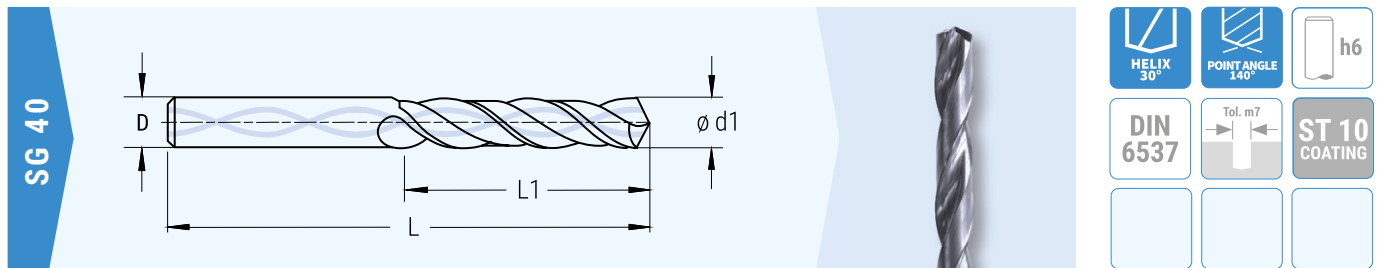
HELIX 30°	POINT ANGLE 140°	h6
DIN 6537	Tol. m7	ST 10 COATING

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Best.-Nr. / Order no.	d1	D	L1	L
SG 40 - 1	1,0	3	8,0	55
SG 40 - 1,1	1,1	3	12,0	55
SG 40 - 1,2	1,2	3	12,0	55
SG 40 - 1,3	1,3	3	12,0	55
SG 40 - 1,4	1,4	3	12,0	55
SG 40 - 1,5	1,5	3	16,0	55
SG 40 - 1,6	1,6	3	16,0	55
SG 40 - 1,7	1,7	3	16,0	55
SG 40 - 1,8	1,8	3	16,0	55
SG 40 - 1,9	1,9	3	16,0	55
SG 40 - 2	2,0	4	21,0	57
SG 40 - 2,1	2,1	4	21,0	57
SG 40 - 2,2	2,2	4	21,0	57
SG 40 - 2,3	2,3	4	21,0	57
SG 40 - 2,4	2,4	4	21,0	57
SG 40 - 2,5	2,5	4	21,0	57
SG 40 - 2,6	2,6	4	21,0	57
SG 40 - 2,7	2,7	4	21,0	57
SG 40 - 2,8	2,8	4	21,0	57
SG 40 - 2,9	2,9	4	21,0	57
SG 40 - 3	3,0	6	28,0	66
SG 40 - 3,1	3,1	6	28,0	66
SG 40 - 3,2	3,2	6	28,0	66
SG 40 - 3,3	3,3	6	28,0	66
SG 40 - 3,4	3,4	6	28,0	66
SG 40 - 3,5	3,5	6	28,0	66
SG 40 - 3,6	3,6	6	28,0	66
SG 40 - 3,7	3,7	6	28,0	66
SG 40 - 3,8	3,8	6	36,0	74
SG 40 - 3,9	3,9	6	36,0	74
SG 40 - 4	4,0	6	36,0	74
SG 40 - 4,1	4,1	6	36,0	74
SG 40 - 4,2	4,2	6	36,0	74
SG 40 - 4,3	4,3	6	36,0	74
SG 40 - 4,4	4,4	6	36,0	74
SG 40 - 4,5	4,5	6	36,0	74
SG 40 - 4,6	4,6	6	36,0	74
SG 40 - 4,7	4,7	6	36,0	74
SG 40 - 4,8	4,8	6	44,0	82
SG 40 - 4,9	4,9	6	44,0	82

# VHM-Universalbohrer 5xD mit Innenkühlung, $\varnothing$ 1,0 - 12,0 mm, Schaft $\varnothing$ 3,0 - 12,0 mm

Solid carbide universal twist drills 5xD with inner coolant supply,  $\varnothing$  1,0 - 12,0 mm, shank  $\varnothing$  3,0 - 12,0 mm

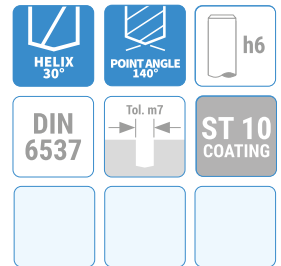
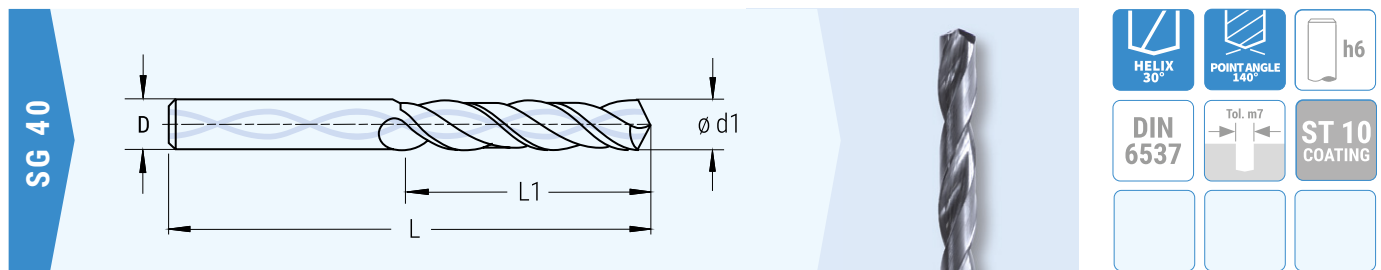


Best.-Nr. / Order no.	d1	D	L1	L
SG 40 - 5	5,0	6	44,0	82
SG 40 - 5,1	5,1	6	44,0	82
SG 40 - 5,2	5,2	6	44,0	82
SG 40 - 5,3	5,3	6	44,0	82
SG 40 - 5,4	5,4	6	44,0	82
SG 40 - 5,5	5,5	6	44,0	82
SG 40 - 5,6	5,6	6	44,0	82
SG 40 - 5,7	5,7	6	44,0	82
SG 40 - 5,8	5,8	6	44,0	82
SG 40 - 5,9	5,9	6	44,0	82
SG 40 - 6	6,0	6	44,0	82
SG 40 - 6,1	6,1	8	53,0	91
SG 40 - 6,2	6,2	8	53,0	91
SG 40 - 6,3	6,3	8	53,0	91
SG 40 - 6,4	6,4	8	53,0	91
SG 40 - 6,5	6,5	8	53,0	91
SG 40 - 6,6	6,6	8	53,0	91
SG 40 - 6,7	6,7	8	53,0	91
SG 40 - 6,8	6,8	8	53,0	91
SG 40 - 6,9	6,9	8	53,0	91
SG 40 - 7	7,0	8	53,0	91
SG 40 - 7,1	7,1	8	53,0	91
SG 40 - 7,2	7,2	8	53,0	91
SG 40 - 7,3	7,3	8	53,0	91
SG 40 - 7,4	7,4	8	53,0	91
SG 40 - 7,5	7,5	8	53,0	91
SG 40 - 7,6	7,6	8	53,0	91
SG 40 - 7,7	7,7	8	53,0	91
SG 40 - 7,8	7,8	8	53,0	91
SG 40 - 7,9	7,9	8	53,0	91
SG 40 - 8	8,0	8	53,0	91
SG 40 - 8,1	8,1	10	61,0	103
SG 40 - 8,2	8,2	10	61,0	103
SG 40 - 8,3	8,3	10	61,0	103
SG 40 - 8,4	8,4	10	61,0	103
SG 40 - 8,5	8,5	10	61,0	103
SG 40 - 8,6	8,6	10	61,0	103
SG 40 - 8,7	8,7	10	61,0	103
SG 40 - 8,8	8,8	10	61,0	103
SG 40 - 8,9	8,9	10	61,0	103



# VHM-Universalbohrer 5xD mit Innenkühlung, $\phi$ 1,0 - 12,0 mm, Schaft $\phi$ 3,0 - 12,0 mm

Solid carbide universal twist drills 5xD with inner coolant supply,  $\phi$  1,0 - 12,0 mm, shank  $\phi$  3,0 - 12,0 mm



Best.-Nr. / Order no.	d1	D	L1	L
SG 40 - 9	9,0	10	61,0	103
SG 40 - 9,1	9,1	10	61,0	103
SG 40 - 9,2	9,2	10	61,0	103
SG 40 - 9,3	9,3	10	61,0	103
SG 40 - 9,4	9,4	10	61,0	103
SG 40 - 9,5	9,5	10	61,0	103
SG 40 - 9,6	9,6	10	61,0	103
SG 40 - 9,7	9,7	10	61,0	103
SG 40 - 9,8	9,8	10	61,0	103
SG 40 - 9,9	9,9	10	61,0	103
SG 40 - 10	10,0	10	61,0	103
SG 40 - 10,1	10,1	12	71,0	118
SG 40 - 10,2	10,2	12	71,0	118
SG 40 - 10,3	10,3	12	71,0	118
SG 40 - 10,4	10,4	12	71,0	118
SG 40 - 10,5	10,5	12	71,0	118
SG 40 - 10,6	10,6	12	71,0	118
SG 40 - 10,7	10,7	12	71,0	118
SG 40 - 10,8	10,8	12	71,0	118
SG 40 - 10,9	10,9	12	71,0	118
SG 40 - 11	11,0	12	71,0	118
SG 40 - 11,1	11,1	12	71,0	118
SG 40 - 11,2	11,2	12	71,0	118
SG 40 - 11,3	11,3	12	71,0	118
SG 40 - 11,4	11,4	12	71,0	118
SG 40 - 11,5	11,5	12	71,0	118
SG 40 - 11,6	11,6	12	71,0	118
SG 40 - 11,7	11,7	12	71,0	118
SG 40 - 11,8	11,8	12	71,0	118
SG 40 - 11,9	11,9	12	71,0	118
SG 40 - 12	12,0	12	71,0	118

**VHM-Spiralbohrer 5xD 180°** für schwierige Anbohrverhältnisse, mit doppelter Führungsphase,  $\varnothing$  2,0 - 12,0 mm, Schaft  $\varnothing$  4,0 - 12,0 mm  
**Solid carbide twist drills 5xD 180°** for difficult drilling conditions with double guidings,  $\varnothing$  2,0 - 12,0 mm, shank  $\varnothing$  4,0 - 12,0 mm

SG 45

HELIX 30°

POINT ANGLE 180°

h5

DIN 6537

Tol. h8

ST 8 COATING

<700 N/mm<sup>2</sup>

700-1100 N/mm<sup>2</sup>

1100-1300 N/mm<sup>2</sup>

30-45 HRC

INOX

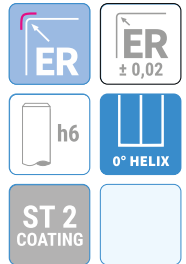
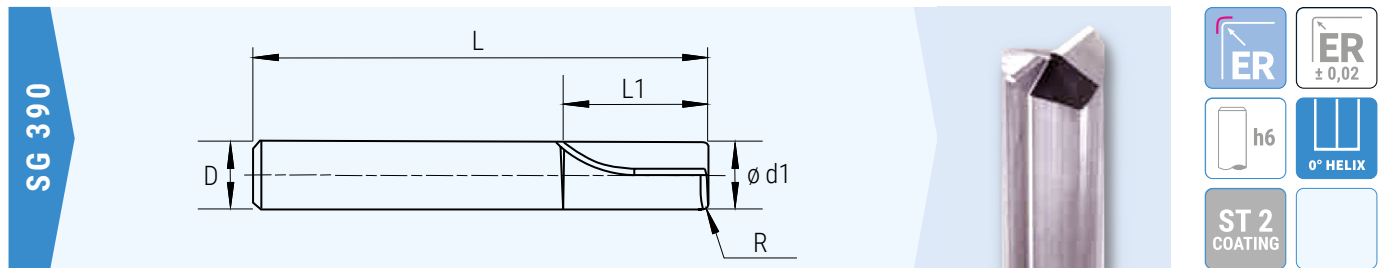
GUSS

AL

Best.-Nr. / Order no.	d1	L1	L	D
SG 45 - 2	2,0	8,0	50	4
SG 45 - 3	3,0	12,0	60	6
SG 45 - 4	4,0	16,0	60	6
SG 45 - 5	5,0	20,0	60	6
SG 45 - 6	6,0	24,0	60	6
SG 45 - 8	8,0	32,0	80	8
SG 45 - 10	10,0	40,0	90	10
SG 45 - 12	12,0	48,0	100	12

Weitere Werkzeugabmessungen im Bereich d1=2,00 mm bis d1= 12,00 mm auf Anfrage verfügbar.  
 Other tool dimensions in the range d1=2,00 mm to d1= 12,00 mm available on request.

**VHM-Untermaß-Stechfräser**  $\varnothing$  2,9 - 15,8 mm, Schaft  $\varnothing$  3 - 16 mm  
**Solid carbide undersize cutters**  $\varnothing$  2,9 - 15,8 mm, shank  $\varnothing$  3 - 16 mm



<700 N/mm <sup>2</sup>	700- 1100 N/mm <sup>2</sup>	1100- 1300 N/mm <sup>2</sup>	30-45 HRC	45-55 HRC				INOX	AL	CU CuZn Gold PL		CFK GFK		
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Best.-Nr. / Order no.	d1	L1	L	D	R
SG 390 - 03	2,90	12,0	40	3	0,2
SG 390 - 04	3,90	16,0	50	4	0,2
SG 390 - 05	4,90	20,0	50	5	0,2
SG 390 - 06	5,85	20,0	65	6	0,3
SG 390 - 08	7,85	25,0	65	8	0,3
SG 390 - 10	9,80	30,0	75	10	0,5
SG 390 - 12	11,80	40,0	90	12	0,5
SG 390 - 16	15,80	60,0	100	16	0,5

**Empfehlung**

Bei Härteverzug sollte die Bohrung 0,3 - 0,5 kleiner gebohrt werden.  
 Mit diesem Stechwerkzeug erhalten Sie eine genaue Fluchtung und sehr gute Oberflächen. Trockenbearbeitung mit Pressluft.

**Schnittwerte**

Beispiel für  $\varnothing$  7,85:  
 bis 1.200 N/mm<sup>2</sup> = 60 m/min – Vorschub 0,06 - 0,08 mm/U  
 gehärtet = 30 m/min – Vorschub 0,04 - 0,06 mm/U

**Einsatzhinweis**

Das Werkzeug kann bei Sack- und Durchgangslöchern eingesetzt werden.  
 Sonderabmessungen auf Anfrage.

**Recommendation**

In case of hardening distortion, the bore should be drilled 0.3-0.5 mm smaller.  
 With this grooving tool you get an exact alignment and very good surfaces.  
 Dry machining with compressed air.

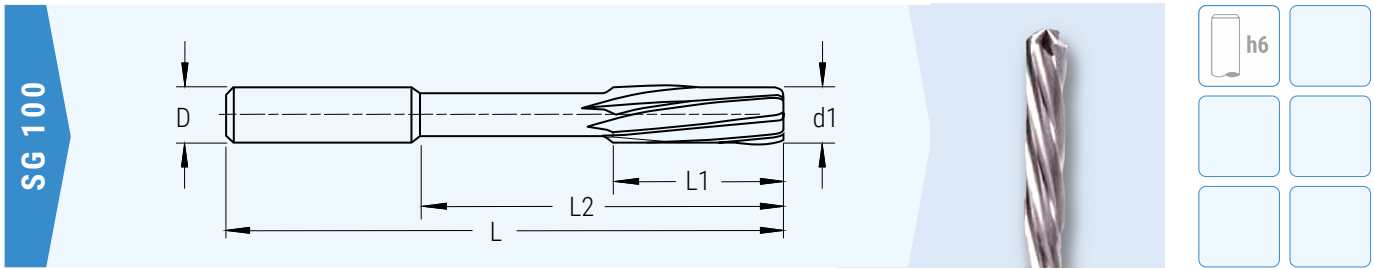
**Cutting data**

Example for diameter 7.85:  
 Max. 1200 N/mm<sup>2</sup> = 60 m/min - feed 0.06-0.08 mm/U  
 hardened = 30 m/min - feed 0.04-0.06 mm/U

**Usage**

This tool can be used for blind and through-holes. Special dimensions on request.

**VHM-Reibahlen** Linksspirale, rechts-schneidend, ø 0,3 - 20,1 mm, Schaft ø 1,5 - 20 mm  
**Solid carbide reamers** left-hand helix, right-hand cutting, ø 0,3 - 20,1 mm, shank ø 1,5 - 20 mm



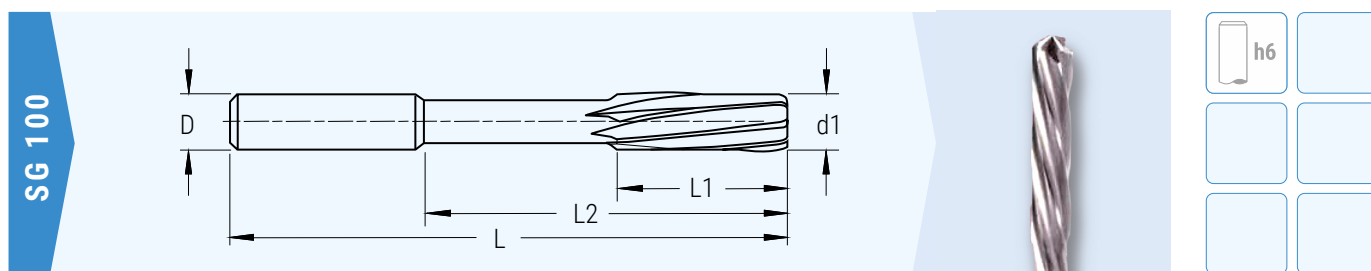
<700 N/mm <sup>2</sup>	700-1100 N/mm <sup>2</sup>	1100-1300 N/mm <sup>2</sup>	30-45 HRC	45-55 HRC				INOX	AL	CU CuZn Gold PL	TI	CFK GFK	PLASTIC	
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d1	L1	L2	L	D	Zähne / teeth
0,30 - 0,59	5,0	10,0	35	1,5	4
0,60 - 0,69	6,0	12,0	35	1,5	4
0,70 - 0,79	6,0	12,0	35	1,5	4
0,80 - 0,90	6,0	15,0	35	1,5	4
0,91 - 1,00	8,0	15,0	35	1,5	4
1,01 - 1,20	10,0	17,0	35	1,5	4
1,21 - 1,50	12,0	23,0	40	1,5	4
1,51 - 2,00	16,0	28,0	45	2,0	4
2,01 - 2,40	18,0	31,0	50	2,0	4
2,41 - 2,70	20,0	34,0	55	3,0	4
2,71 - 3,10	20,0	39,0	60	3,0	4
3,11 - 3,70	22,0	37,0	60	4,0	6
3,71 - 4,10	24,0	40,0	65	4,0	6
4,11 - 4,60	24,0	40,0	65	5,0	6
4,61 - 4,90	26,0	38,0	65	5,0	6
4,91 - 5,20	26,0	48,0	75	5,0	6
5,21 - 5,70	26,0	48,0	75	5,0	6
5,71 - 6,20	26,0	48,0	75	5,0	6
6,21 - 6,60	30,0	49,0	80	6,0	6
6,61 - 6,90	30,0	49,0	80	6,0	6
6,91 - 7,20	35,0	59,0	95	7,0	6

- › Die angeschliffene Freizone erlaubt höchstmögliche Arbeitstiefe. / The ground free zone allows highest possible working depth.
- › Passungszuschlag 20%. Beschichtung optional ST1 / Fitting surcharge 20%. Coating optional ST1.
- › Abweichende Tauchtiefen und Zwischenmaße kurzfristig lieferbar. / Deviating depths and other dimensions available at short notice

**Toleranzen / Tolerances:** 0,30 - 3,00 +0/+0,003 // 3,01 - 6,00 +0/+0,004 // 6,01 - 20,10 +0/+ 0,005

**VHM-Reibahlen** Linksspirale, rechts-schneidend, ø 0,3 - 20,1 mm, Schaft ø 1,5 - 20 mm  
**Solid carbide reamers** left-hand helix, right-hand cutting, ø 0,3 - 20,1 mm, shank ø 1,5 - 20 mm



Material selection buttons: <700 N/mm<sup>2</sup>, 700-1100 N/mm<sup>2</sup>, 1100-1300 N/mm<sup>2</sup>, 30-45 HRC, 45-55 HRC, INOX, AL, CU CuZn Gold PL, TI, CFK GFK, PLASTIC.

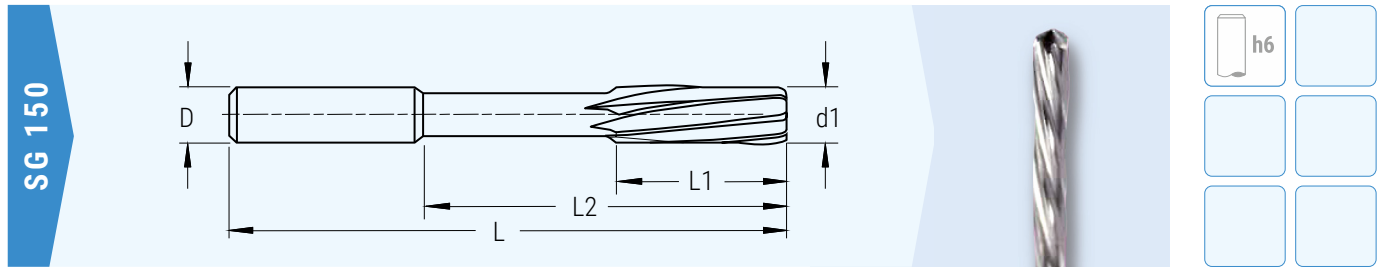
d1	L1	L2	L	D	Zähne / teeth
7,21 - 7,70	35,0	59,0	95	7	6
7,71 - 8,20	35,0	59,0	95	7	6
8,21 - 8,70	35,0	64,0	100	8	6
8,71 - 8,90	35,0	64,0	100	8	6
8,91 - 9,20	35,0	64,0	100	9	6
9,21 - 9,70	35,0	64,0	100	9	6
9,71 - 9,90	35,0	64,0	100	9	6
9,91 - 10,70	35,0	64,0	100	10	6
10,71 - 10,90	35,0	64,0	100	10	6
10,91 - 11,20	35,0	64,0	100	11	6
11,21 - 11,70	35,0	64,0	100	11	6
11,71 - 11,90	35,0	64,0	100	11	6
11,91 - 12,60	35,0	64,0	100	12	6
12,61 - 12,90	35,0	64,0	100	13	6
12,91 - 13,52	35,0	64,0	100	13	6
13,90 - 14,10	35,0	64,0	100	14	6
14,90 - 15,10	35,0	64,0	100	14	6
15,90 - 16,10	35,0	64,0	100	16	6
17,90 - 18,10	35,0	64,0	100	18	6
19,90 - 20,10	35,0	64,0	100	20	6

- › Die angeschliffene Freizone erlaubt höchstmögliche Arbeitstiefe. / The ground free zone allows highest possible working depth.
- › Passungszuschlag 20%. Beschichtung optional ST1 / Fitting surcharge 20%. Coating optional ST1.
- › Abweichende Tauchtiefen und Zwischenmaße kurzfristig lieferbar. / Deviating depths and other dimensions available at short notice

**Toleranzen / Tolerances:** 0,30 - 3,00 +0/+0,003 // 3,01 - 6,00 +0/+0,004 // 6,01 - 20,10 +0/+ 0,005

# VHM-Reibahlen überlang Linksspirale, rechts-schneidend, ø 1,95 - 16,1 mm, Schaft ø 2 - 16 mm

## Solid carbide reamers overlength left-hand spiral, right-hand cutting, ø 1,95 - 16,1 mm, shank ø 2 - 16 mm



<700 N/mm <sup>2</sup>	700- 1100 N/mm <sup>2</sup>	1100- 1300 N/mm <sup>2</sup>	30-45 HRC	45-55 HRC				INOX	AL	CU CuZn Gold PL	TI	CFK GFK	PLASTIC	
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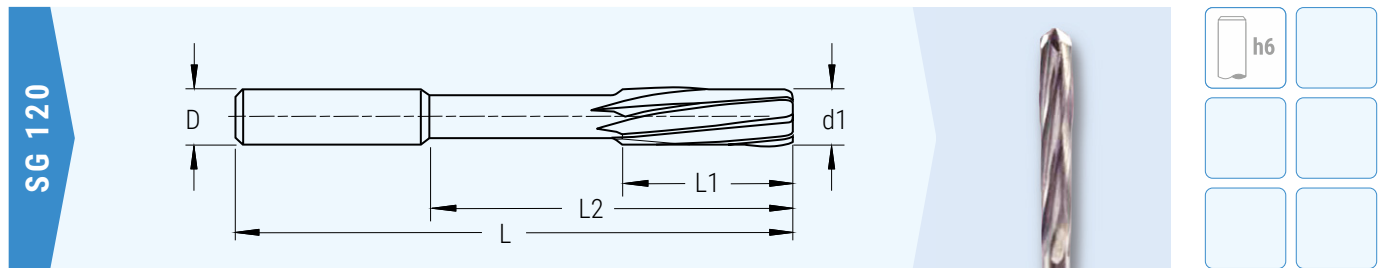
d1	L1	L2	L	D	Zähne / teeth
1,95 - 2,05	20,0	79,0	100	2	6
2,95 - 3,05	20,0	79,0	100	3	6
3,06 - 3,94	20,0	79,0	100	4	6
3,95 - 4,05	24,0	75,0	100	4	6
4,06 - 4,94	24,0	75,0	100	5	6
4,95 - 5,05	26,0	73,0	100	5	6
5,06 - 5,94	26,0	73,0	100	6	6
5,95 - 6,05	26,0	73,0	100	6	6
2,95 - 3,05	20,0	129,0	150	3	6
3,06 - 3,94	20,0	125,0	150	4	6
3,95 - 4,05	24,0	125,0	150	4	6
4,06 - 4,94	24,0	123,0	150	5	6
4,95 - 5,05	26,0	123,0	150	5	6
5,06 - 5,94	26,0	123,0	150	6	6
5,95 - 6,05	26,0	123,0	150	6	6
6,06 - 6,94	26,0	115,0	150	6	6
6,95 - 7,05	35,0	115,0	150	7	6
7,06 - 7,89	35,0	115,0	150	7	6
7,90 - 8,10	35,0	115,0	150	8	6
8,11 - 8,89	35,0	115,0	150	8	6
8,90 - 9,10	35,0	115,0	150	9	6
9,11 - 9,89	35,0	115,0	150	9	6
9,90 - 10,10	35,0	115,0	150	10	6
10,11 - 10,89	35,0	115,0	150	10	6
10,90 - 11,10	35,0	115,0	150	11	6
11,11 - 11,89	35,0	115,0	150	11	6
11,90 - 12,10	35,0	115,0	150	12	6
12,11 - 12,89	35,0	115,0	150	12	6
12,90 - 13,10	35,0	115,0	150	13	6
13,11 - 13,89	35,0	115,0	150	13	6
13,90 - 14,10	35,0	115,0	150	13	6
14,11 - 14,89	35,0	115,0	150	14	6
14,90 - 15,10	35,0	115,0	150	14	6
15,90 - 16,10	35,0	115,0	150	16	6

- › Die angeschliffene Freizone erlaubt höchstmögliche Arbeitstiefe. / The ground free zone allows highest possible working depth.
- › Passungszuschlag 20%. Beschichtung optional ST1 / Fitting surcharge 20%. Coating optional ST1.
- › Abweichende Tauchtiefen und Zwischenmaße kurzfristig lieferbar. / Deviating depths and other dimensions available at short notice

**Toleranzen / Tolerances: 0,30 - 3,00 +0/+0,003 // 3,01 - 6,00 +0/+0,004 // 6,01 - 20,10 +0/+ 0,005**

**VHM-Reibahlen** Rechtsspirale, rechts-schneidend, ø 1,51 - 12,6 mm, Schaft ø 2 - 12 mm

**Solid carbide reamers** right-hand helix, right-hand cutting, ø 1,51 - 12,6 mm, shank ø 2 - 12 mm



Material selection buttons: <700 N/mm<sup>2</sup>, 700-1100 N/mm<sup>2</sup>, 1100-1300 N/mm<sup>2</sup>, 30-45 HRC, 45-55 HRC, INOX, AL, CU CuZn Gold PL, TI, CFK GFK, PLASTIC.

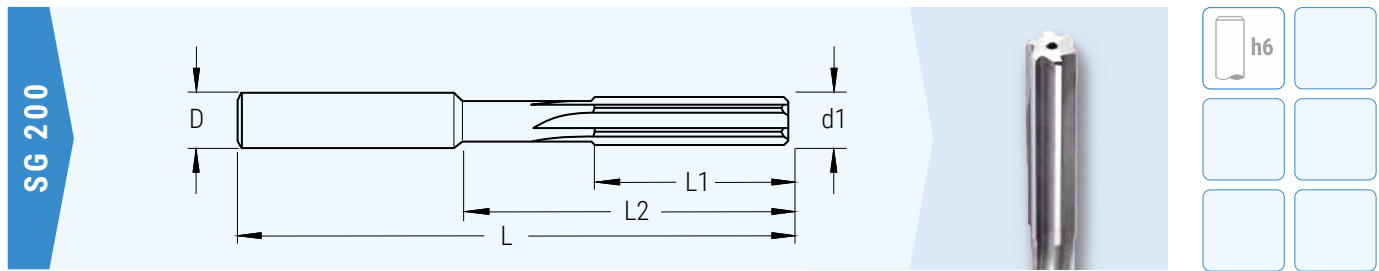
d1	L1	L2	L	D	Zähne / teeth
1,51 - 2,00	16,0	28,0	45	2	4
2,01 - 2,40	18,0	31,0	50	2	4
2,41 - 2,70	20,0	34,0	55	3	4
2,71 - 3,10	20,0	39,0	60	3	4
3,11 - 3,70	22,0	37,0	60	4	6
3,71 - 4,10	24,0	40,0	65	4	6
4,11 - 4,60	24,0	40,0	65	5	6
4,61 - 4,90	26,0	38,0	65	5	6
4,91 - 5,20	26,0	48,0	75	5	6
5,21 - 5,70	26,0	48,0	75	5	6
5,71 - 6,20	26,0	48,0	75	5	6
6,21 - 6,60	30,0	49,0	80	6	6
6,61 - 6,90	30,0	49,0	80	6	6
6,91 - 7,20	35,0	59,0	95	7	6
7,21 - 7,70	35,0	59,0	95	7	6
7,71 - 8,20	35,0	59,0	95	7	6
8,21 - 8,70	35,0	64,0	100	8	6
8,71 - 8,90	35,0	64,0	100	8	6
8,91 - 9,20	35,0	64,0	100	9	6
9,21 - 9,70	35,0	64,0	100	9	6
9,71 - 9,90	35,0	64,0	100	9	6
9,91 - 10,70	35,0	64,0	100	10	6
10,71 - 10,90	35,0	64,0	100	10	6
10,91 - 11,20	35,0	64,0	100	11	6
11,21 - 11,70	35,0	64,0	100	11	6
11,71 - 11,90	35,0	64,0	100	11	6
11,91 - 12,60	35,0	64,0	100	12	6

- › Die angeschliffene Freizone erlaubt höchstmögliche Arbeitstiefe. / The ground free zone allows highest possible working depth.
- › Passungszuschlag 20%. Beschichtung optional ST1 / Fitting surcharge 20%. Coating optional ST1.
- › Abweichende Tauchtiefen und Zwischenmaße kurzfristig lieferbar. / Deviating depths and other dimensions available at short notice

**Toleranzen / Tolerances:** 0,30 - 3,00 +0/+0,003 // 3,01 - 6,00 +0/+0,004 // 6,01 - 20,10 +0/+ 0,005

**Alle Werkzeuge auf Anfrage auch mit Stirnschneide lieferbar.**  
Face cutting edge also available on request.

**VHM-Reibahlen mit Innenkühlung** gerade-genutet, rechts-schneidend, ø 2,95 - 12,10 mm, Schaft ø 6 - 12 mm  
**Solid carbide reamers with internal cooling** straight-fluted, right-hand cutting, ø 2,95 - 12,10 mm, shank ø 6 - 12 mm



Material selection buttons: <700 N/mm<sup>2</sup>, 700-1100 N/mm<sup>2</sup>, 1100-1300 N/mm<sup>2</sup>, 30-45 HRC, 45-55 HRC, INOX, AL, CU CuZn Gold PL, CFK GFK.

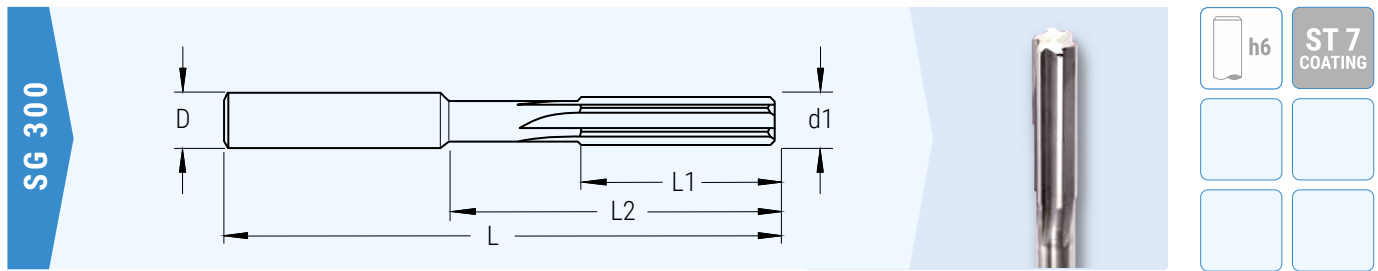
d1	L1	L2	L	D	Zähne / teeth
2,95 - 3,05	22,0	40,0	75	6	6
3,06 - 3,96	22,0	40,0	75	6	6
3,97 - 4,05	22,0	40,0	75	6	6
4,06 - 4,96	22,0	40,0	75	6	6
4,97 - 5,05	22,0	40,0	75	6	6
5,06 - 5,96	22,0	40,0	75	6	6
5,97 - 6,05	30,0	45,0	80	6	6
6,06 - 6,47	30,0	45,0	80	6	6
6,48 - 6,96	30,0	60,0	100	8	6
6,97 - 7,05	30,0	60,0	100	8	6
7,06 - 7,96	30,0	60,0	100	8	6
7,97 - 8,05	35,0	60,0	100	8	6
8,06 - 8,47	35,0	60,0	100	8	6
8,48 - 8,96	35,0	60,0	100	10	6
8,97 - 9,05	35,0	60,0	100	10	6
9,06 - 9,96	35,0	60,0	100	10	6
9,97 - 10,05	35,0	60,0	100	10	6
10,06 - 10,47	35,0	60,0	100	10	6
10,48 - 10,96	40,0	60,0	100	12	6
10,97 - 11,05	40,0	60,0	100	12	6
11,06 - 11,96	40,0	60,0	100	12	6
11,97 - 12,10	40,0	60,0	100	12	6

- › Die angeschliffene Freizone erlaubt höchstmögliche Arbeitstiefe. / The grinded free zone allows the highest possible working depth.
- › Passungszuschlag 20%. Beschichtung optional ST1 / Fitting surcharge 20%. Coating optional ST1.
- › Abweichende Tauchtiefen und Zwischenmaße kurzfristig lieferbar. / Deviating depths and other dimensions available at short notice

**Toleranzen / Tolerances:** 0,30 - 3,00 +0/+0,003 // 3,01 - 6,00 +0/+0,004 // 6,01 - 20,10 +0/+ 0,005



**VHM-Reibahlen für gehärtete Werkstoffe** gerade-genutet, rechts-schneidend, ø 2,95 - 12,12 mm, Schaft ø 6 - 12 mm  
**Solid carbide reamers for hardened materials** straight-fluted, right-hand cutting, ø 2,95 - 12,12 mm, shank ø 6 - 12 mm



Material selection buttons: 45-55 HRC, 55-60 HRC, 60-65 HRC, and other empty boxes.

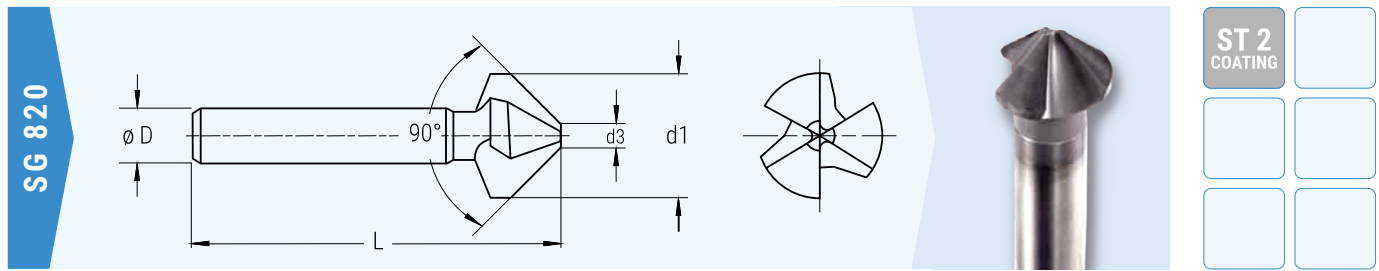
d1	L1	L2	L	D	Zähne / teeth
2,95 - 3,05	12,0	40,0	75	6	6
3,95 - 4,05	14,0	40,0	75	6	6
4,95 - 5,05	14,0	40,0	75	6	6
5,90 - 6,12	20,0	40,0	80	6	6
6,90 - 7,12	20,0	60,0	100	8	6
7,90 - 8,12	25,0	60,0	100	8	6
8,90 - 9,12	25,0	60,0	100	10	6
9,90 - 10,12	25,0	60,0	100	10	6
10,90 - 11,12	30,0	60,0	100	12	6
11,95 - 12,12	30,0	60,0	100	12	6
12,90 - 13,12	30,0	60,0	100	14	6
13,90 - 14,12	30,0	60,0	100	14	6
14,90 - 15,12	30,0	60,0	100	14	6
15,90 - 16,12	30,0	60,0	100	16	6

- › Die angeschliffene Freizone erlaubt höchstmögliche Arbeitstiefe. / The grinded free zone allows the highest possible working depth.
- › Passungszuschlag 20%. / Fitting surcharge 20%.
- › Abweichende Tauchtiefen und Zwischenmaße kurzfristig lieferbar. / Deviating depths and other dimensions available at short notice

**Toleranzen / Tolerances:** 0,30 - 3,00 +0/+0,003 // 3,01 - 6,00 +0/+0,004 // 6,01 - 20,10 +0/+ 0,005

# HSS-E Kegelsenker 90° $\varnothing$ 4,3 - 25,0 mm, Schaft $\varnothing$ 4 - 12 mm

## HSS-E countersinks 90° $\varnothing$ 4,3 - 25,0 mm, shank $\varnothing$ 4 - 12 mm



<700 N/mm <sup>2</sup>	700- 1100 N/mm <sup>2</sup>	1100- 1300 N/mm <sup>2</sup>	30-45 HRC					INOX	AL	CU CuZn Gold PL	TI		PLASTIC	
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Best.-Nr. unbeschichtet Order no. uncoated	Best.-Nr. beschichtet Order no. coated	d1	d3	D	L
SG 820 - 043	SG 820 - 043 M	4,3	1,5	4	38
SG 820 - 063	SG 820 - 063 M	6,3	2,0	6	38
SG 820 - 083	SG 820 - 083 M	8,3	3,0	6	40
SG 820 - 104	SG 820 - 104 M	10,4	4,0	6	44
SG 820 - 124	SG 820 - 124 M	12,4	4,0	8	48
SG 820 - 165	SG 820 - 165 M	16,5	4,0	8	55
SG 820 - 205	SG 820 - 205 M	20,5	5,0	10	65
SG 820 - 250	SG 820 - 250 M	25,0	6,0	12	75

# ISO-Klassifizierung der Werkstoffgruppen

## ISO classification of material groups

ISO Gruppe	WMG (Work Material Group)	Härte (HB oder HRC)	Zugfestigkeit (MPa)	Materialbeispiele (AISI, EN, DIN, SS, STN, BS, UNE, CN, AFNOR, GOST, UNI...)		
P	P1 Stahl (Automatenstahl) (Kohlenstoffstähle mit erhöhter Bearbeitbarkeit)	P1.1	geschwefelt	< 240 HB	≤ 830	AISI 1108, EN 15522, DIN 1.0723, SS 1922, ČSN 11120, BS 210A15, UNE F.210F, GB Y15, AFNOR 10F1, GOST A30, UNI CF10520
		P1.2	geschwefelt und phosphoriert	< 180 HB	≤ 620	AISI 1211, EN 115Mn30, DIN 1.0715, SS 1912, ČSN 11109, BS 230M7, UNE F.2111, GB Y15, AFNOR S250, GOST A40G, UNI CF95Mn28
		P1.3	geschwefelt / phosphoriert und verbleit	< 180 HB	≤ 620	AISI 12L13, EN 115MnPb30, DIN 1.0718, SS 1914, ČSN 12110, BS 210M16, UNE F.2114, GB Y15Pb, AFNOR S250Pb, GOST AS35G2, UNI CF105Pb20
	P2 Kohlenstoffstahl (Stähle, die hauptsächlich aus Eisen und Kohlenstoff bestehen)	P2.1	enthält <0.25%C	< 180 HB	≤ 620	AISI 1015, EN C15, DIN 1.0401, SS 1350, ČSN 11301, BS 080A15, UNE F.111, GB 15, AFNOR C18RR, GOST S2ps, UNI Fe360
		P2.2	enthält <0.55%C	< 240 HB	≤ 830	AISI 1030, EN C30, DIN 1.0528, SS 1550, ČSN 12031, BS 080M32, UNE F.1130, GB 30, AFNOR AF50C30, GOST 30G, UNI Fe590
		P2.3	enthält >0.55%C	< 300 HB	≤ 1030	AISI 1060, EN C60, DIN 1.0601, SS 1655, ČSN 12061, BS 080A62, UNE F513, GB 60, AFNOR 1C60, GOST 60G, UNI C60
	P3 Legierter Stahl (Kohlenstoffstähle mit einem Legierungsgehalt ≤ 10%)	P3.1	geglüht	< 180 HB	≤ 620	AISI 5015, EN 16Mo3, DIN 1.5415, SS 2912, ČSN 15020, BS 1501-240, UNE F.2601, GB 16Mo, AFNOR 15D3, GOST 15M, UNI 16Mo3KW
		P3.2	gehärtet und angelassen	180 - 260 HB	> 620 ≤ 900	AISI 4140, EN 42CrMo4, DIN 1.7225, SS 2244, ČSN 15142, BS 708M40, UNE F.8232, GB 42CrMo, AFNOR 42CD4, GOST 40ChFA, UNI 42CrMo4
		P3.3	gehärtet und angelassen	260 - 360 HB	> 900 ≤ 1240	AISI 4140, EN 42CrMo4, DIN 1.7225, SS 2244, ČSN 15142, BS 708M40, UNE F.8232, GB 42CrMo, AFNOR 42CD4, GOST 40ChFA, UNI 42CrMo4
	P4 Werkzeugstahl (Speziallegierter Stahl für Werkzeuge, Matrizen und Formen)	P4.1	geglüht	< 26 HRC	≤ 900	AISI D2, EN X155GVMo12-1, DIN 1.2370, SS 2736, ČSN 19573, BS BD2, UNE F.520A, GB Cr12Mo1V1, AFNOR Z160CDV12, GOST Ch12MF, UNI X155GVMo121KU
P4.2		gehärtet und angelassen	26 - 39 HRC	> 900 ≤ 1240	AISI D2, EN X155GVMo12-1, DIN 1.2370, SS 2736, ČSN 19573, BS BD2, UNE F.520A, GB Cr12Mo1V1, AFNOR Z160CDV12, GOST Ch12MF, UNI X155GVMo121KU	
P4.3		gehärtet und angelassen	39 - 45 HRC	> 1240 ≤ 1450	AISI D2, EN X155GVMo12-1, DIN 1.2370, SS 2736, ČSN 19573, BS BD2, UNE F.520A, GB Cr12Mo1V1, AFNOR Z160CDV12, GOST Ch12MF, UNI X155GVMo121KU	
M	M1 Ferritischer Edelstahl (nicht härtbare Chromlegierungen)	M1.1	geglüht	< 160 HB	≤ 520	AISI 304, EN X7Cr14, DIN 1.4001, SS 2326, BS 434517, UNE F.3401, AFNOR Z8C12, GOST 08Ch13, UNI X6CrTi12
		M1.2	geglüht	160 - 220 HB	> 520 ≤ 700	AISI 446, EN X10CrAl24, DIN 1.4762, SS 2322, ČSN 17113, BS 430517, UNE F.3154, GB 10Cr17, AFNOR Z10CA54, GOST 12Ch17, UNI X16Cr26
	M2 Martensitischer Edelstahl (härtbare Chromlegierungen)	M2.1	vergiütet	200 - 280 HB	> 670 ≤ 950	AISI 440C, EN X105CrMo17, DIN 1.4125, SS 2385, ČSN 17023, BS 425C11, UNE F.3402, GB 102Cr17Mo, AFNOR Z100CD17, GOST 95Ch18, UNI X6GCrNi 13 04
		M2.2	ausscheidungsgehärtet	280 - 380 HB	> 950 ≤ 1300	AISI 420, EN X45Cr13, DIN 1.4034, SS 17029, BS 425C11, UNE F.3405, AFNOR Z44C14, GOST 20X17H12, UNI X30Cr13
	M3 Austenitischer Edelstahl (Chrom-Nickel- und Chrom-Nickel-Mangan-Legierungen)	M3.1	geglüht	< 200 HB	≤ 750	AISI 308, EN X5CrNi18-12, DIN 1.4303, SS 2352, ČSN 17249, BS 305S17, UNE F.3513, GB 10Cr18Ni12, AFNOR Z8CN18.12, UNI X7CrNi18 10
		M3.2	geglüht	200 - 260 HB	> 750 ≤ 870	AISI 309, EN X15CrNiSi20-12, DIN 1.4828, ČSN 17251, BS 309S24, UNE F.3312, GB 12Cr23Ni13, AFNOR Z15CN20.12, GOST 20Ch20Ni14S2, UNI 16CrNi23 14
		M3.3	geglüht	260 - 300 HB	> 870 ≤ 1040	AISI 5848, EN X45CrNiW18-9, DIN 1.4873, BS 3315A0, UNE F.3211, AFNOR Z35CNW14-4, UNI X45CrNiW 18 9
	M4 Austenitisch-ferritischer (DUPELX) oder superaustenitischer Edelstahl	M4.1	geglüht	< 300 HB	≤ 990	AISI 329, EN X1-NiCrMoCu25-20-5, DIN 1.4539, SS 2562, ČSN 17265, BS 318S13, UNE F.3552, GB 022Cr25NiMo2N, AFNOR Z1NCU25.20
		M4.2	geglüht	300 - 380 HB	≤ 1320	AISI 631 (17-7PH), EN X7CrNiAl17-7, DIN 1.4568, SS 2388, ČSN 17465, BS 301S13, UNE F.3217, GB 07Cr17Ni7Al, AFNOR Z9CN17-07, GOST 09Ch17Ni7Al, UNI X53CrMnNiN12
	K	K1 Grauguss (ASTM A48) oder Automobiler-Grauguss (ASTM A159) (Eisen-Kohlenstoff-Gussteile mit einer Lamellengraphit-Mikrostruktur)	K1.1	ferritisch oder ferritisch-perlitisch	< 180 HB	≤ 190
K1.2			ferritisch-perlitisch oder perlitisch	180 - 240 HB	> 190 ≤ 310	ASTM A48 Grade 30 (F12101), EN-JL-1030, DIN GG-20 (0.6020), SS 0120, STN 422420, BS Grade 220, UNE FG20, GB HT200, AFNOR F200, GOST ČH20, UNI G20
K1.3			perlitisch	240 - 280 HB	> 310 ≤ 390	ASTM A48 Grade 50 (F13501), EN-JL-1060, DIN GG-35 (0.6035), SS 0135, STN 422435, BS Grade 350, UNE FG35, GB HAT300, AFNOR F350, GOST SC35, UNI G35
K2 Temperguss (ASTM A602) (Eisen-Kohlenstoff-Gussteile mit graphitfreier Mikrostruktur)		K2.1	ferritisch	< 160 HB	≤ 400	ASTM A602 Grade M3210 (F20000), EN-JM-1130, DIN GTS-35 (0.8135), SS 0815, BS B340/12, UNE Type A, AFNOR MN 35-10, GOST K435-10
		K2.2	ferritisch oder perlitisch	160 - 200 HB	> 400 ≤ 550	ASTM A602 Grade M4504 (F20001), EN-JM-1040, DIN GTS-50 05 (0.8045), BS P50-05, AFNOR MB 45-7
		K2.3	perlitisch	200 - 240 HB	> 550 ≤ 660	ASTM A602 Grade M7002 (F20004), EN-JM-1140, DIN GTS-45 (0.8145), SS 0854, STN 422540, BS P 45-06, UNE Typ B, AFNOR MP 50-5, GOST K445-7, UNI GMM 45
K3 Duktiler Gusseisen (ASTM A536) (Eisen-Kohlenstoff-Gussteile mit einer Kugelgraphit-Mikrostruktur)		K3.1	ferritisch	< 180 HB	≤ 560	ASTM A536 Grade 60-40-18 (F32800), EN-JS-1030, DIN GGG-40 (0.7040), SS 0717, STN 422304, BS 420/12, UNE FGE 42-12, GB QT 400, AFNOR FGS 400-12, GOST B440
		K3.2	ferritisch oder perlitisch	180 - 220 HB	> 560 ≤ 680	ASTM A536 Grade 80-55-06 (F33800), EN-JS-1050, DIN GGG-50 (0.7050), SS 0727, STN 422305, BS 500/7, UNE FGE 50-7, GB QT 500-7, AFNOR FGS 500-7, GOST B450
		K3.3	perlitisch	220 - 260 HB	> 680 ≤ 800	ASTM A536 Grade 100-70-03 (F34800), EN-JS-1060, DIN GGG-60 (0.7060), SS 0732, STN 422306, BS 600/3, UNE FG70-2, GB QT 600-3, AFNOR FGS 600-3, GOST B460
K4 Austenitisches Grauguss (ASTM A436) (Gussteile aus Eisen-Kohlenstoff-Legierungen mit einer austenitischen Lamellengraphit-Mikrostruktur)		K4.1	ferritisch	< 180 HB	≤ 190	ASTM A436 Type 1 (L-NiCuCr 15 G 2, F41000), EN-JL-3011, DIN GGL-NiMn 13 7 (0.6652), SS 0523, BS Grade F1, AFNOR FGL-Ni3Mn7, GOST 4H19X3W
	K4.2	ferritisch	< 240 HB	≤ 740	ASTM A439 Type D-28 (S-NiCr 20 3, F43001), EN-JS-3021, DIN GGG-NiMn 23 4, SS 0776, BS Grade S2M, AFNOR FGS Ni23 Mn4, GOST 4H19X3W	
	K4.3	ferritisch	< 280 HB	> 840 ≤ 980	ASTM A897 Grade 110-70-11	
	K4.4	ferritisch	280 - 320 HB	> 980 ≤ 1130	ASTM A897 Grade 125-80-10, EN-JS-1100, DIN GGG-90 (5.3400)	
	K4.5	ferritisch	320 - 360 HB	> 1130 ≤ 1280	ASTM A897 Grade 2 (150-110-07), EN-JS-1110, DIN GGG-100 (5.3403)	
K5 GJV aus verdichtetem Graphit (ASTM A842) (Eisen-Kohlenstoff-Gussteile mit vermikularer Graphitstruktur)	K5.1	ferritisch	< 180 HB	≤ 400	ASTM A842 Grade 300, EN-GJV-300, DIN GGG 30, GOST 49830	
	K5.2	ferritisch oder perlitisch	180 - 220 HB	> 400 ≤ 450	ASTM A842 Grade 350, EN-GJV-350, DIN GGG 35 (5.2200), GOST 49830	
	K5.3	perlitisch	220 - 260 HB	> 450 ≤ 500	ASTM A842 Grade 450, EN-GJV-450, DIN GGG 45, GOST 49845	
N	N1 Kommerziell reine Aluminiumknetlegierung	N1.1	naturhart	< 60 HB	≤ 240	UNS A91200, EN AL99.0, DIN 3.0205, SS 4010, STN 424009, BS 1C, UNE L-3001, GB L5, AFNOR A4, GOST ALC, UNI 3567
		N1.2	aushärtbar	60 - 100 HB	> 240 ≤ 400	UNS A93004, EN AlMn0.5Mg0.5, DIN 3.0505, SS 4054, STN 424432, BS N31, UNE L-3831, GB LF2, AFNOR A-M1, GOST AlMg, UNI 3568
		N1.3	aushärtbar	100 - 150 HB	> 400 ≤ 590	UNS A95083, EN AlMg4.5Mn0.7, DIN 3.3547, SS 4140, STN 424415, BS N8, UNE L-3321, GB AlMg4.5Mn, AFNOR A-64.5Mn, GOST Amg 4.5, UNI P-AlMg4.4
	N2 Aluminiumgusslegierungen	N2.1	naturhart	< 75 HB	≤ 240	UNS A02080, EN AlCu45, BS LM11, STN 424331, Al Si1Cu, GOST AlMgSiK, UNI G-AISi7Mg
		N2.2	aushärtbar	75 - 90 HB	> 240 ≤ 270	UNS A02400, EN AlCu4Ni2Mg2, SS AlSi7MgFe, BS LM6, STN 424519, UNE Al-75SiMg, AFNOR A-57G, GOST AK7, UNI G-AISi7Mg
		N2.3	aushärtbar	90 - 140 HB	> 270 ≤ 440	UNS A03360, EN G-AlCu4NiMg2, SS AlSi10Mg, STN 424336, BS LM 30, AFNOR A-S10G, UNI G-AISi9Mg
	N3 Kupferlegierungen mit hervorragenden Bearbeitungseigenschaften Kurzspanige Kupferlegierungen mit guten bis mäßigen Bearbeitungseigenschaften Elektrolytisches Kupfer und langspanige Kupferlegierungen mit mäßigen bis schlechten Bearbeitungseigenschaften	N3.1	naturhart	< 75 HB	≤ 240	UNS C14700, EN CuPb1P, DIN 2.1498, STN 423214, BS C111, AFNOR CuZn35Pb2, GOST L63-3, UNI CuS(P0.01)
		N3.2	naturhart	< 200 HB	≤ 690	UNS C81540, EN CuNi25Zr, DIN 2.0857, STN 423220, BS NS113, UNE CuSn12, AFNOR CuZn40, GOST L60, UNI P-CuZn-40
		N3.3	naturhart	< 200 HB	≤ 690	UNS C10100, EN CuAg0.1, DIN 2.1203, SS 5010, UNE CUSi3Mn1, AFNOR Cu-C2, GOST M1F, UNI Cu-0F
	N4 Thermoplastische Polymere	N4.1	ABS, Acryl, Duraplast, Elastomer, EP, Epoxid, FEP, Fluor, Gummi, Kautschuk, Latex, MF, MPF, PA, PAI, PC, PE, PEEK, PEI, PES, PET, PP, Phenolharze, PI, PMMA, Polyamide, Polyester, Polyolefine, Polysulfon, POM, PP, PPE, PPS, PS, PSU, PTFE, PU, PUR, PVDF, SAN, SI, Styrol, UF, Ureol			
N4.2		Duroplaste			Aramid, Epoxy, Fluoropolymer, Methacrylate, Melamine, Phenolic, Polyester, Polyimide, Polymethacrylimide, Polyurethane	
N5 Verstärkte Polymere oder Verbundwerkstoffe	N5.1	Graphit			CFK, GFK, GMT, Honeycomb, Kevlar, LFT, Organo, SMC	
	N5.2	Graphit			CGM-1, CM-00, GM-10, GM-11, GR030, GR030PI, GR060, GR060PI, GR125, MC-01, MC-01R0, MC-03, MC-03M	
S	S1 Titan oder Titanlegierungen	S1.1	naturhart	< 200 HB	≤ 660	UNS R50250 (Grade 1), EN Ti 99.6, DIN 3.7035, BS TA.2, UNE Ti-P02, AFNOR T-40, GOST BT1-00
		S1.2	naturhart	200 - 280 HB	> 660 ≤ 950	UNS R56404 (Grade 29), EN Ti2Cu, DIN 3.7124, BS TA.21, UNE Ti-P11, AFNOR T-U2
	S2 Eisenbasierte Hochtemperaturlegierungen	S2.1	naturhart	280 - 360 HB	> 950 ≤ 1200	UNS R54250 (Grade 38), EN TiAl6V4, DIN 3.7165, ČSN TiAl6Velli, BS TA. 13, UNE Ti-P63, AFNOR T-A6V, GOST BT6
		S2.2	naturhart	< 200 HB	≤ 690	UNS N08801 (Incoloy 801), EN X8 NiCrAlTi31-21, DIN 1.4959, BS NA 15, AFNOR Z8NC33-21
	S3 Nickelbasierte Hochtemperaturlegierungen	S3.1	naturhart	200 - 280 HB	> 690 ≤ 970	UNS N19907, EN X6NiCrTiMoVB25-12, DIN 1.4980, SS 2570, BS HR52, AFNOR Z6NCrTiD25.15B, GOST 36XHTi0
S3.2		naturhart	< 280 HB	≤ 940	UNS A09706 (Inconel 706), EN NiCr2FeAl, DIN 2.4856, BS HR 6, ČSN Inconel 625, UNE F.3313, GB Cr16Ni35, AFNOR NC22FeDNB, GOST XH38BT	
S4 Kobaltbasierte Hochtemperaturlegierungen	S4.1	naturhart	280 - 360 HB	> 940 ≤ 1200	UNS N07001, EN NiCr20Co13Mo4Ti3Al, DIN 2.4654, BS HR 2, ČSN Waspaloy, AFNOR NCKD 20ATV, GOST XH80TBi0	
	S4.2	naturhart	< 240 HB	≤ 800	UNS R30016 (Stellite 6b), EN CoCr20W15Ni, DIN 2.4964, AFNOR KC 20 WN, GOST IKS2	
H	H1 Hartguss	H1.1	naturhart	< 440 HB	≤ 800	UNS F45001, EN-GJ-S-1050-6, DIN 5.3406, SS 0512, BS Grade 2A
		H1.2	naturhart	< 55 HRC	≤ 800	UNS F45003, EN-GJ-S-1400-1, DIN 5.3405, SS 0457, BS Grade 3D
	H2 Gehärtetes Gusseisen	H2.1	naturhart	> 55 HRC		UNS F45003, EN G-X260NiCr4-2, DIN 0.9620, SS 0466, BS Grade 5
		H2.2	naturhart	> 55 HRC		AISI 4135, EN 34CrMo4, DIN 1.7220, SS 2234, STN 415131, BS 198, UNE F.1250, GB 35CrMo, AFNOR 35CD4, GOST AC38XTM, UNI 35CrMo4KB
	H3 Gehärteter Stahl <55HRC	H3.1	naturhart	< 51 HRC		AISI 4135, EN 34CrMo4, DIN 1.7220, SS 2234, STN 415131, BS 198, UNE F.1250, GB 35CrMo, AFNOR 35CD4, GOST AC38XTM, UNI 35CrMo4KB
H3.2		naturhart	51 - 55 HRC		AISI 4135, EN 34CrMo4, DIN 1.7220, SS 2234, STN 415131, BS 198, UNE F.1250, GB 35CrMo, AFNOR 35CD4, GOST AC38XTM, UNI 35CrMo4KB	
H4 Gehärteter Stahl >55HRC	H4.1	naturhart	55 - 59 HRC		UNS T31501, EN 100MnCrW4, DIN 1.2510, SS 2140, STN 419413, BS B01, UNE F.5220, GB 9CrWMn, AFNOR 90MWCv5, GOST 9XB7, UNI 95MnWCr5KU	
	H4.2	naturhart	> 59 HRC		UNS T31501, EN 100MnCrW4, DIN 1.2510, SS 2140, STN 419413, BS B01, UNE F.5220, GB 9CrWMn, AFNOR 90MWCv5, GOST 9XB7, UNI 95MnWCr5KU	

# Codesystem (ISO) für Fräswendeschneidplatten

## Code system (ISO) for milling inserts

# S

1

Plattenform

# P

2

Freiwinkel

# K

3

Toleranz

# R

4

Plattentyp

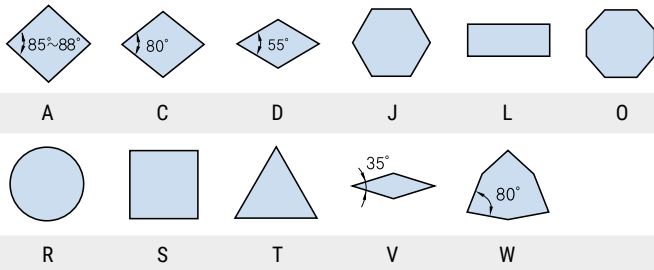
# 12

5

Kantenlänge, Ø Innenkreis

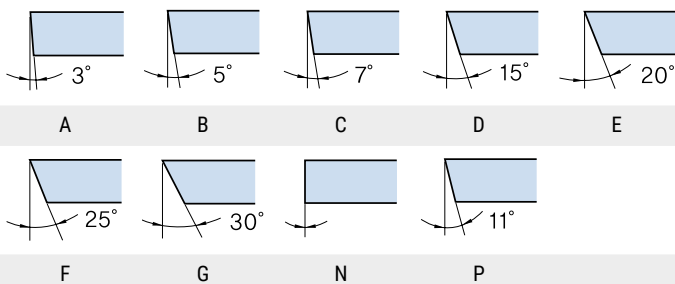
### Wendeschneidplattenform

S P K R 12 03 ED 08 S R - MX



### Freiwinkel

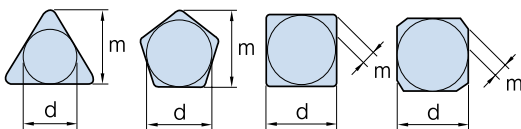
S P K R 12 03 ED 08 S R - MX



### Toleranz

S P K R 12 03 ED 08 S R - MX

d: Innenkreis  
t: Dicke  
m: Siehe  
Abbildung

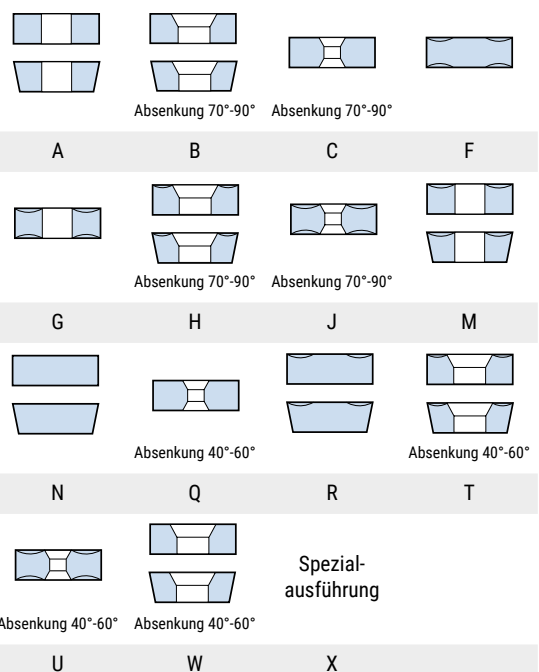


Toleranz für C, E, H, M, O, P, R, S, T, W  
Wendeschneidplattenform (Ausnahmefall)

Klasse	d	m	t	Toleranz d				Toleranz m				
				d	J,K,L,M,N	U	M,N	U	U			
A	± 0,025	± 0,005	± 0,025	6,35	+ 0,05	+ 0,08	+ 0,08	+ 0,13				
C	± 0,025	± 0,013	± 0,025	9,525	+ 0,05	+ 0,08	+ 0,08	+ 0,13				
H	± 0,013	± 0,013	± 0,025	12,7	+ 0,08	+ 0,13	+ 0,13	+ 0,20				
E	± 0,025	± 0,025	± 0,025	15,875	+ 0,10	+ 0,18	+ 0,15	+ 0,27				
G	± 0,025	± 0,025	± 0,13	19,05	+ 0,10	+ 0,18	+ 0,15	+ 0,27				
J	± 0,05± 0,15	± 0,005	± 0,025	25,4	+ 0,13	+ 0,25	+ 0,18	+ 0,38				
K	± 0,05± 0,15	± 0,013	± 0,025	Toleranz für D WSP-Form (Ausnahmefall)								
L	± 0,05± 0,15	± 0,025	± 0,025	d	Toleranz d		Toleranz m					
M	± 0,05± 0,15	± 0,08± 0,20	± 0,13	6,35	+ 0,05		+ 0,08					
U	± 0,08± 0,25	± 0,18± 0,38	± 0,13	9,525	+ 0,05		+ 0,08					
				12,7	+ 0,08		+ 0,13					
				15,875	+ 0,10		+ 0,15					
				19,05	+ 0,10		+ 0,15					

### Plattentyp

S P K R 12 03 ED 08 S R - MX

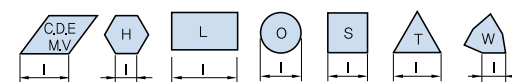


### Schneidkantenlänge, Durchmesser Innenkreis

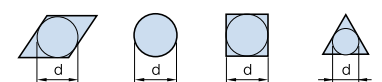
S P K R 12 03 ED 08 S R - MX

• Metrisches System

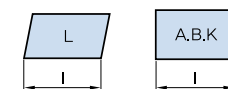
(Dezimal Integer-Konstante)



• Zollsystem



• 1/32" Einheit für WSP mit kleinerem I.C unter 1/4" verwenden  
• 1/8" Einheit für WSP mit größerem I.C über 1/4" verwenden



Geben Sie bei rechteckigen und rautenförmigen Schneidplatten statt des Innenkreises die Schneidkantenlänge an.

### Entsprechungstabelle für metrische Werte und Zollsystem

	06	09	11	16	22	27	33	44
	03	05	06	09	12	15	19	25
	04	06	07	11	15	19	23	31
	03	05	06	09	12	16	19	25
Innenkreis	5/32"	7/32"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
Zollsystem	5	7	2(8)	3	4	5	6	8

# 03

6

Schneidkantenhöhe

# ED 08

7

Eckenradius

# S

8

Schneidkantenform

# R

9

Werkzeugrichtung

# MX

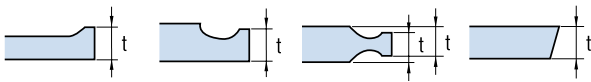
10

Spanbrecher zum Fräsen

### Schneidkantenhöhe

6

S P K R 12 03 ED 08 S R - MX



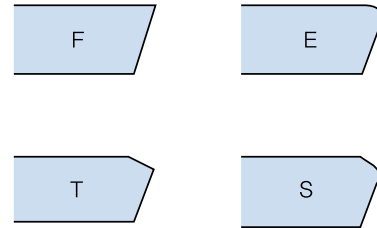
Symbol		Schneidkantenhöhe (t)	
Metrisch	Zoll	mm	Zoll
01	1(2)	1,59	1/16
T0	1,125	1,79	9/128
T1	1,2	1,98	5/64
02	1,5(3)	2,38	3/32
T2	1,75	2,78	7/64
03	2	3,18	1/8
T3	2,5	3,97	5/32
04	3	4,76	3/16
05	3,5	5,56	7/32
06	4	6,35	1/4
07	5	7,94	5/16
09	6	9,52	3/8
11	7	11,11	7/16
12	8(16)	12,70	1/2

( ) Symbol für kleine Wendeschneidplatte

### Schneidkantenform

8

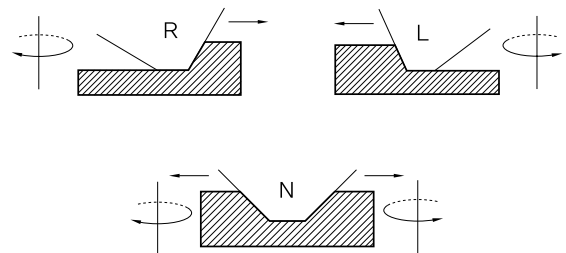
S P K R 12 03 ED 08 S R - MX



### Werkzeugrichtung

9

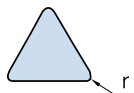
S P K R 12 03 ED 08 S R - MX



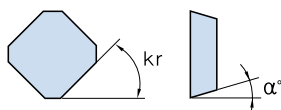
### Eckradius (Eck-R)

7

S P K R 12 03 ED 08 S R - MX



r		Symbol		r		Symbol	
mm	Zoll	mm	Zoll	mm	Zoll	mm	Zoll
00	0	0,0		12	3	1,1	3/64
02		0,2		15		1,5	
04	1	0,4	1/64	16	4	1,6	4/64
05		0,5		24	6	2,4	6/64
08	2	0,8	2/64	32	8	3,2	8/64
10		1,0		40		4,0	



Paralleler Schneidkantenrücken		Freiwinkel	
kr		alpha°	
A - 45°		A - 3°	F - 25°
D - 60°		B - 5°	K - 30°
E - 75°		C - 7°	N - 0°
F - 85°		D - 15°	P - 11°
P - 90°		E - 20°	
Z - Spezial			

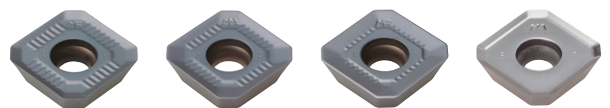
### Spanbrecher zum Fräsen

10

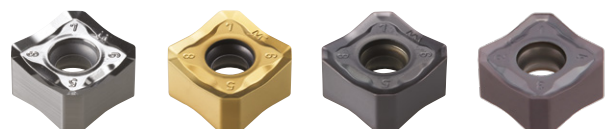
S P K R 12 03 ED 08 S R - MX



MA MF MM MX



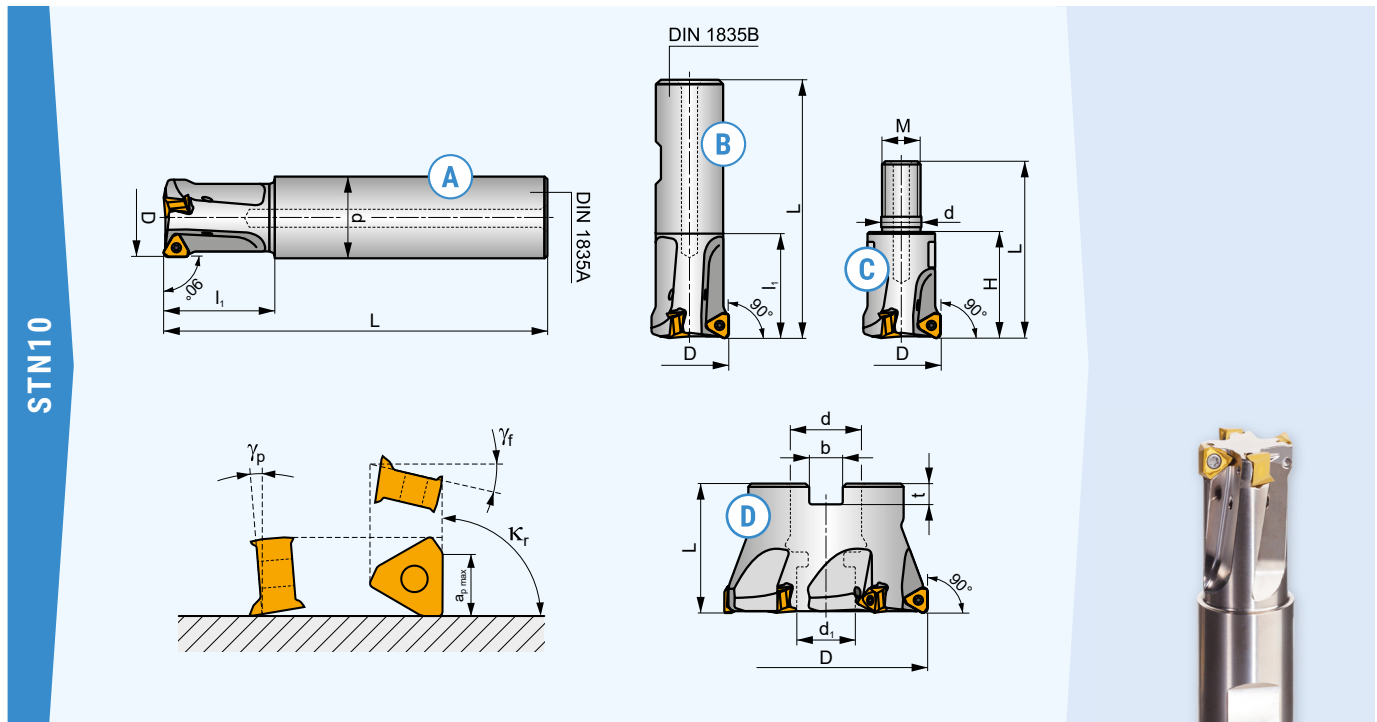
MF MM MR MA



MA MF MM ML

# Wendeschneidplattenfräser STN10

## Indexable insert milling cutter STN10



### Merkmale

- » Doppelseitige Wendeschneidplatten
- » Sechs Schneidkanten
- » Drei positive Geometrien für Stahl, Edelstahl, Gusseisen und Nichteisenmetalle
- » Schnitttiefe bis zu 5 mm
- » Großes Fräserprogramm, das auch kleine Durchmesser von 18 mm bis zu 80 mm abdeckt, für leistungsstarke Werkzeuge mit bis zu 10 Zähnen
- » Fräser sind aus wärmebehandeltem Werkzeugstahl für hohe Betriebsicherheit

### Vorteile

- » Kosteneinsparungen – mehr Schneidkanten
- » Höhere Produktivität – hohe Zähnezahl
- » Prozesssicherheit – reduzierte Schnittkräfte und ruhiger Lauf
- » Vielseitig – Großes Programm an Bearbeitungswerkzeugen für eine Vielzahl von Werkstoffen und Anwendungen, einschließlich Eck- und Nutfräsen, Planfräsen, Schraubenlinieninterpolation, Einwärtskopieren und Schrägeintauchfräsen

### Features

- » Double sided indexable inserts
- » Six cutting edges
- » Three positive geometries for steel, stainless steel, cast iron and non-ferrous metals
- » Cutting depth up to 5 mm
- » Large milling cutter program, which also offers small diameters from 18 mm up to 80 mm, for powerful tools with up to 10 teeth
- » Milling cutters are made of heat-treated tool steel for high operational safety

### Advantages

- » Cost savings - more cutting edges
- » Higher productivity - high number of teeth
- » Process reliability - reduced cutting forces and smoother run
- » Versatile - Large range of machining tools for a variety of materials and applications, including corner and slot milling, face milling, helical interpolation, inward copying and angular plunge milling

## Wendeschneidplattenfräser STN10

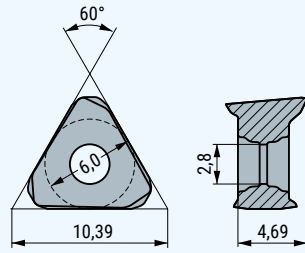
### Indexable insert milling cutter STN10

Form	Best.-Nr. / Order no.	D	L	d	l1	H	M	Z / teeth	Schraube / screw
A	18A2 R050 A20-STN10-C	18	180	20	50	-	-	2	ST-US52506-T07P
	20A2 R029 A20-STN10-C	20	150	20	29	-	-	2	ST-US52506-T07P
	20A3 R029 A20-STN10-C	20	150	20	29	-	-	3	ST-US52506-T07P
	22A3 R050 A25-STN10-C	22	180	25	50	-	-	3	ST-US52506-T07P
	25A3 R034 A25-STN10-C	25	170	25	34	-	-	3	ST-US52506-T07P
	25A4 R034 A25-STN10-C	25	170	25	34	-	-	4	ST-US52506-T07P
	30A4 R050 A32-STN10-C	30	200	32	50	-	-	4	ST-US52506-T07P
	32A4 R037 A32-STN10-C	32	195	32	37	-	-	4	ST-US52506-T07P
	32A5 R037 A32-STN10-C	32	195	32	37	-	-	5	ST-US52506-T07P
	35A5 R080 A32-STN10-C	35	200	32	80	-	-	5	ST-US52506-T07P
B	20A2 R032 B20-STN10-C	20	90	20	32			2	ST-US52506-T07P
	20A3 R032 B20-STN10-C	20	90	20	32			3	ST-US52506-T07P
	25A3 R042 B25-STN10-C	25	100	25	42			3	ST-US52506-T07P
	25A4 R042 B25-STN10-C	25	100	25	42			4	ST-US52506-T07P
	32A4 R042 B32-STN10-C	32	110	32	42			4	ST-US52506-T07P
	32A5 R042 B32-STN10-C	32	110	32	42			5	ST-US52506-T07P
C	20A2 R026 M10-STN10-C	20	45	10,5	-	26	M10	2	ST-US52506-T07P
	20A3 R026 M10-STN10-C	20	45	10,5	-	26	M10	3	ST-US52506-T07P
	25A3 R033 M12-STN10-C	25	55	12,5	-	33	M12	3	ST-US52506-T07P
	25A4 R033 M12-STN10-C	25	55	12,5	-	33	M12	4	ST-US52506-T07P
	32A4 R043 M16-STN10-C	32	66	17	-	43	M16	4	ST-US52506-T07P
	32A5 R043 M16-STN10-C	32	66	17	-	43	M16	5	ST-US52506-T07P
D	40A04 R-S90 TN10-C	40	40	16	14	8,4	5,6	4	ST-US52506-T07P
	40A06 R-S90 TN10-C	40	40	16	14	8,4	5,6	6	ST-US52506-T07P
	50A05 R-S90 TN10-C	50	40	22	18	10,4	6,3	5	ST-US52506-T07P
	50A07 R-S90 TN10-C	50	40	22	18	10,4	6,3	7	ST-US52506-T07P
	63A06 R-S90 TN10-C	63	40	22	18	10,4	6,3	6	ST-US52506-T07P
	63A09 R-S90 TN10-C	63	40	22	18	10,4	6,3	9	ST-US52506-T07P
	80A10 R-S90 TN10-C	80	50	27	38	12,4	7	10	ST-US52506-T07P

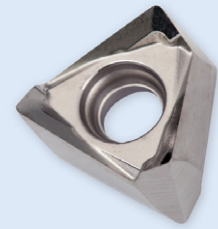
[Passende Wendeschneidplatten auf der Folgeseite »](#)  
[Suitable indexable inserts on the following page »](#)

**Fräswendeschneidplatten TNGX10** für Wendeschneidplattenfräser STN10  
**Milling indexable inserts TNGX10** for indexable insert milling cutter STN10

TNGX10



Drehmoment: 0,8 Nm  
 Torque:

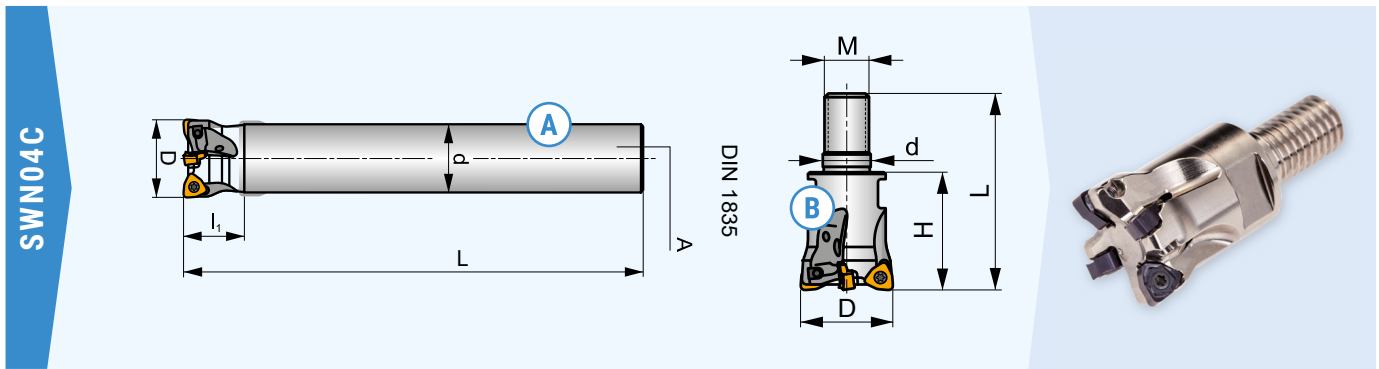


Best.-Nr. Order no.	Beschichtung coating	P	M	K	N	S	H
TNGX 100402SR-F	M8340						
	M8330						
TNGX 100404SR-F	M9340						
	M6330						
	M8340						
	8215						
	M8330						
TNGX 100408SR-F	M9340						
	M6330						
	M8340						
	8215						
	M8330						
TNGX 100408SR-M	M6330						
TNGX 100404SR-M	M9340						
	M8340						
	M8345						
	8215						
	M8330						
TNGX 100408SR-M	M9340						
	M8310						
	M8340						
	M8345						
	8215						
	M8330						
TNGX 100404FR-FA	M0315						
	HF7						
TNGX 100408FR-FA	M0315						
	HF7						



# Wendeschneidplattenfräser SWN04C

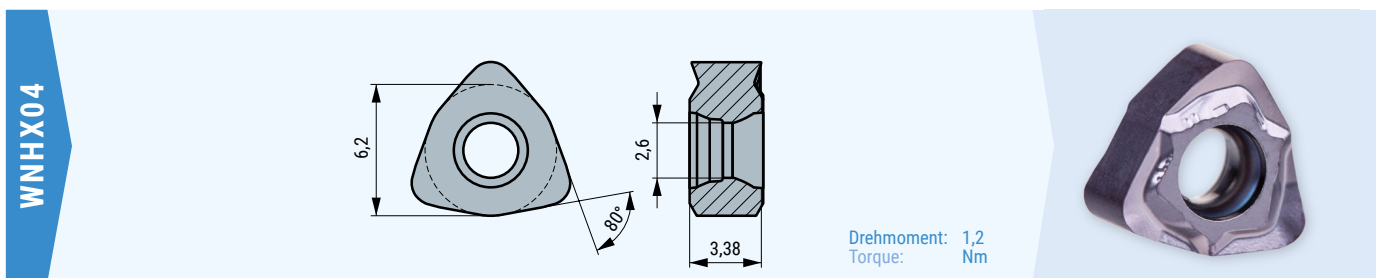
## Indexable insert milling cutter SWN04C



Form	Best.-Nr. / Order no.	D	L	d	l1	H	M	Z / teeth	Schraube / screw
A	20A3 R020 A18-SWN04C-C	20	160	18	20	-	-	3	ST-US42507-T07P
	25A4 R020 A22-SWN04C-C	25	180	22	20	-	-	4	ST-US42507-T07P
	32A6 R020 A25-SWN04C-C	32	200	25	20	-	-	6	ST-US42507-T07P
B	20A3 R030 M10-SWN04C-C	20	49	-	-	30	M10	3	ST-US42507-T07P
	25A4 R033 M12-SWN04C-C	25	55	-	-	33	M12	4	ST-US42507-T07P
	32A6 R040 M16-SWN04C-C	32	63	-	-	40	M16	6	ST-US42507-T07P
	35A6 R043 M16-SWN04C-C	35	66	-	-	43	M16	6	ST-US42507-T07P

# Fräswendeschneidplatten WNHX für Wendeschneidplattenfräser SWN04C

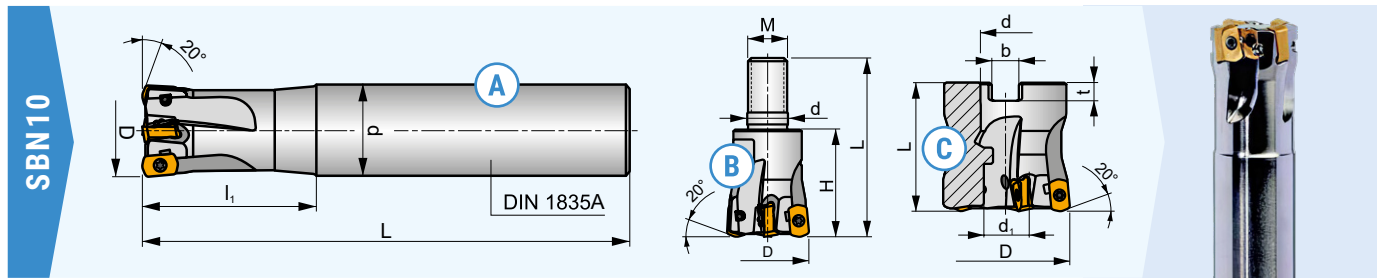
## Milling indexable inserts ADMX for indexable insert milling cutter SWN04C



Best.-Nr. Order no.	Beschichtung coating	P	M	K	N	S	H
WNHX 040305ER-WM	M4310	★★		★★★			★★★
	M8330	★★★		★★★			★★
WNHX 040310ER-WM	M4310	★★		★★★			★★★
	M8330	★★★		★★★			★★
WNHX 040315ER-WM	M4310	★★		★★★			★★★
	M8330	★★★		★★★			★★

# Wendeschneidplattenfräser SBN10

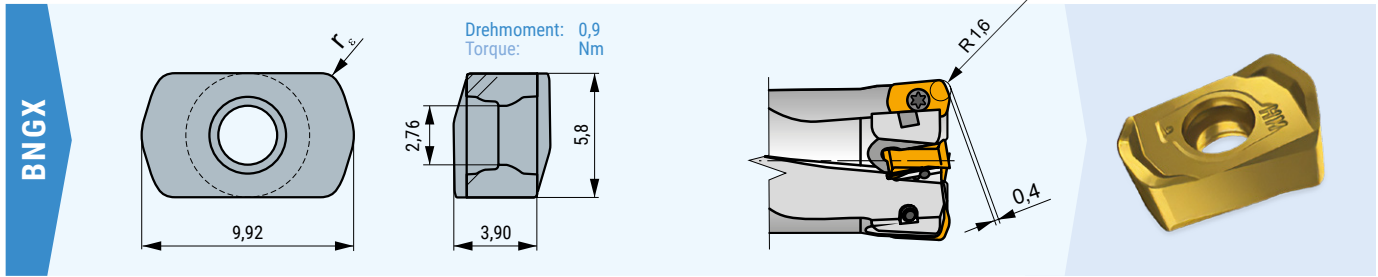
## Indexable insert milling cutter SBN10



Form	Best.-Nr. / Order no.	D	L	d	d1	l1	H	M	b	t	Z / teeth	Schraube / screw
A	16E2 R030 A16-SBN10-C	16	100	16	-	30	-	-			2	ST-US42507-T07P
	16E2 R050 A16-SBN10-C	16	150	16	-	50	-	-			2	ST-US42507-T07P
	16E2 R030 A14-SBN10-C	16	150	14	-	30	-	-			2	ST-US42507-T07P
	18E2 R030 A16-SBN10-C	18	150	16	-	30	-	-			2	ST-US42507-T07P
	20E3 R040 A20-SBN10-C	20	130	20	-	40	-	-			3	ST-US42507-T07P
	20E3 R080 A20-SBN10-C	20	160	20	-	80	-	-			3	ST-US42507-T07P
	20E3 R040 A18-SBN10-C	20	180	18	-	40	-	-			3	ST-US42507-T07P
	20E4 R040 A20-SBN10-C	20	130	20	-	40	-	-			4	ST-US42507-T07P
	25E4 R050 A25-SBN10-C	25	140	25	-	50	-	-			4	ST-US42507-T07P
	25E4 R100 A25-SBN10-C	25	180	25	-	100	-	-			4	ST-US42507-T07P
	25E4 R050 A22-SBN10-C	25	220	22	-	50	-	-			4	ST-US42507-T07P
	25E5 R050 A25-SBN10-C	25	140	25	-	50	-	-			5	ST-US42507-T07P
	32E5 R070 A32-SBN10-C	32	150	32	-	70	-	-			5	ST-US42507-T07P
	32E6 R070 A32-SBN10-C	32	150	32	-	70	-	-			6	ST-US42507-T07P
	32E5 R120 A32-SBN10-C	32	200	32	-	120	-	-			5	ST-US42507-T07P
	35E5 R050 A32-SBN10-C	35	200	32	-	50	-	-			5	ST-US42507-T07P
	35E6 R050 A32-SBN10-C	35	200	32	-	50	-	-			6	ST-US42507-T07P
	B	16E2 R025 M08-SBN10-C	16	43	8,5	-	-	25	M8			2
18E2 R025 M08-SBN10-C		18	43	8,5	-	-	25	M8			2	ST-US42507-T07P
20E3 R030 M10-SBN10-C		20	49	10,5	-	-	30	M10			3	ST-US42507-T07P
20E4 R030 M10-SBN10-C		20	49	10,5	-	-	30	M10			4	ST-US42507-T07P
25E4 R033 M12-SBN10-C		25	55	12,5	-	-	33	M12			4	ST-US42507-T07P
25E5 R033 M12-SBN10-C		25	55	12,5	-	-	33	M12			5	ST-US42507-T07P
28E5 R035 M12-SBN10-C		28	57	12,5	-	-	35	M12			5	ST-US42507-T07P
32E5 R040 M16-SBN10-C		32	63	17	-	-	40	M16			5	ST-US42507-T07P
32E6 R040 M16-SBN10-C		32	63	17	-	-	40	M16			6	ST-US42507-T07P
35E6 R043 M16-SBN10-C		35	66	17	-	-	43	M16			6	ST-US42507-T07P
40E6 R043 M16-SBN10-C		40	66	17	-	-	43	M16			6	ST-US42507-T07P
C	40A05 R-SMOBN10-C	40	40	16	14,1	-	-	-	8,4	5,6	5	ST-US42507-T07P
	40A07 R-SMOBN10-C	40	40	16	14,1	-	-	-	8,4	5,6	7	ST-US42507-T07P
	42A05 R-SMOBN10-C	42	40	16	14,1	-	-	-	8,4	5,6	5	ST-US42507-T07P
	42A07 R-SMOBN10-C	42	40	16	14,1	-	-	-	8,4	5,6	7	ST-US42507-T07P

**Fräswendeschneidplatten BNGX10** für Wendeschneidplattenfräser SBN10  
**Milling indexable inserts TNGX10** for indexable insert milling cutter SBN10

Form CAM-Radius R=1,6	R	t
BNGX 10T308	1,60	0,44



Best.-Nr. / Order no.	Beschichtung / coating	P	M	K	N	S	H
BNGX 10T308SR-M	M9325						
	M6330						
	M8310						
	M8330						
	M8340						
	M8345						
	8215						
BNGX 10T308SR-MM	M9325						
	M9340						
	M6330						
	M8310						
	M8330						
	M8340						
BNGX 10T308SR-HM	M8310						
	M8330						
	8215						

## Merkmale & Vorteile

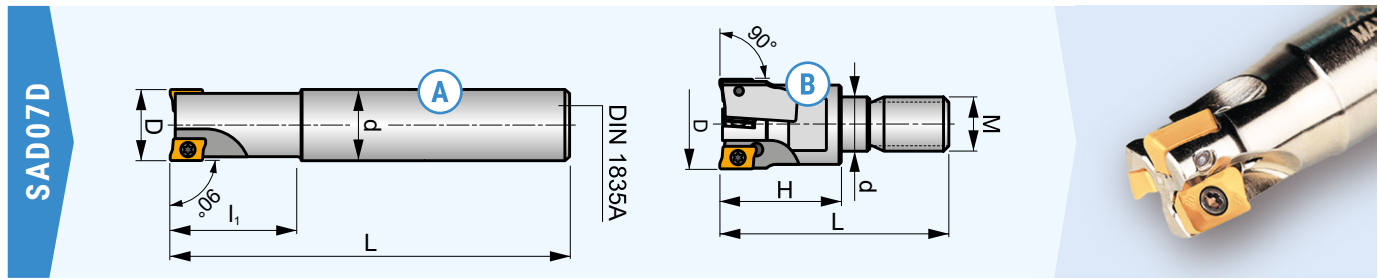
- » Komplettangebot für den Formen- und Werkzeugbau
- » Fräser für Kopierfräsen, Einwärtskopieren, Schraubenlinieninterpolation, Nutfräsen und Tauchfräsen. Auch für Planfräsen und Eckfräsen
- » BNGX10-Wendeschneidplatten für Schruppen mit hohem Vorschub
- » Drei Geometrien geeignet für eine große Bandbreite an Materialien
- » Einzigartiges Design für glattere Schnitte
- » Große Palette an Fräserdurchmessern 16 - 42 mm und -typen
- » Spezielles Design mit Innenkühlung für eine bessere Kühlung
- » Produktivität - Hohe Vorschubraten mit axialer Schnitttiefe bis 1 mm
- » Verfahrenssicherheit - Höherer Rampenwinkel für bessere Spankontrolle
- » Anpassbar - Geeignet für Aufspannungen mit niedriger Steifigkeit und hohe Auskragung
- » Kostenersparnis - Vielseitige Fräser mit BNGX10-Wendeschneidplatten mit vier Schneidkanten
- » Arbeitskräfte in Z-Achse (spindelschonend)

## Features & Benefits

- » Complete range of products for mold and tool making
- » Milling cutters for copy milling, inward copying, helical interpolation, slot milling, plunge milling, face milling, corner milling
- » BNGX10 inserts for high feed roughing
- » Three geometries suitable for a wide range of materials
- » Unique design for smoother cuts
- » Wide range of cutter diameters 16 - 42 mm and types
- » Special design with internal cooling for better cooling
- » Productivity - High feed rates with axial cutting depth up to 1 mm
- » Process safety - higher ramp angle for better chip control
- » Adaptable - Suitable for clamping with low rigidity and high overhang
- » Cost saving - Versatile milling cutters with BNGX10 inserts with four cutting edges
- » Work force in Z-axis (spindel saving)

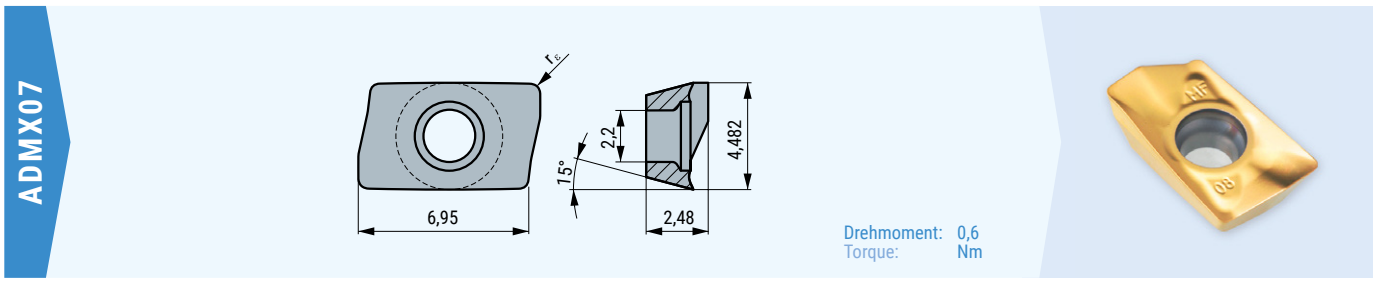
# Wendeschneidplattenfräser SAD07D

## Indexable insert milling cutter SAD07D



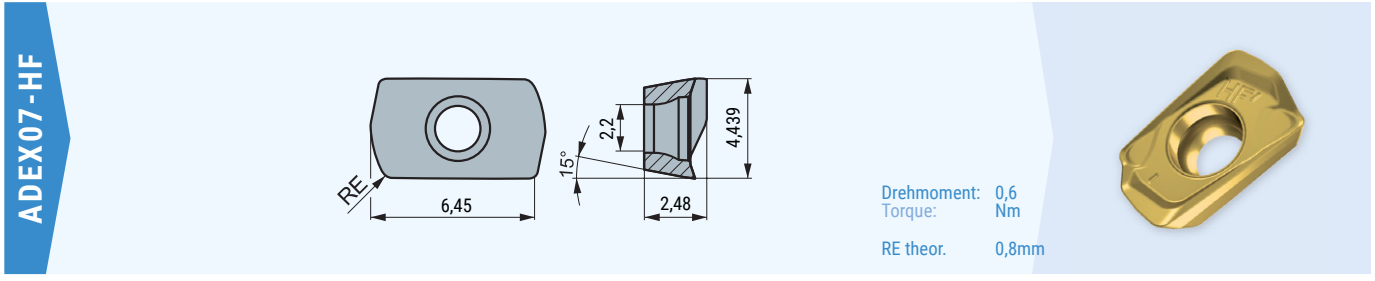
Form	Best.-Nr. / Order no.	D	L	d	l1	H	M	Z / teeth	Schraube / screw
A	10A2 R016 A08-SAD07D-C	10	100	8	16	-	-	2	ST-US62003A-T06P
	10A2 R016 A10-SAD07D-C	10	80	10	16	-	-	2	ST-US62003A-T06P
	10A2 R018 A08-SAD07D-CF	10	100	8	18	-	-	2	ST-US62003A-T06P
	10A2 R018 A10-SAD07D-CF	10	80	10	18	-	-	2	ST-US62003A-T06P
	12A2 R018 A10-SAD07D-C	12	120	10	18	-	-	2	ST-US62003A-T06P
	12A2 R018 A12-SAD07D-C	12	90	12	18	-	-	2	ST-US62003A-T06P
	12A3 R018 A12-SAD07D-C	12	90	12	18	-	-	3	ST-US62003A-T06P
	12A3 R020 A12-SAD07D-CF	12	90	12	20	-	-	3	ST-US62003A-T06P
	14A3 R018 A12-SAD07D-C	14	140	12	18	-	-	3	ST-US62003A-T06P
	14A3 R018 A14-SAD07D-C	14	90	14	18	-	-	3	ST-US62003A-T06P
	14A3 R020 A12-SAD07D-CF	14	140	12	20	-	-	3	ST-US62003A-T06P
	14A3 R020 A14-SAD07D-CF	14	90	14	20	-	-	3	ST-US62003A-T06P
	16A3 R019 A14-SAD07D-C	16	160	14	19	-	-	3	ST-US62004A-T06P
	16A3 R019 A16-SAD07D-C	16	110	16	19	-	-	3	ST-US62004A-T06P
	16A4 R019 A16-SAD07D-C	16	110	16	19	-	-	4	ST-US62004A-T06P
	18A4 R019 A16-SAD07D-C	18	180	16	19	-	-	4	ST-US62004A-T06P
	18A4 R019 A18-SAD07D-C	18	110	18	19	-	-	4	ST-US62004A-T06P
	20A4 R020 A18-SAD07D-C	20	200	18	20	-	-	4	ST-US62004A-T06P
	20A4 R020 A20-SAD07D-C	20	125	20	20	-	-	4	ST-US62004A-T06P
	20A5 R020 A20-SAD07D-C	20	125	20	20	-	-	5	ST-US62004A-T06P
25A5 R024 A25-SAD07D-C	25	140	25	24	-	-	5	ST-US62004A-T06P	
25A6 R024 A25-SAD07D-C	25	140	25	24	-	-	6	ST-US62004A-T06P	
B	12A2 R020 M06-SAD07D-C	12	35	6,5	-	20	M6	2	ST-US62003A-T06P
	S-12A3 R020 M06-SAD07D-C	12	35	6,5	-	20	M6	3	ST-US62003A-T06P
	14A3 R020 M08-SAD07D-C	14	38	8,5	-	20	M8	3	ST-US62003A-T06P
	14A3 R023 M08-SAD07D-CF	14	41	8,5	-	23	M8	3	ST-US62003A-T06P
	16A4 R023 M08-SAD07D-C	16	41	8,5	-	23	M8	4	ST-US62004A-T06P
	S-16A4 R023 M08-SAD07D-C	16	41	8,5	-	23	M8	4	ST-US62004A-T06P
	20A5 R030 M10-SAD07D-C	20	49	10,5	-	30	M10	5	ST-US62004A-T06P
	25A6 R035 M12-SAD07D-C	25	57	12,5	-	35	M12	6	ST-US62004A-T06P
32A8 R043 M16-SAD07D-C	32	66	17	-	43	M16	8	ST-US62004A-T06P	

**Fräswendeschneidplatten ADMX** für Wendeschneidplattenfräser SAD07D  
**Milling indexable inserts ADMX** for indexable insert milling cutter SAD07D



Drehmoment: 0,6 Nm  
 Torque: 0,6 Nm

Best.-Nr. / Order no.	Beschichtung / coating	P	M	K	N	S	H
ADMX 070202SR-M	M8330						
	M8340						
	8215						
ADMX 070204SR-M	M9340						
	M6330						
	M8310						
	M8330						
	M8340						
	8215						
	8230						
ADMX 070208SR-M	M9340						
	M6330						
	M8310						
	M8330						
	M8340						
	8215						
ADMX 070220SR-M	M6330						
	M8310						
	M8330						
	M8340						

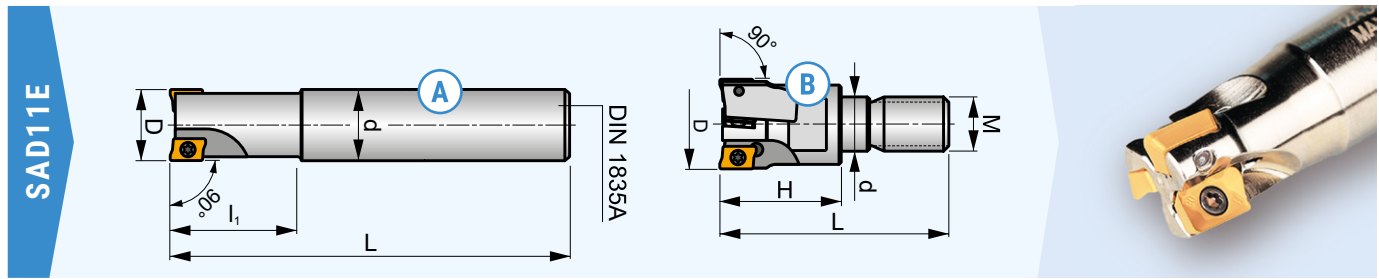


Drehmoment: 0,6 Nm  
 Torque: 0,6 Nm  
 RE theor. 0,8mm

Best.-Nr. / Order no.	Beschichtung / coating	P	M	K	N	S	H
ADEX 070206SR-HF	M6330	★★	★★★			★★	
ADEX 070206SR-HF	M8330	★★★	★★	★★	★	★★	★★
ADEX 070206SR-HF	M8340	★★★	★★★			★★	

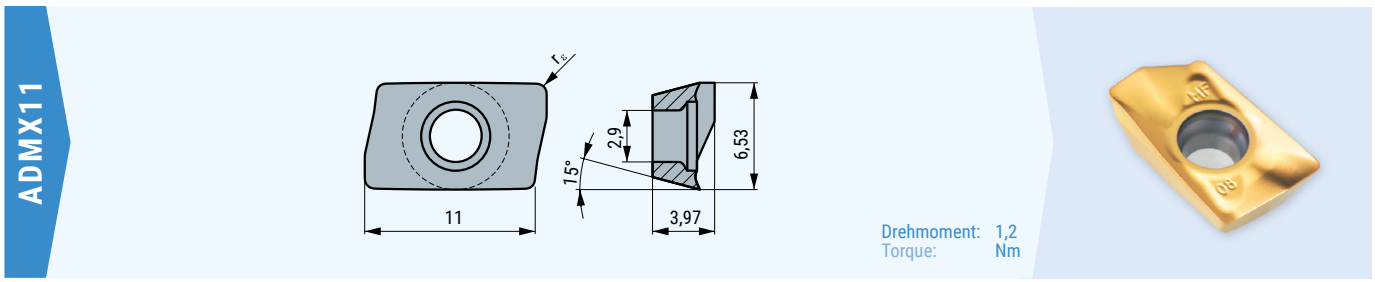
# Wendeschneidplattenfräser SAD11E

## Indexable insert milling cutter SAD11E



Form	Best.-Nr. / Order no.	D	L	d	d1	l1	l2	H	M	Z / teeth	Schraube / screw
A	16A2 R024 A14-SAD11E-C	16	160	14	-	24	-	-	-	2	ST-US62505-T07P
	16A2 R024 A16-SAD11E-C	16	135	16	-	24	-	-	-	2	ST-US62505-T07P
	16A2 R050 A16-SAD11E-C	16	135	16	-	50	-	-	-	2	ST-US62505-T07P
	18A2 R029 A20-SAD11E-C	18	150	20	-	29	-	-	-	2	ST-US62505-T07P
	20A2 R029 A20-SAD11E-C	20	150	20	-	29	-	-	-	2	ST-US62506-T07P
	20A2 R070 A20-SAD11E-C	20	150	20	-	70	-	-	-	2	ST-US62506-T07P
	20A3 R029 A18-SAD11E-C	20	200	18	-	29	-	-	-	3	ST-US62505-T07P
	20A3 R029 A20-SAD11E-C	20	150	20	-	29	-	-	-	3	ST-US62505-T07P
	22A3 R029 A20-SAD11E-C	22	200	20	-	29	-	-	-	3	ST-US62505-T07P
	25A3 R034 A25-SAD11E-C	25	170	25	-	34	-	-	-	3	ST-US62506-T07P
	25A3 R080 A25-SAD11E-C	25	170	25	-	80	-	-	-	3	ST-US62506-T07P
	25A4 R034 A25-SAD11E-C	25	170	25	-	34	-	-	-	4	ST-US62505-T07P
	25A4 R040 A25-SAD11E-C	25	250	25	-	40	-	-	-	4	ST-US62505-T07P
	30A3 R080 A32-SAD11E-C	30	200	32	-	80	-	-	-	3	ST-US62506-T07P
	32A3 R090 A32-SAD11E-C	32	195	32	-	90	-	-	-	3	ST-US62506-T07P
	32A5 R034 A32-SAD11E-C	32	195	32	-	34	-	-	-	5	ST-US62505-T07P
	35A5 R025 A32-SAD11E-C	35	200	32	-	25	-	-	-	5	ST-US62506-T07P
B	16A2 R024 M08-SAD11E-C	16	38	8,5	-	-	-	24	M8	2	ST-US62505-T07P
	20A2 R026 M10-SAD11E-C	20	45	11	-	-	-	26	M10	2	ST-US62506-T07P
	20A3 R026 M10-SAD11E-C	20	45	10,5	-	-	-	26	M10	3	ST-US62505-T07P
	25A3 R033 M12-SAD11E-C	25	55	12,5	-	-	-	33	M12	3	ST-US62506-T07P
	25A4 R033 M12-SAD11E-C	25	55	12,5	-	-	-	33	M12	4	ST-US62505-T07P
	32A4 R043 M16-SAD11E-C	32	66	17	-	-	-	43	M16	4	ST-US62506-T07P
	32A5 R043 M16-SAD11E-C	32	66	17	-	-	-	43	M16	5	ST-US62505-T07P
	40A4 R043 M16-SAD11E-C	40	66	17	-	-	-	43	M16	4	ST-US62506-T07P
	40A6 R043 M16-SAD11E-C	40	66	17	-	-	-	43	M16	6	ST-US62506-T07P

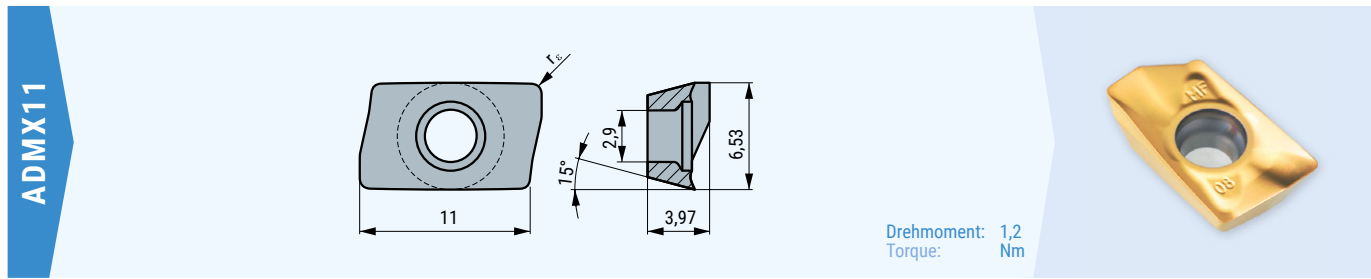
**Fräswendeschneidplatten ADMX11** für Wendeschneidplattenfräser SAD11E  
**Milling indexable inserts ADMX11** for indexable insert milling cutter SAD11E



Drehmoment: 1,2 Nm  
 Torque:

Best.-Nr. / Order no.	Beschichtung / coating	P	M	K	N	S	H
ADMX 11T304SR-F	M9340	★★	★★★			★★	
	M8310	★★★	★★	★★		★★	
	M8330	★★★	★★	★★	★	★	
	M8340	★★★	★★★	★★		★★	
	8215	★★★	★★	★★	★★★	★★	
	8230	★★★	★★★	★★	★	★★	
ADMX 11T308SR-F	M9340	★★	★★★			★★	
	M8330	★★★	★★	★★	★	★	
	M8340	★★★	★★★	★★		★★	
	8215	★★★	★★	★★	★★★	★★	
	8230	★★★	★★★	★★	★	★★	
ADMX 11T302SR-M	M8330	★★★	★★	★★★		★	
	M8340	★★★	★★★	★★		★★	
ADMX 11T304SR-M	M9325	★★★	★★			★★	
	M9340	★★	★★★			★★	
	M8310	★★★	★★	★★★		★★	
	M8330	★★★	★★	★★★		★	
	M8340	★★★	★★★	★★		★★	
	8215	★★★	★★	★★★		★★	
	8230	★★★	★★★	★★★		★★	
ADMX 11T308SR-M	M5315	★★		★★★			
	M9315	★★★		★★			
	M9325	★★★	★★			★★	
	M9340	★★	★★★			★★	
	M8310	★★★	★★	★★★		★★	
	M8330	★★★	★★	★★★		★	
	M8340	★★★	★★★	★★		★★	
	8215	★★★	★★	★★★		★★	
	8230	★★★	★★★	★★★		★★	

**Fräswendeschneidplatten ADMX11** für Wendeschneidplattenfräser SAD11E  
**Milling indexable inserts ADMX11** for indexable insert milling cutter SAD11E

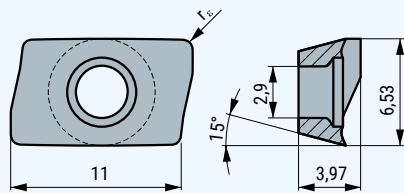


Best.-Nr. / Order no.	Beschichtung / coating	P	M	K	N	S	H
ADMX 11T310SR-M	M8330						
	M8340						
ADMX 11T312SR-M	M8330						
	M8340						
	8215						
ADMX 11T316SR-M	M6330						
	M8310						
	M8330						
	M8340						
	8215						
ADMX 11T320SR-M	M6330						
	M8330						
	M8340						
ADMX 11T325SR-M	M6330						
	M8330						
	M8340						
ADMX 11T330SR-M	M6330						
	M8330						
	M8340						
ADMX 11T308PR-R	M5315						
	M9315						
	M9325						
	M8310						
	M8330						
	M8340						
	8215						



**Fräswendeschneidplatten ADMX11** für Wendeschneidplattenfräser SAD11E  
**Milling indexable inserts ADMX11** for indexable insert milling cutter SAD11E

ADMX11



Drehmoment: 1,2 Nm  
 Torque:

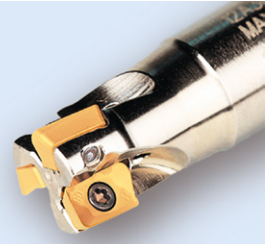
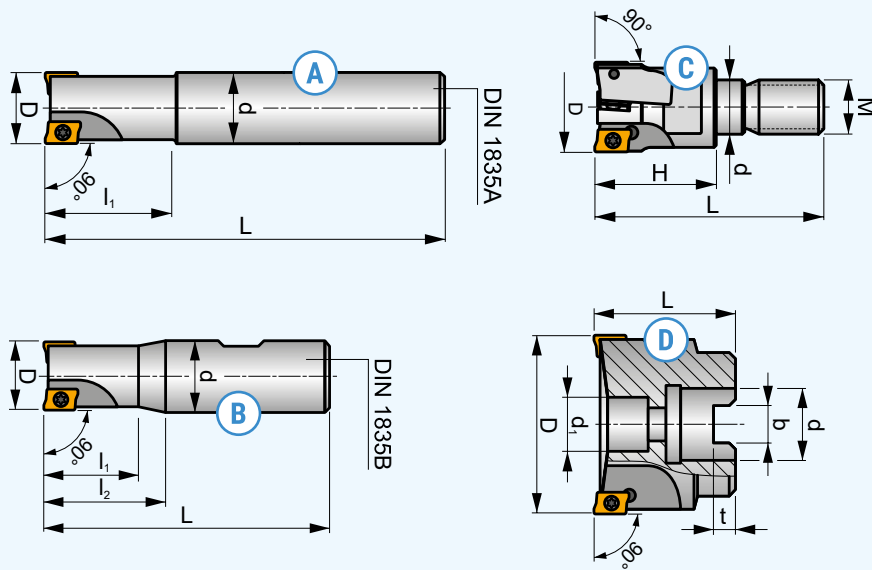


Best.-Nr. / Order no.	Beschichtung / coating	P	M	K	N	S	H
ADMX 11T316PR-R	M9325	***	**			**	
	M8330	***	**	***		*	**
	M8340	***	**	**		**	
	8215	***	**	***		**	**
ADMX 11T304SR-MF	M9340	**	***			***	
	M6330	**	***			***	
	M8340	***	***			***	
ADMX 11T308SR-MF	M9340	**	***			***	
	M6330	**	***			***	
	M8340	***	***			***	

# Wendeschneidplattenfräser SAD16E

## Indexable insert milling cutter SAD16E

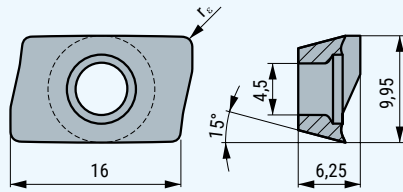
SAD16E



Form	Best.-Nr. / Order no.	D	L	d	d1	l1	l2	H	M	Z / teeth	Schraube / screw
A	25A2 R033 A25-SAD16E-C	25	165	25	-	33	-	-	-	2	ST-US4008T15P
	25A2 R038 A25-SAD16E-C	25	200	25	-	38	-	-	-	2	ST-US4008T15P
	32A3 R033 A32-SAD16E-C	32	195	32	-	33	-	-	-	3	ST-US4008T15P
	32A3 R048 A32-SAD16E-C	32	250	32	-	48	-	-	-	3	ST-US4008T15P
B	25A2 R042 B25-SAD16E-C	25	98	25	-	42	-	-	-	2	ST-US4008T15P
	32A3 R040 B32-SAD16E-C	32	100	32	-	40	-	-	-	3	ST-US4008T15P
	40A3 R050 B32-SAD16E-C	40	110	32	-	50	-	-	-	3	ST-US4008T15P
	40A4 R050 B32-SAD16E-C	40	110	32	-	50	-	-	-	4	ST-US4008T15P
C	32A3 R043 M16-SAD16E-C	32	66	17	-	-	-	43	M16	3	ST-US4008T15P
	40A4 R043 M16-SAD16E-C	40	66	17	-	-	-	43	M16	4	ST-US4008T15P
D	40A04 R-S90 AD16E-C	40	40	16	14	-	-	-	-	4	ST-US4008T15P
	50A03 R-S90 AD16E-C	50	40	22	18	-	-	-	-	3	ST-US4011T15P
	50A05 R-S90 AD16E-C	50	40	22	18	-	-	-	-	5	ST-US4011T15P
	63A04 R-S90 AD16E-C	63	40	22	18	-	-	-	-	4	ST-US4011T15P
	63A06 R-S90 AD16E-C	63	40	22	18	-	-	-	-	6	ST-US4011T15P
	80A05 R-S90 AD16E-C	80	50	27	38	-	-	-	-	5	ST-US4011T15P
	80A07 R-S90 AD16E-C	80	50	27	38	-	-	-	-	7	ST-US4011T15P

**Fräswendeschneidplatten ADMX16** für Wendeschneidplattenfräser SAD16E  
**Milling indexable inserts ADMX16** for indexable insert milling cutter SAD16E

ADMX16



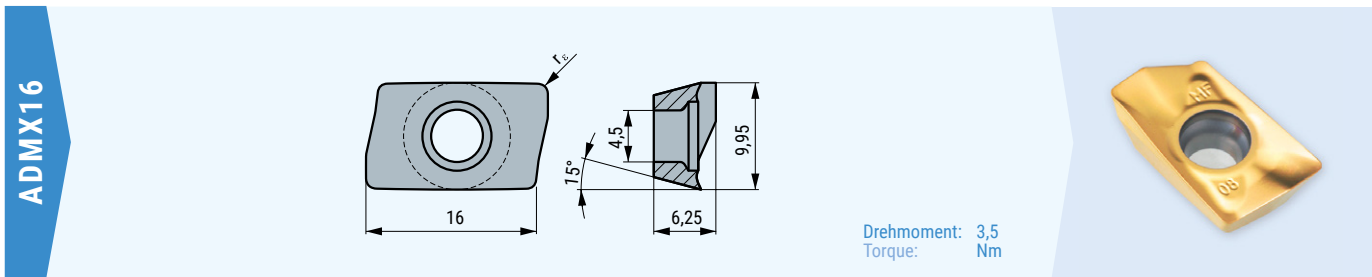
Drehmoment: 3,5 Nm  
Torque:



Best.-Nr. / Order no.	Beschichtung / coating	P	M	K	N	S	H
ADMX 160608SR-F	M9340	★★	★★★				
	M8310	★★★	★★	★★		★★	
	M8330	★★★	★★	★★	★	★	
	M8340	★★★	★★★	★★		★★	
	8215	★★	★★	★★	★★★	★	
	8230	★★★	★★★	★★		★★	
ADMX 160604SR-M	M8330	★★★	★★	★★★		★	
	M8340	★★★	★★★	★★		★★	
	8215	★★★	★★	★★★		★★	
	8230	★★★	★★★	★★★		★★	
ADMX 160608SR-M	M5315			★★★			
	M9315	★★★		★★			
	M9325	★★★	★★			★★	
	M9340	★★	★★★				
	M8310	★★★	★★	★★★		★★	
	M8330	★★★	★★	★★★		★	
	M8340	★★★	★★★	★★		★★	
	8215	★★★	★★	★★★		★★	
	8230	★★★	★★★	★★★		★★	
ADMX 160616SR-M	M9325	★★★	★★			★★	
	M8310	★★★	★★	★★★		★★	
	M8330	★★★	★★	★★★		★	
	M8340	★★★	★★★	★★		★★	
	8215	★★★	★★	★★★		★★	
	8230	★★★	★★★	★★★		★★	
ADMX 160620SR-M	M6330	★★	★★★			★★	
	M8330	★★★	★★	★★★		★	
	M8340	★★★	★★★	★★		★★	

# Fräswendeschneidplatten ADMX16 für Wendeschneidplattenfräser SAD16E

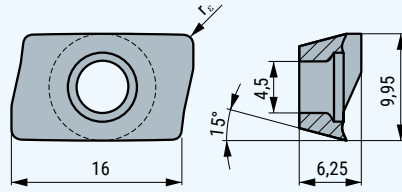
## Milling indexable inserts ADMX16 for indexable insert milling cutter SAD16E



Best.-Nr. / Order no.	Beschichtung / coating	P	M	K	N	S	H
ADMX 160630SR-M	M8330	***	**	***		*	
	M8340	***	***	**		**	
ADMX 160632SR-M	M6330	**	***			**	
	M9325	***	**			**	
	M8330	***	**	***		*	
ADMX 160640SR-M	M8340	***	***	**		**	
	8230	***	***	***		**	
	M6330	**	***			**	
ADMX 160650SR-M	M8330	***	**	***		*	
	M8340	***	***	**		**	
	M8330	***	**	***		*	
ADMX 160608PR-R	M8340	***	***	**		**	
	M5315			***			
	M9315	***		**			**
	M9325	***	**			**	
	M8310	***	**	***		**	**
	M8330	***	**	***		*	**
	M8340	***	**	**		**	
	8215	**	**	***		*	**
8230	***	**	***		**	*	
ADMX 160616PR-R	M5315			***			
	M9315	***		**			**
	M9325	***	**			**	
	M8330	***	**	***		*	**
	M8340	***	**	**		**	
ADMX 160608SR-MF	M9340	**	***			***	
	M6330	**	***			***	
	M8340	***	***			***	

**Fräswendeschneidplatten ADMX16** für Wendeschneidplattenfräser SAD16E  
**Milling indexable inserts ADMX16** for indexable insert milling cutter SAD16E

ADMX16

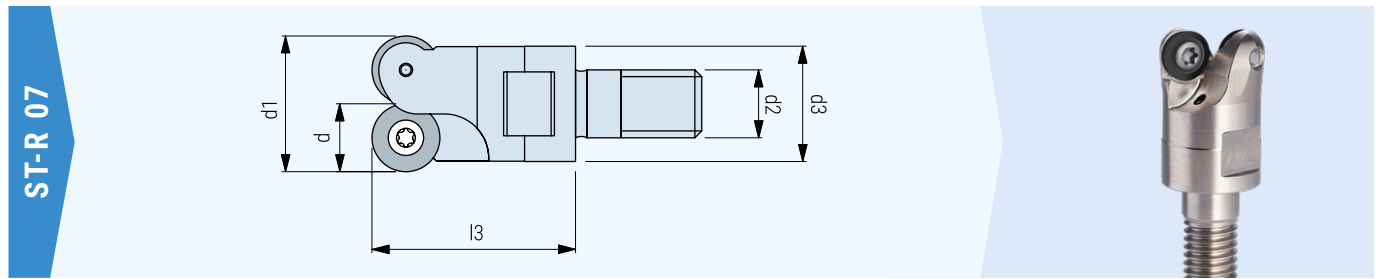


Drehmoment: 3,5  
Torque: Nm



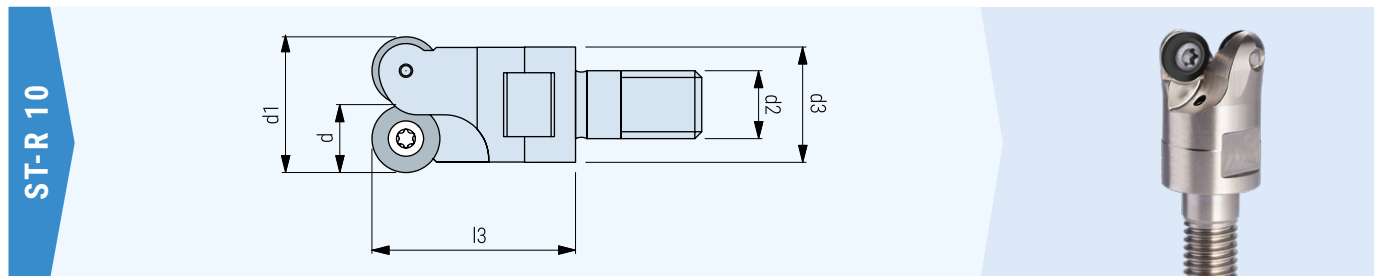
Best.-Nr. / Order no.	Beschichtung / coating	P	M	K	N	S	H
ADMX 160604SR-MM	M9340						
	M6330						
	M8340						
ADMX 160608SR-MM	M9340						
	M6330						
	M8340						
	M8345						
ADMX 160616SR-MM	M9340						
	M6330						
	M8340						
	M8345						

## Wendepplattenfräser für WFM-Werkzeuge Insert milling cutters for WFM tools



Best.-Nr. / Order no.	d1	Z	d	l3	d2	d3	Radius
ST-R07-	16	3	7,0	28,5	M8	13,8	3,5
ST-R07-	20	4	7,0	28,5	M10	18,0	3,5
ST-R07-	25	5	7,0	28,5	M12	21,0	3,5

## Wendepplattenfräser für WFM-Werkzeuge Insert milling cutters for WFM tools



Best.-Nr. / Order no.	d1	Z	d	l3	d2	d3	Radius
ST-R10-	20	2	10,0	29	M10	18,0	5,0
ST-R10-	25	3	10,0	33	M12	21,0	5,0

## Ersatzteile Spare parts

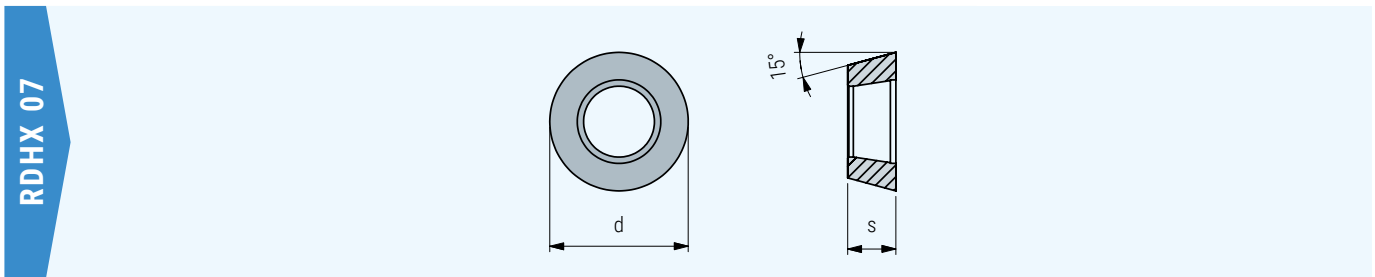
Best.-Nr. / Order no.	Best.-Nr. / Order no.
Schraube / Screw ST25050	Torxschlüssel / Torx key T 7
Schraube / Screw ST35075	Torxschlüssel / Torx key T 15

<sup>2</sup>Verpackungseinheit = 1 Stück

<sup>2</sup>Packaging unit = 1 piece

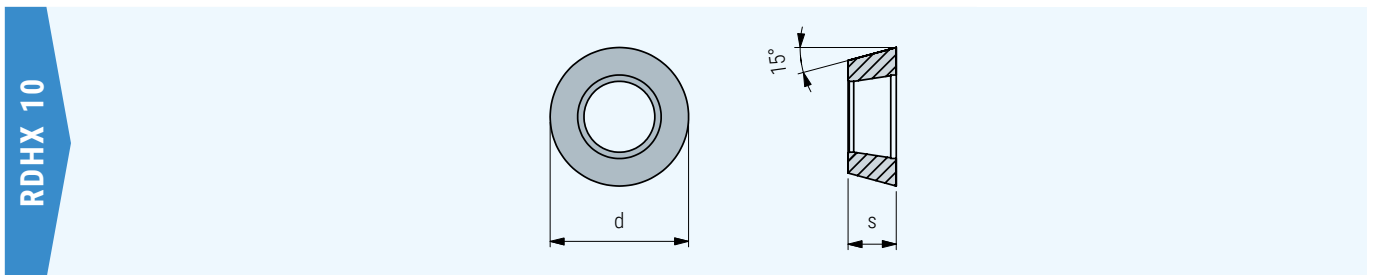
Weitere Sonderabmessungen des Trägers auf Anfrage  
Further special dimensions of the tool holder on request

## Rundwendeplatten für Fräser ST-R 07 Circular inserts for milling cutters ST-R 07



Best.-Nr. / Order no.	d	Radius
RDHX0702-MO unbeschichtet / uncoated	7,0	3,5
RDHX0702-MOST 11	7,0	3,5
RDHX0702-MOHSC62	7,0	3,5
RDHX0702-MOSD-Coat	7,0	3,5

## Rundwendeplatten für Fräser ST-R 10 Circular inserts for milling cutters ST-R 10



Best.-Nr. / Order no.	d	Radius
RDHX1003-MOTHSC62	10,0	5,0
RDHX1003-MOTP40	10,0	5,0

### Ersatzteile Spare parts

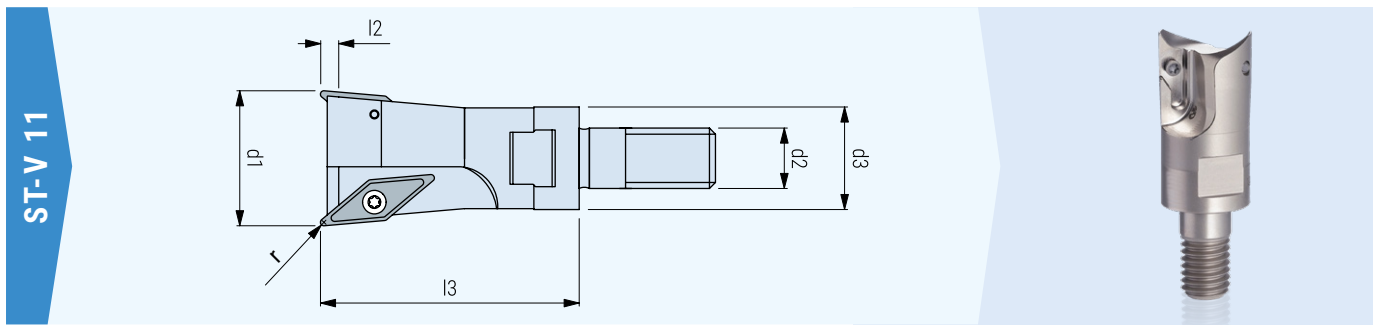
Best.-Nr. / Order no.	Best.-Nr. / Order no.
Schraube / Screw ST25050	Torxschlüssel / Torx key T 7
Schraube / Screw ST35075	Torxschlüssel / Torx key T 15

<sup>1</sup>Verpackungseinheit = 10 Stück

<sup>1</sup>Packaging unit = 10 pieces

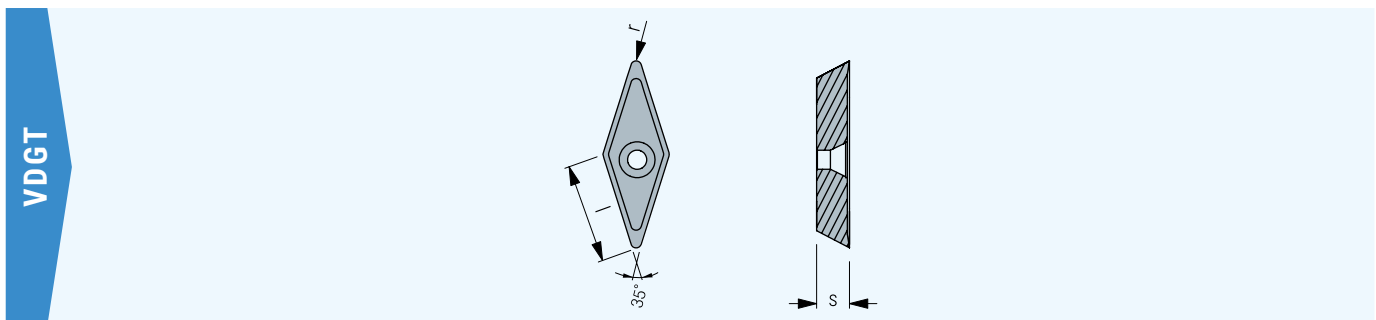
Weitere Abmessungen und Ausführungen auf Anfrage  
Further dimensions and versions on request

## Wendplattenfräser für WFM Werkzeuge Insert milling cutters for WFM tools.



Best.-Nr. / Order no.	d1	Z	l2	l3	d2	d3	r
ST-V11-	15	2	4	35,0	M8	13,8	1,0
ST-V11-	16	2	4	35,5	M8	13,8	1,0
ST-V11-	20	2	4	35,5	M10	18,0	1,0
ST-V11-	25	3	4	40,0	M12	21,0	1,0

## Wendplattenfräser für Fräser ST-V 11 Eckenradius 1,0 - S 2,87 für D 15-25 mm Insert for milling cutter ST-V 11 Corner radius 1,0 - S 2,87 für D 15-25 mm



Best.-Nr. / Order no.	r	l	s
VDGT11T210FN unbeschichtet	1,0	8,8	2,87
VDGT11T210FNST 11	1,0	8,8	2,87
VDGT11T210FNSD-Coat	1,0	8,8	2,87

## Ersatzteile / Spare parts

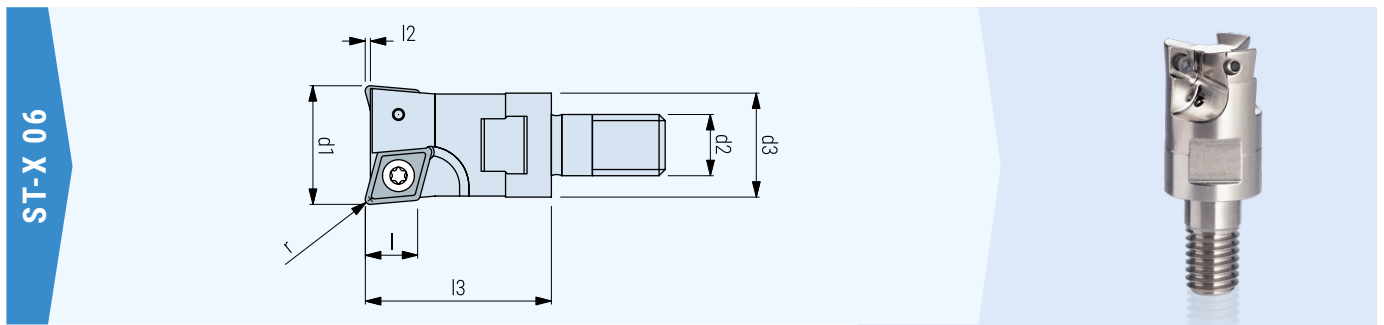
Best.-Nr. / Order no.
Schraube / Screw ST25050
Torxschlüssel / Torx key T7

<sup>1</sup> Verpackungseinheit = 10 Stück / <sup>2</sup> Verpackungseinheit = 1 Stück  
<sup>1</sup> Packaging unit = 10 pieces / <sup>2</sup> Packaging unit = 1 piece

Weitere Sonderabmessungen des Trägers auf Anfrage  
Further special dimensions of the holder on request

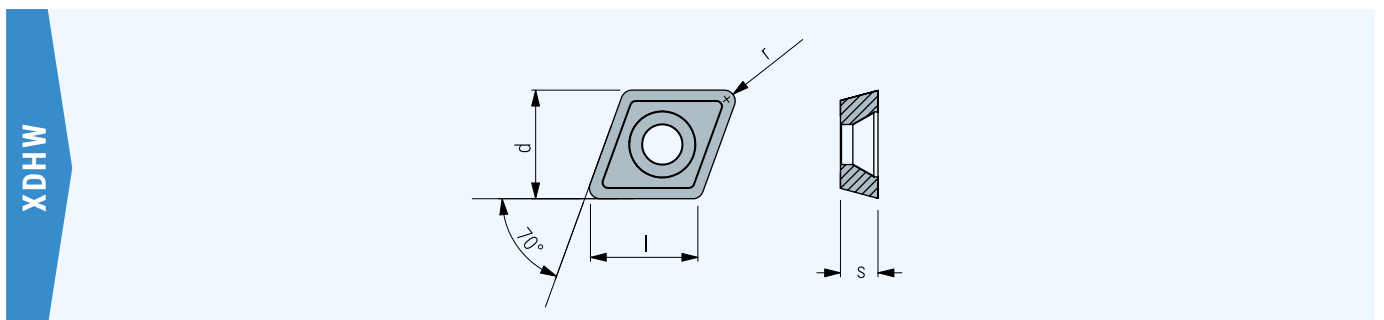


## Wendeplattenfräser für WFM Werkzeuge Insert milling cutters for WFM tools



Best.-Nr. / Order no.	d1	Z	l2	l3	d2	d3	r
ST-X06-	16	2	1,3	28,5	M8	13,8	1,0
ST-X06-	20	3	1,3	28,5	M10	18,0	1,0
ST-X06-	25	4	1,3	32,5	M12	21,0	1,0

## Wendeplatten für Fräser ST-X 06 Eckenradius 1,0 - S 2,38 für D 16-25 mm Indexable inserts for milling cutter ST-X 06 Corner radius 1,0 - S 2,38 for D 16-25 mm



Best.-Nr. / Order no.	r	l	d	s
XDHW070210SNHSC62	1,0	6,9	6,5	2,38
XDHW070210SN poliert	1,0	6,9	6,5	2,38
XDHW070210SNST 11	1,0	6,9	6,5	2,38
XDHW 070210 SN SD-Coat	1,0	6,9	6,5	2,38

## Ersatzteile / Spare parts

<b>Best.-Nr. / Order no.</b>
Schraube / Screw ST25050
Torxschlüssel / Torx key T7

<sup>1</sup>Verpackungseinheit = 10 Stück / <sup>2</sup>Verpackungseinheit = 1 Stück  
<sup>1</sup>Packaging unit = 10 pieces / <sup>2</sup>Packaging unit = 1 piece

Weitere Sonderabmessungen des Trägers auf Anfrage  
Further special dimensions of the holder on request

# Codesystem (ISO) für Drehwendschneidplatten

## Code system (ISO) for turning inserts

# C

1

Plattenform

# N

2

Freiwinkel

# M

3

Toleranz

# G

4

Plattentyp

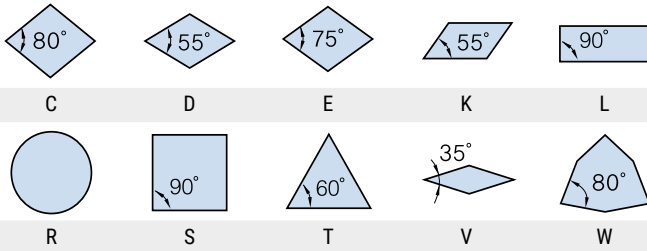
# 12

5

Schneidenlänge, Ø Innenkreis

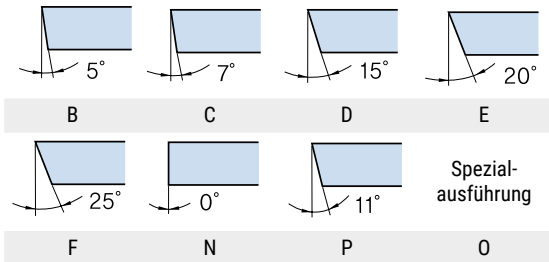
### Wendeschneidplattenform

**C** N M G 12 04 08 - VM



### Freiwinkel

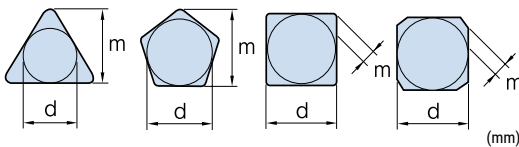
C **N** M G 12 04 08 - VM



### Toleranzen

C N **M** G 12 04 08 - VM

d: Ø Innenkreis  
t: Dicke  
m: siehe Abb.



Klasse	d	m	t
A	± 0,025	± 0,005	± 0,025
C	± 0,025	± 0,013	± 0,025
H	± 0,013	± 0,013	± 0,025
E	± 0,025	± 0,025	± 0,025
G	± 0,025	± 0,025	± 0,13
J*	± 0,05±0,15	± 0,005	± 0,025
K*	± 0,05±0,15	± 0,013	± 0,025
L*	± 0,05±0,15	± 0,025	± 0,025
M*	± 0,05±0,15	± 0,08±0,20	± 0,13
N*	± 0,05±0,15	± 0,08±0,18	± 0,025
U*	± 0,08±0,25	± 0,18±0,38	± 0,13

\*Seiten basieren auf ungeschliffener Wendeschneidplatte

### Toleranz für C, E, H, M, O, P, R, S, T, W Plattenform (Ausnahmefall)

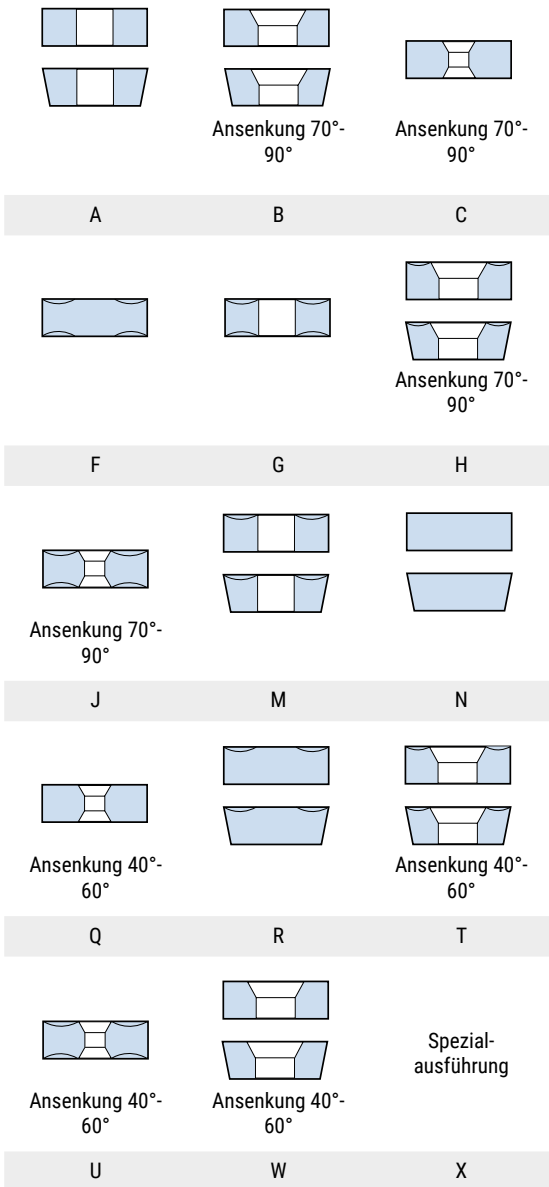
d	Toleranz für d		Toleranz für m	
	J, K, L, M, N	U	M, N	U
6,35	+ 0,05	+ 0,08	+ 0,08	+ 0,13
9,525	+ 0,05	+ 0,08	+ 0,08	+ 0,13
12,7	+ 0,08	+ 0,13	+ 0,13	+ 0,20
15,875	+ 0,10	+ 0,18	+ 0,15	+ 0,27
19,05	+ 0,10	+ 0,18	+ 0,15	+ 0,27
25,4	+ 0,13	+ 0,25	+ 0,18	+ 0,38

### Toleranz für D Plattenform (Ausnahmefall)

d	Toleranz für d	Toleranz für m
6,35	+ 0,05	+ 0,08
9,525	+ 0,05	+ 0,08
12,7	+ 0,08	+ 0,13
15,875	+ 0,10	+ 0,15
19,05	+ 0,10	+ 0,15

### Plattentyp

C N M **G** 12 04 08 - VM



# 04

6

Schneidkantenhöhe

# 08

7

Eckenradius

# MX

8

Spanbrecher zum Drehen

### Schneidenlänge, Durchmesser Innenkreis

5

C N M G 12 04 08 - VM

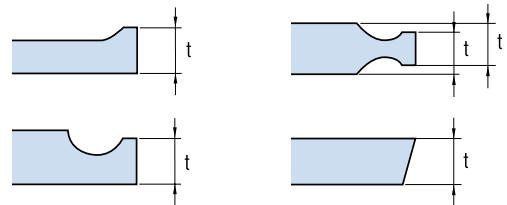
Symbol							IC
C	d	S	T	R	V	W	
Metrisch							d (mm)
03	04	03	06	03		02	3,97
04	05	04	08	04	08	03	4,76
05	06	05	09	05	09	03	5,56
				06			6,00
06	07	06	11	06	11	04	6,35
08	09	07	13	07	13	05	7,97
				08			8,0
09	11	09	16	09	16	06	9,525
				10			10,00
11	13	11	19	11	19	07	11,11
				12			12,00
12	15	12	22	12	22	08	12,70
14	17	14	24	14	24	09	14,29
16	19	15	27	15	27	10	15,875
				16			16,00
17	21	17	30	17	30	11	17,46
19	23	19	33	19	33	13	19,05
				20			20,00
22	27	22	38	22	38	15	22,225
				25			25,00
25	31	25	44	25	44	17	25,40
32	38	31	54	31	54	21	31,75
				32			32,00

( ) Symbol für kleine Wendeschneidplatten

### Höhe der Schneidkante

6

C N M G 12 04 08 - VM



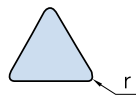
Symbol	Höhe der Schneidkante (t)
Metrisch	mm
01	1,59
T0	1,79
T1	1,98
02	2,38
T2	2,78
03	3,18
T3	3,97
04	4,76
05	5,56
06	6,35
07	7,94
09	9,52
11	11,11
12	12,70

( ) Symbol für kleine Wendeschneidplatten

### Eckenradius (Eck-R)

7

C N M G 12 04 08 - VM



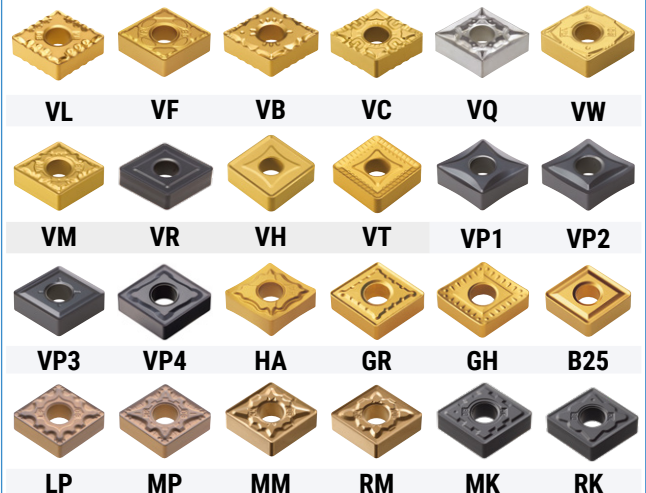
Symbol	Eckenradius
M0	0
00	0-0,2
01	0,1
02	0,2
04	0,4
08	0,8
12	1,2
16	1,6
20	2,0
24	2,4
28	2,8
32	3,2

### Spanbrecher

8

C N M G 12 04 08 - VM

#### Negative Spanbrecher



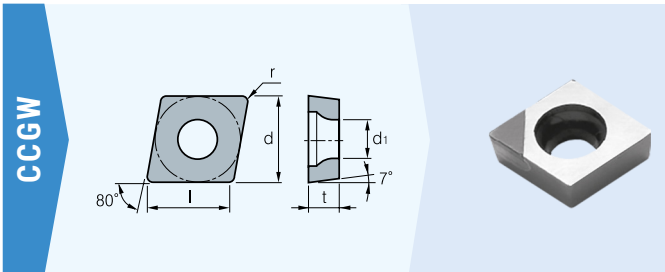
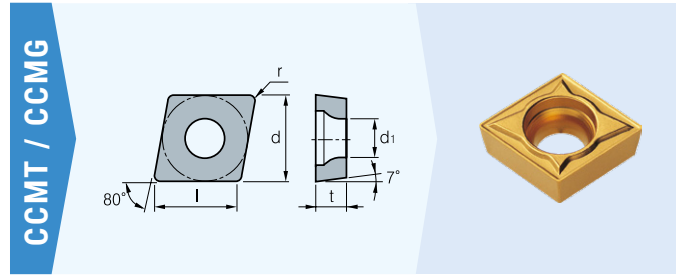
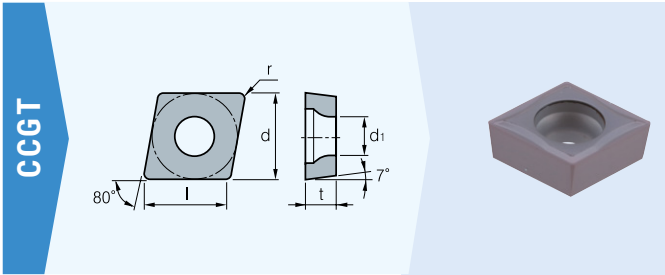
#### Positive Spanbrecher



# Rhombische Wendepplatten zum Drehen

## Rhombic indexable inserts for turning operations

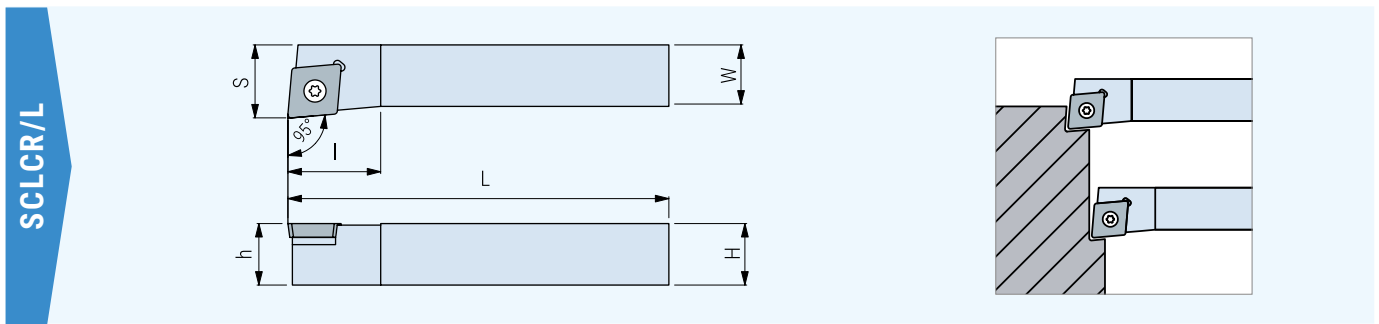
CC



Best.-Nr. / Order no.	r	l	d	t	d1	blank	ST2/ST6 coating	SD coating	CBN	ST11 coating
CCGT09T302	0,2	9	9,525	3,97	4,4	AL	45-55 HRC	GRAPHIT	55-60 HRC	AL
CCGT09T304	0,4	9	9,525	3,97	4,4	PLASTIC	INOX	CFK GFK	60-65 HRC	PLASTIC
CCMT09T302	0,2	9	9,525	3,97	4,4	CU CuZn Gold PL	55-60 HRC			<700 N/mm <sup>2</sup>
CCMT09T304	0,4	9	9,525	3,97	4,4					700- 1100 N/mm <sup>2</sup>
CCMT09T308	0,8	9	9,525	3,97	4,4					INOX
CNMG120404	0,4	12	12,7	4,76	5,16	<700 N/mm <sup>2</sup>	Ti			
CNMG120408	0,8	12	12,7	4,76	5,16					
CNMG160608	0,8	16	15,875	6,36	6,35	700- 1100 N/mm <sup>2</sup>				
CNMG160612	1,2	16	15,875	6,36	6,35					
CCGW09T304	0,4	9	9,525	3,97	4,4	30-45 HRC				
CCGW09T308	0,8	9	9,525	3,97	4,4					

## Drehwendeplattenhalter für WFM Werkzeuge Außenhalter für Wendeplatte CC 06 und CC 09

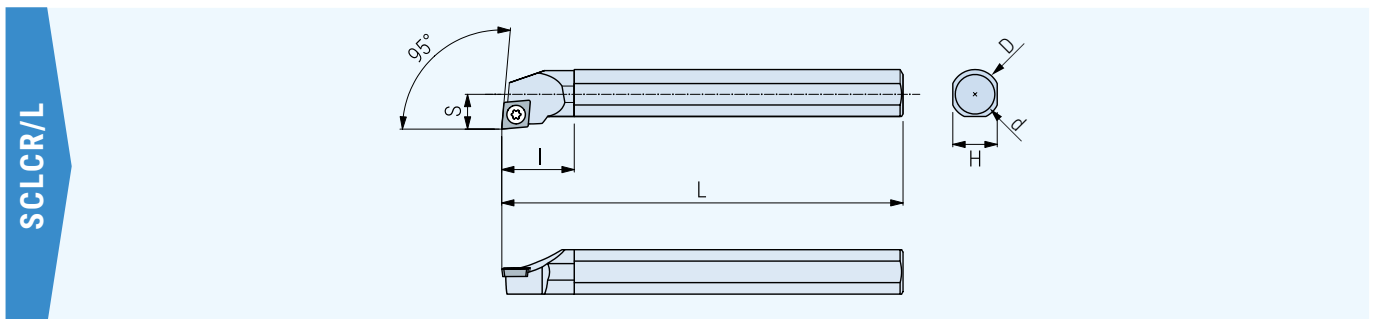
### Turning insert holder for WFM tools External holder for insert CC 06 und CC 09



Best.-Nr. / Order no.	H	W	L	S	h	I
SCLCR/L0808-D06	8	8	60	10	8	10
SCLCR/L1010-E06	10	10	70	16	10	10
Ersatzteile / Spare parts	Schraube / Screw ST25065					
SCLCR/L1212-F09	12	12	80	20	12	16
SCLCR/L1616-H09	16	16	100	20	16	16
Ersatzteile / Spare parts	Schraube / Screw ST35080					

## Bohrstangen für WFM Werkzeuge

### Boring bars for WFM tools



Best.-Nr. / Order no.	ø D	ø d	H	L	S	I
S08K-SCLCR/L-06	10	8	7	125	5	14
S10K-SCLCR/L-06	12	10	9	125	6	14
S12M-SCLCR/L-09	16	12	11	150	9	25
S16R-SCLCR/L-09	20	16	15	200	11	32
Ersatzteile / Spare parts	Schraube / Screw ST35080					

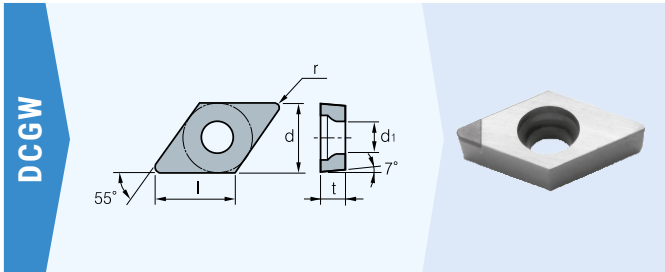
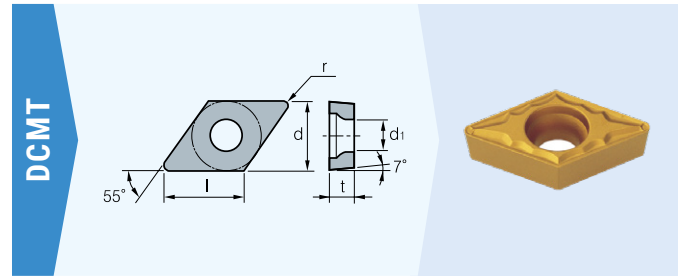
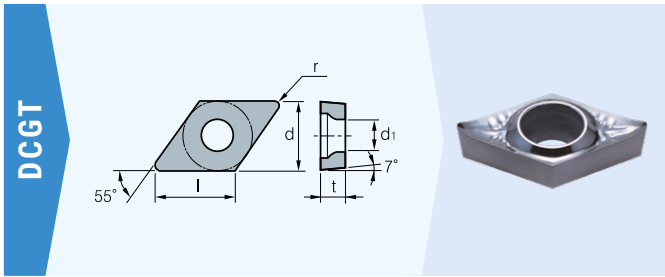
Bohrstangen auch in Vollhartmetall lieferbar / Boring bars also available in solid carbide  
 Weitere Abmessungen und Ausführungen auf Anfrage / Further dimensions and versions on request

<sup>2</sup>Verpackungseinheit = 1 Stück / <sup>2</sup>Packaging unit = 1 piece

# Rhombische Wendepplatten zum Drehen

## Rhombic indexable inserts for turning operations

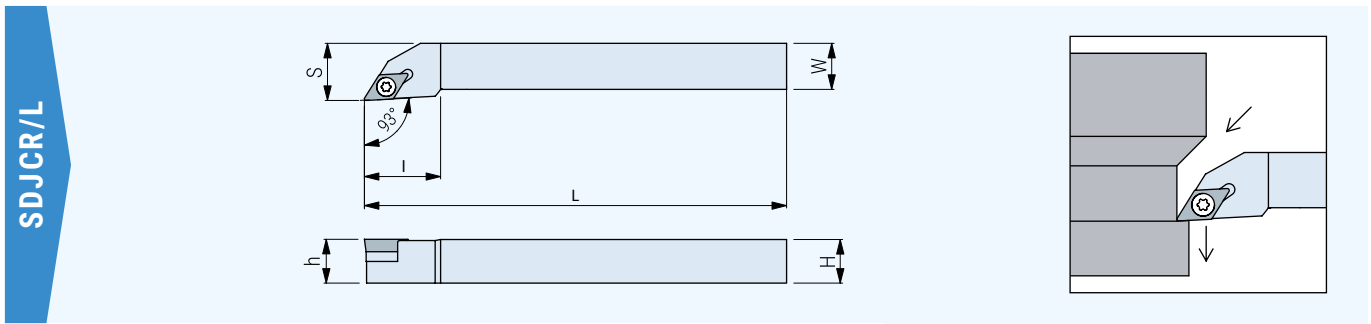
DC



Best.-Nr. / Order no.	r	l	d	t	d1	blank	ST2/ST6 coating	SD coating	CBN	ST11 coating
DCGT070202	0,2	7	6,35	2,38	2,8					
DCGT070204	0,4	7	6,35	2,38	2,8	AL	45-55 HRC	GRAPHIT	55-60 HRC	AL
DCGT070208	0,8	7	6,35	2,38	2,8	PLASTIC	INOX	CFK GFK	60-65 HRC	PLASTIC
DCGT11T302	0,2	11	9,525	3,97	4,4					
DCGT11T304	0,4	11	9,525	3,97	4,4	CU CuZn Gold PL	55-60 HRC			<700 N/mm <sup>2</sup>
DCGT11T308	0,8	11	9,525	3,97	4,4					
DCMT11T302	0,2	11	9,525	3,97	4,4	<700 N/mm <sup>2</sup>	TI			700- 1100 N/mm <sup>2</sup>
DCMT11T304	0,4	11	9,525	3,97	4,4	700- 1100 N/mm <sup>2</sup>				INOX
DCMT11T308	0,8	11	9,525	3,97	4,4					
DCGW11T302	0,2	11	9,525	3,97	4,4					
DCGW11T304	0,4	11	9,525	3,97	4,4	30-45 HRC				

## Drehwendeplattenhalter für WFM-Werkzeuge Außenhalter für Wendeplatte DC 07 und DC 11

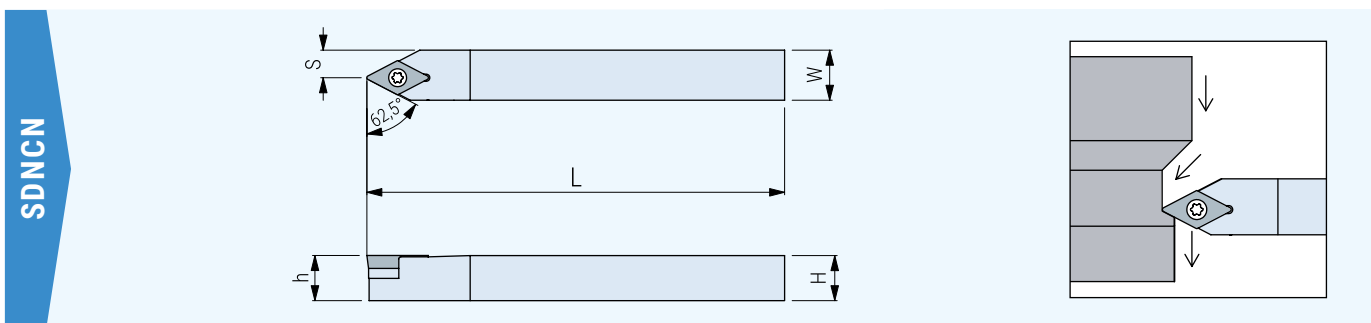
### Turning insert holder for WFM tools External holder for insert DC 07 und DC 11



Best.-Nr. / Order no.	H	W	L	S	h	I
SDJCR/L1010-E07	10	10	70	12	10	15
SDJCR/L1212-F07	12	12	80	16	12	15
SDJCR/L1212-F11	12	12	80	16	12	15
SDJCR/L1616-H11	16	16	100	20	16	24
<b>Ersatzteile / Spare parts</b>	Schraube / Screw ST25065					

## Drehwendeplattenhalter für WFM-Werkzeuge Außenhalter für Wendeplatte DC 07 und DC 11

### Turning insert holder for WFM tools External holder for insert DC 07 und DC 11



Best.-Nr. / Order no.	H	W	L	S	h
SDNCN1010-E07	10	10	70	5	10
SDNCN1212-F07	12	12	80	6	12
SDNCN1212-F11	12	12	80	6	12
SDNCN1616-H11	16	16	100	8	16
<b>Ersatzteile / Spare parts</b>	Schraube / Screw ST35120				

<sup>2</sup>Verpackungseinheit = 1 Stück

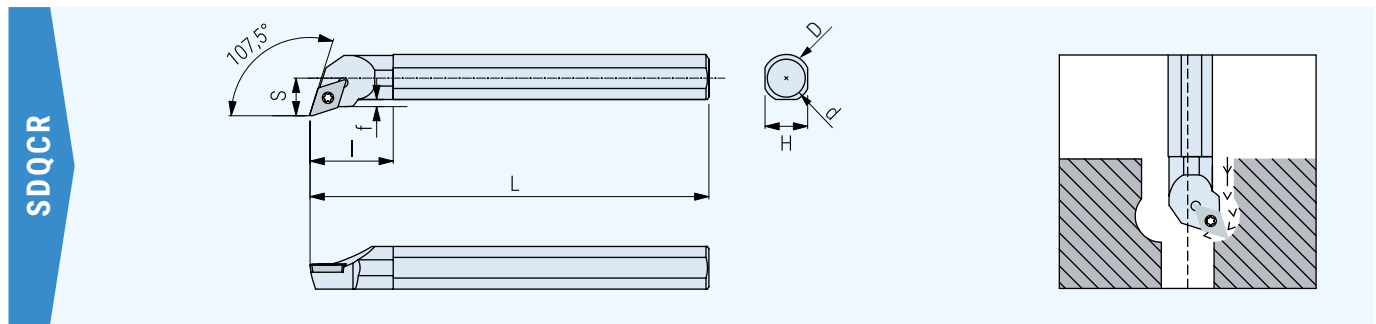
<sup>2</sup>Packaging unit = 1 piece

Weitere Abmessungen und Ausführungen auf Anfrage

Further dimensions and versions on request

## Bohrstangen für WFM-Werkzeuge Bohrstangen für Innenbearbeitung DC 07 + DC 11

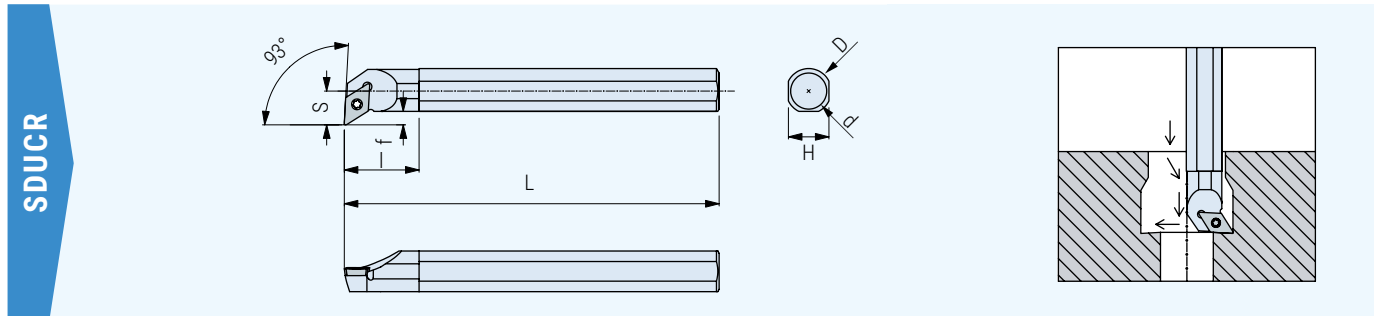
### Boring bars for WFM tools Boring bars for internal operation DC 07 + DC 11



Best.-Nr. / Order no.	$\varnothing D$	$\varnothing d$	H	L	S	l	f
<b>S10M-SDQCR/L-07</b>	13	10	9	150	7	20	2,5
<b>S12M-SDQCR/L-07</b>	16	12	11	150	9	22	3,5
<b>S16R-SDQCR/L-11</b>	20	16	15	200	11	27	4
<b>Ersatzteile / Spare parts</b>	D= 10 mm - Schraube / Screw ST25055						
	D= 12 mm - Schraube / Screw ST25065						

## Bohrstangen für WFM-Werkzeuge Bohrstangen für Innenbearbeitung DC 07 und DC 11

### Boring bars for WFM tools Boring bars for internal operation DC 07 und DC 11



Best.-Nr. / Order no.	$\varnothing D$	$\varnothing d$	H	L	S	l	f
<b>S10M-SDUCR/L-07</b>	13	10	9	150	7	20	2,5
<b>S12M-SDUCR/L-07</b>	16	12	11	150	9	22	3,5
<b>S16R-SDUCR/L-11</b>	20	16	15	200	11	27	4
<b>Ersatzteile / Spare parts</b>	D=10 mm - Schraube / Screw ST25055						
	D=12 mm - Schraube / Screw ST25065						

Bohrstangen auch in Vollhartmetall lieferbar. / Boring bars also available in solid carbide.

Weitere Abmessungen und Ausführungen auf Anfrage / Weitere Abmessungen und Ausführungen auf Anfrage

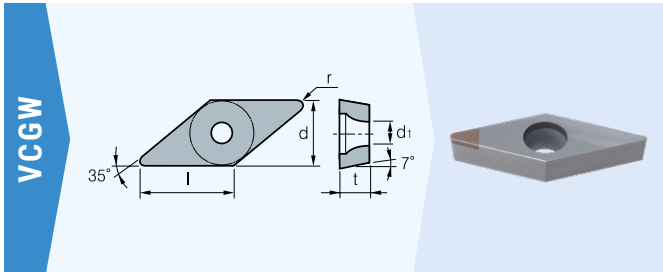
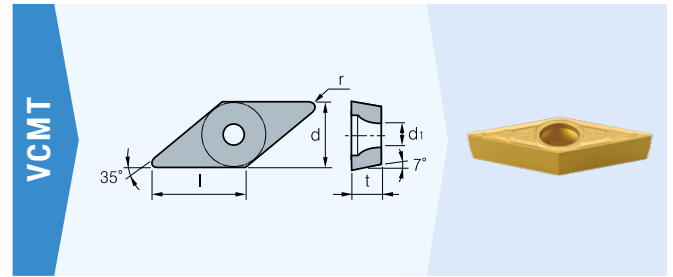
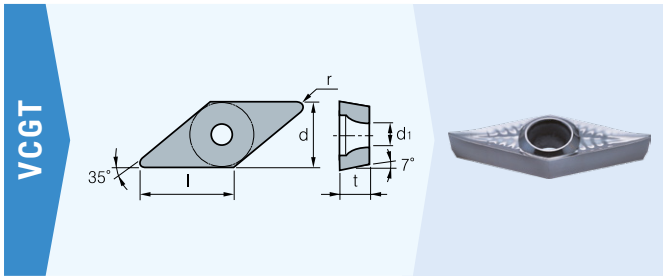
<sup>2</sup>Verpackungseinheit = 1 Stück / <sup>2</sup>Verpackungseinheit = 1 Stück



# Rhombische Wendepplatten zum Drehen

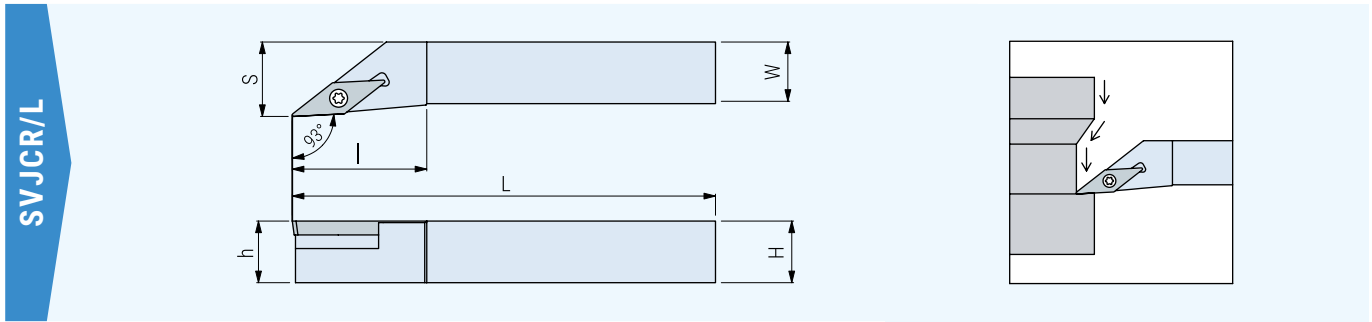
## Rhombic indexable inserts for turning operations

# VC



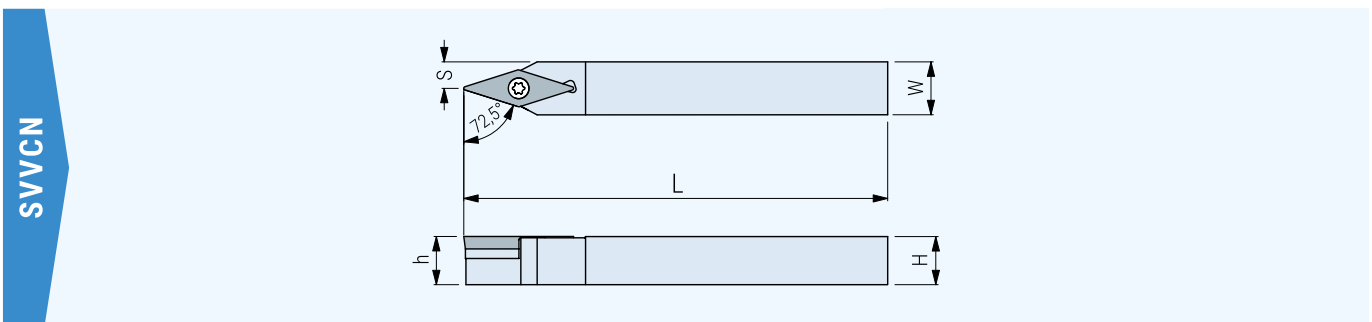
Best.-Nr. / Order no.	r	l	d	t	d1	blank	ST2/ST6 coating	SD coating	CBN	ST11 coating
VCGT110301	0,1	11	6,35	3,18	2,8	AL	45-55 HRC	GRAPHIT	55-60 HRC	AL
VCGT110302	0,2	11	6,35	3,18	2,8	PLASTIC	INOX	CFK GFK	60-65 HRC	PLASTIC
VCGT110304	0,4	11	6,35	3,18	2,8					
VCGT160402	0,2	16	9,525	4,76	4,4	CU CuZn Gold PL	55-60 HRC			<700 N/mm <sup>2</sup>
VCGT160404	0,4	16	9,525	4,76	4,4	<700 N/mm <sup>2</sup>	TI			700- 1100 N/mm <sup>2</sup>
VCGT160408	0,8	16	9,525	4,76	4,4					
VCMT110304	0,4	11	6,35	3,18	2,8	700- 1100 N/mm <sup>2</sup>				INOX
VCGW110302	0,2	11	6,35	3,18	2,8	30-45 HRC				
VCGW110304T	0,4	11	6,35	3,18	2,8					

**Drehwendeplattenhalter für WFM-Werkzeuge** Außenhalter für Wendeplatte VC 11  
**Turning insert holder for WFM tools** External holder for insert VC 11



Best.-Nr. / Order no.	H	W	L	S	h	I
SVJCR/L12-12-F11	12	12	80	16	12	25
SVJCR/L16-16-H11	16	16	100	20	16	25
<b>Ersatzteile / Spare parts</b>	Schraube / Screw ST25065					

**Drehwendeplattenhalter für WFM-Werkzeuge** Außenhalter für Wendeplatte VC 11  
**Turning insert holder for WFM tools** External holder for insert VC 11



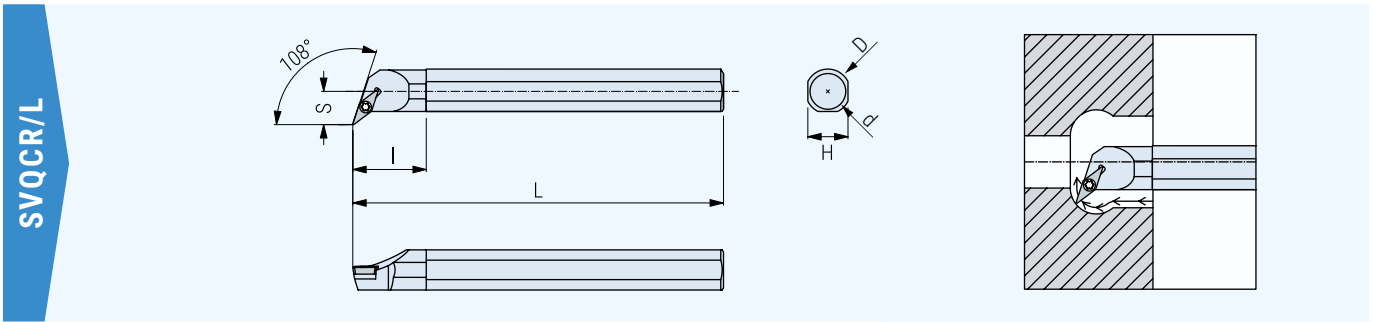
Best.-Nr. / Order no.	H	W	L	S	h	I
SVVCN12-12-F11	12	12	80	6	12	-
SVVCN16-16-H11	16	16	100	8	16	-
<b>Ersatzteile / Spare parts</b>	Schraube / Screw ST25065					

Weitere Abmessungen und Ausführungen auf Anfrage  
 Further dimensions and versions on request

<sup>2</sup>Verpackungseinheit = 1 Stück

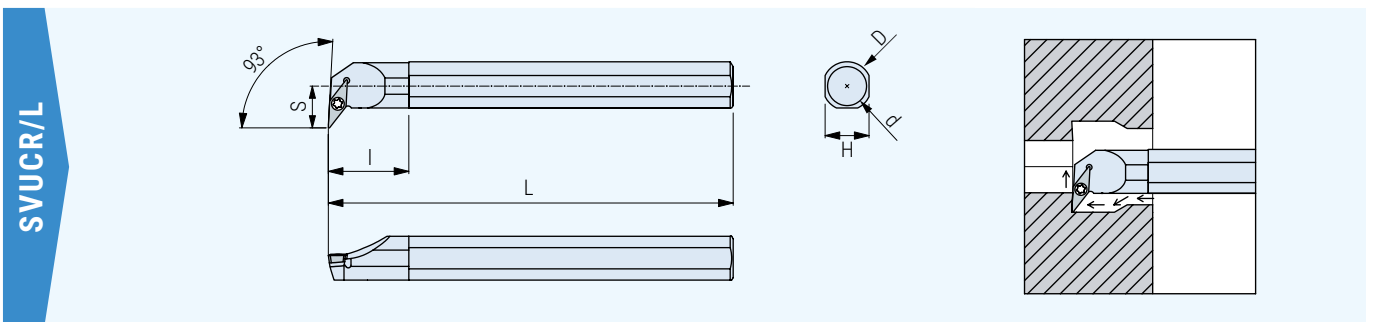
<sup>2</sup>Packaging unit = 1 piece

**Bohrstangen für WFM-Werkzeuge** Bohrstange für Innenbearbeitung VC 11  
**Boring bars for WFM tools** Boring bars for internal operation VC 11



Best.-Nr. / Order no.	ø D	ø d	H	L	S	I
S16R-SVQCR/L-11	20	16	15	200	11	35
Ersatzteile / Spare parts	Schraube / Screw ST25065					

**Bohrstangen SVUCR/L für WFM-Werkzeuge** Bohrstange für Innenbearbeitung VC 11  
**Boring bars for WFM tools** Boring bars for internal operation VC 11

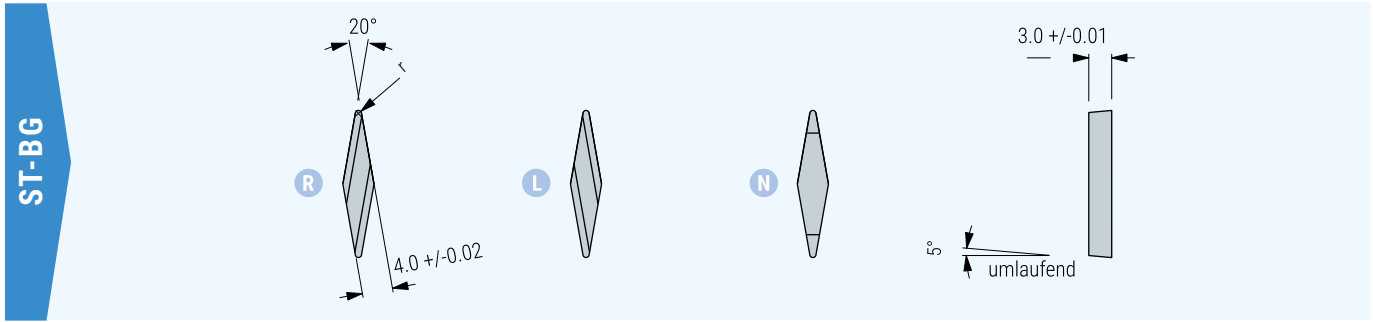


Best.-Nr. / Order no.	ø D	ø d	H	L	S	I
S16R-SVUCR/L-11	20	16	15	200	13	30
Ersatzteile / Spare parts	Schraube / Screw ST25065					

Bohrstangen auch in Vollhartmetall lieferbar.  
 Boring bars also available in solid carbide.

# Kopier-Wendeplatten ST für WFM-Werkzeuge Kopierwendeplatten positiv 20° Spitzenwinkel

## Copy inserts ST for WFM tools Copy insert – 20° positiv with point angle

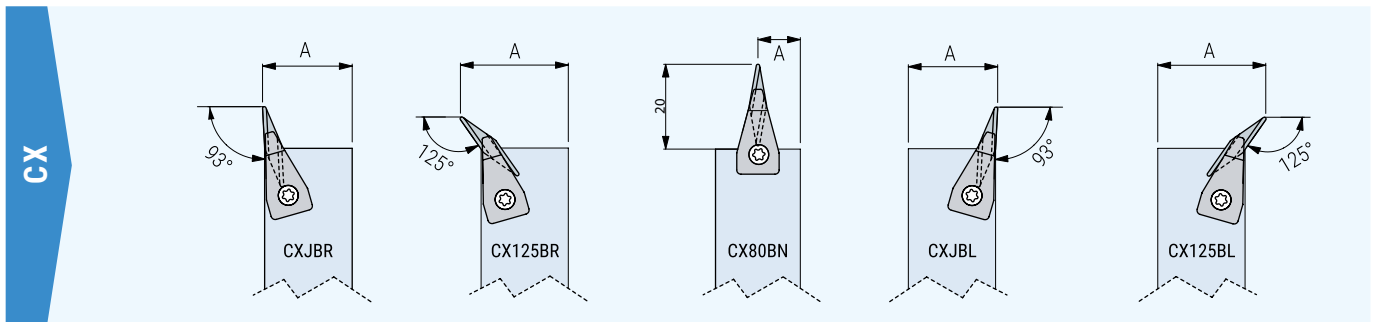


Best.-Nr. / Order no.	r
ST-BGL100301-34-ST3	0,10
ST-BGL100302-34-ST3	0,20
ST-BGL100304-34-ST3	0,40

Best.-Nr. / Order no.	r
ST-BGN100301-34-ST3	0,10
ST-BGN100302-34-ST3	0,20
ST-BGN100304-34-ST3	0,40

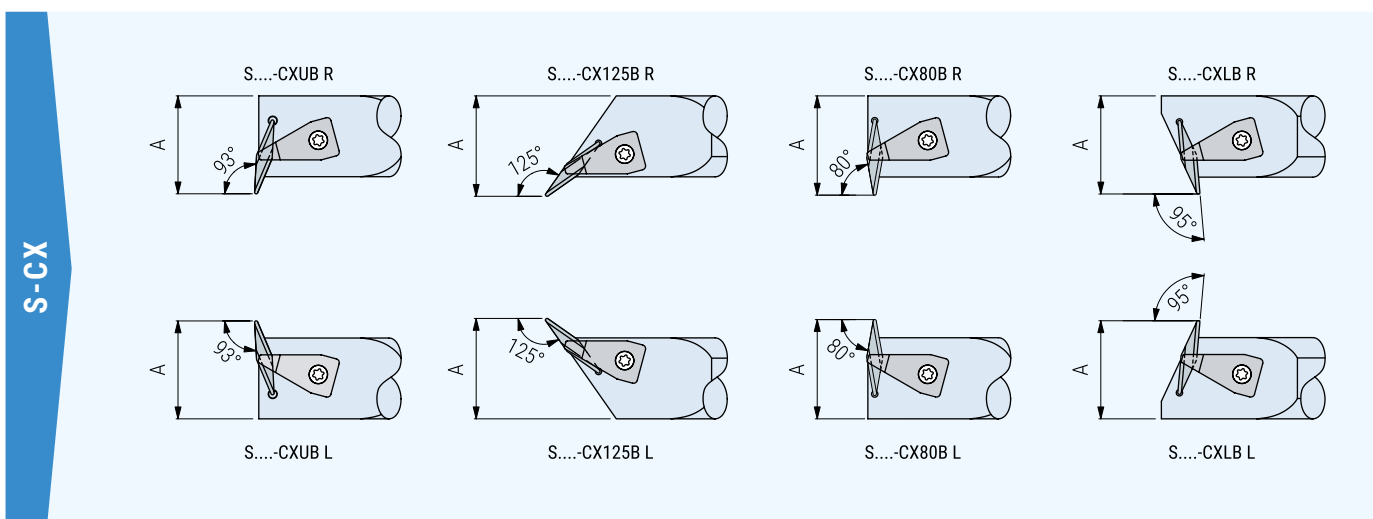
Best.-Nr. / Order no.	r
ST-BGR100301-34-ST3	0,10
ST-BGR100302-34-ST3	0,20
ST-BGR100304-34-ST3	0,40

## Kopier-Drehwendeplattenhalter für WFM Werkzeuge Copy turning insert holder for WFM tools



Schaft / shank	CXJBR Maß A	CX125BR Maß A	CX80BN Maß A	CXJBL Maß A	CX125BL Maß A
12x12x100	12,5	17	6	12,5	17
16x16x100	16,5	21	8	16,5	21
20x20x125	20,5	25	10	20,5	25
25x25x125	25,5	30	12,5	25,5	30

## Kopier-Bohrstangen für WFM-Werkzeuge Bohrstangen für Innenbearbeitung Copy boring bars for WFM tools Boring bars for internal operation



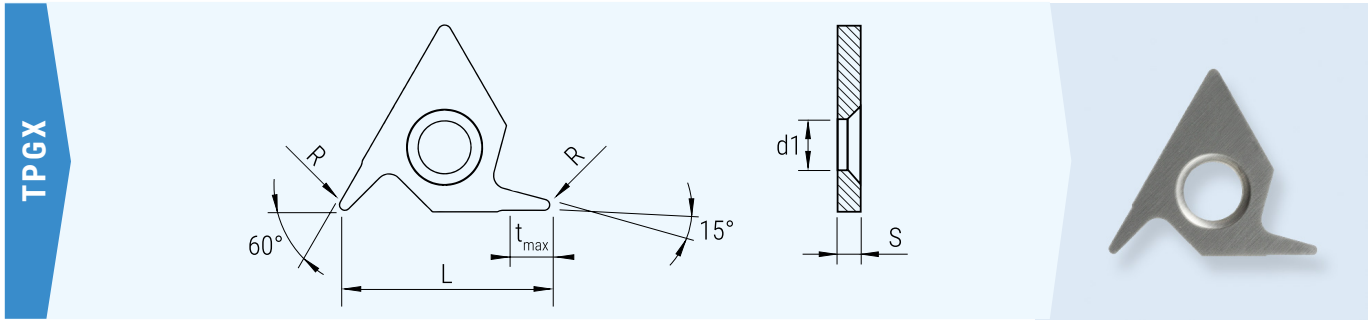
Schaft / shank	Maß A
16x100	20
20x150	24
25x200	29

Weitere Abmessungen und Ausführungen auf Anfrage  
Further dimensions and versions on request

<sup>2</sup>Verpackungseinheit = 1 Stück  
<sup>2</sup>Packaging unit = 1 piece

# VHM Spezial-Wendeplatte zum Kopieren mit 15° Gesamtwinkel

## Carbide special insert for copying with 15 degrees angle



Best.-Nr. / Order no.	L	R	d1	Z	t <sub>max</sub>	S	unbesch. uncoated	SD Coat	ST 11	ST2 Coat
TPGX16R-ER0,20 *	13,79	0,2	3,90	2	3,50	3,20	Aluminum, Kupfer, Messing, Kunststoff alu- minium, copper, brass, plastic	Graphit, abrasive Werkstoffe Graphite / abrasive materials	Aluminium, Kup- fer, Messing aluminium, copper, brass	Gehärtete Stähle Hardened steels
TPGX16L-ER0,20 *										
TPGX16R-ER0,40	13,79	0,4	3,90	2	3,50	3,20				
TPGX16L-ER0,40										

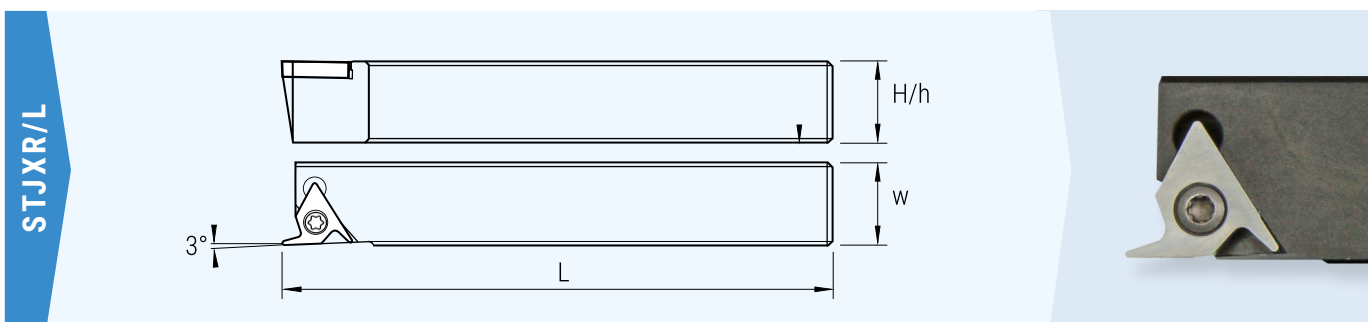
### Vorteile auf einen Blick / Advantages at a glance

- » Extrem schlanker Spitzenwinkel von 15 Grad / Extremely slim tip angle of 15 degrees
- » Plattenform neutral 0° / insert shape neutral 0°
- » Freiwinkel seitlich 3° / Clearance angle lateral 3°
- » Eintauchtiefe 3,5 mm / Immersion depth 3,5 mm

Weitere Abmessungen und Ausführungen auf Anfrage / Further dimensions and versions on request  
 \* Verpackungseinheit = 10 Stück / \* Packaging unit = 10 pieces

\* Wendeplatten mit R 0,2 auf Anfrage  
 \* Inserts with R 0.2 on request

### Werkzeughalter Tool holder



Best.-Nr. / Order no.	L	H	W	h
STJXR-2020K16	125,0	20,0	20,0	20,0
STJXL-2020K16				
STJXR-2525K16	125,0	25,0	25,0	25,0
STJXL-2525K16				

Alle Wendeplattenhalter sind in linker und rechter Ausführung bestellbar.  
 All insert holders can be ordered in left and right versions.

Gewindewerkzeuge für  
Außen- und Innengewinde

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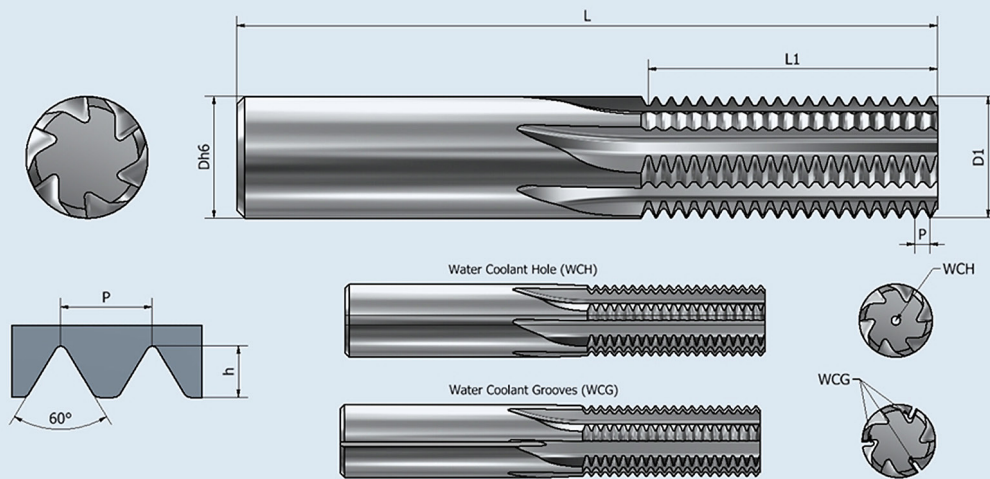
Threading tools for  
external and internal threads



# VHM-Gewindefräser geradegenutet, Innengewinde, 1,5 x Ø, ISO 60° metrisch

## Solid carbide thread mills straight fluted, internal thread, 1,5 x Ø, ISO 60° metric

TMSC



Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
										blank	blank WCH	blank WCG	ST2 Coat	ST2 Coat WCH	ST2 Coat WCG
M1,4	0,30	TMSC 03010 N 0.30 ISO	38	2,40	3	1,00	8	3	0,176	*	*	*	*	*	*
M1,6	0,35	TMSC 03010 N 0.35 ISO	38	2,45	3	1,00	7	3	0,206	*	*	*	*	*	*
M2	0,40	TMSC 03013 N 0.40 ISO	38	3,20	3	1,30	8	3	0,235	.	.	.	.	.	.
M2,5	0,45	TMSC 03015 N 0.45 ISO	38	3,60	3	1,50	8	3	0,264	.	.	.	.	.	.
M3	0,50	TMSC 03021 N 0.50 ISO	38	4,50	3	2,10	9	3	0,294	.	.	.	.	.	.
M3,5	0,60	TMSC 03026 N 0.60 ISO	38	5,40	3	2,60	9	3	0,352	.	.	.	.	.	.
M4	0,70	TMSC 03026 N 0.70 ISO	38	6,30	3	2,60	9	3	0,411	.	.	.	.	.	.
M4,5	0,75	TMSC 04030 N 0.75 ISO	42	6,75	4	3,00	9	3	0,440	.	.	.	.	.	.
M5	0,80	TMSC 04036 N 0.80 ISO	42	8,00	4	3,60	10	3	0,470	.	.	.	.	.	.
M6	1,00	TMSC 06040 N 1.00 ISO	57	9,00	6	4,00	9	3	0,587	.	.	.	.	.	.
M8	1,25	TMSC 06050 N 1.25 ISO	57	12,50	6	5,00	10	3	0,734	.	.	.	.	.	.
M10	1,50	TMSC 06059 N 1.50 ISO	57	15,00	6	5,90	10	5	0,881	.	.	.	.	.	.
M12	1,75	TMSC 08079 N 1.75 ISO	63	19,25	8	7,90	11	5	1,027	.	.	.	.	.	.
M14	2,00	TMSC 10099 N 2.00 ISO	72	24,00	10	9,90	12	5	1,174	.	.	.	.	.	.
M16	2,00	TMSC 12119 N 2.00 ISO	83	30,00	12	11,90	15	5	1,174	.	.	.	.	.	.
M20	2,50	TMSC 12119 N 2.50 ISO	83	30,00	12	11,90	12	5	1,468	.	.	.	.	.	.
M24	3,00	TMSC 16159 N 3.00 ISO	92	36,00	16	15,90	12	6	1,761	.	.	.	.	.	.
M30	3,50	TMSC 16159 N 3.50 ISO	92	38,50	16	15,90	11	6	2,055	.	.	.	.	.	.
M36	4,00	TMSC 16159 N 4.00 ISO	92	40,00	16	15,90	10	6	2,348	.	.	.	.	.	.
M48	5,00	TMSC 20199 N5.00 ISO	104	40,00	20	19,90	8	6	2,936	.	.	.	.	.	.
M64	6,00	TMSC 20199 N 6.00 ISO	104	36,00	20	19,90	6	6	3,523	.	.	.	.	.	.

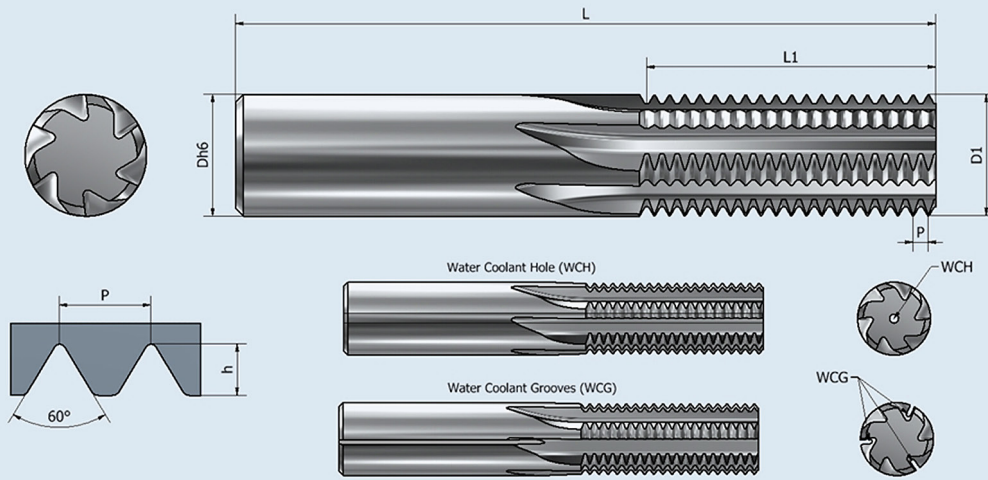
\* Auf Anfrage / \* On request

**Bestellbeispiel:** TXXX 03013 N 0.40 ISO **D**  
**Order sample:** Bestellnr. / Order no. Type



# VHM-Gewindefräser geradegenutet, Innengewinde, 1,5 x Ø, ISO 60° metrisch-fein Solid carbide thread mills straight fluted, internal thread, 1,5 x Ø, ISO 60° metric fine

TMSC



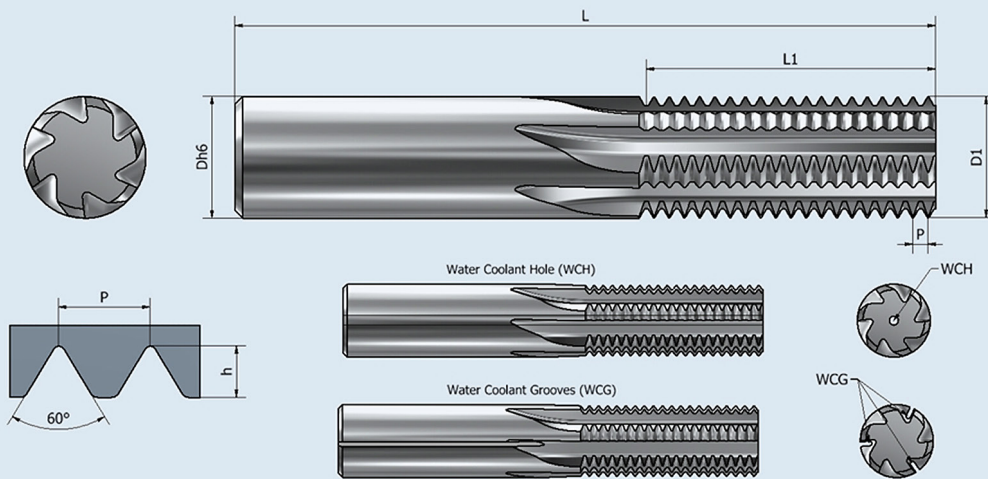
Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
										blank	blank WCH	blank WCG	ST2 Coat	ST2 Coat WCH	ST2 Coat WCG
M10	0,50	<b>TMSC 06059 N 0.50 ISO</b>	57	15,00	6	5,90	30	5	0,294	•	•	•	•	•	•
M10	0,75	<b>TMSC 06059 N 0.75 ISO</b>	57	15,00	6	5,90	20	5	0,400	•	•	•	•	•	•
M12	0,50	<b>TMSC 08079 N 0.50 ISO</b>	63	15,00	8	7,90	30	5	0,294	•	•	•	•	•	•
M12	1,00	<b>TMSC 08079 N 1.00 ISO</b>	63	20,00	8	7,90	20	5	0,587	•	•	•	•	•	•
M14	1,50	<b>TMSC 10099 N 1.50 ISO</b>	72	24,00	10	9,90	16	5	0,881	•	•	•	•	•	•
M16	1,50	<b>TMSC 10099 N 1.50 ISO</b>	72	24,00	10	9,90	16	5	0,881	•	•	•	•	•	•
M18	1,50	<b>TMSC 12119 N 1.50 ISO</b>	83	30,00	12	11,90	20	5	0,881	•	•	•	•	•	•
M20	2,00	<b>TMSC 12119 N 2.00 ISO</b>	83	30,00	12	11,90	15	5	1,174	•	•	•	•	•	•
M24	2,00	<b>TMSC 16159 N 2.00 ISO</b>	92	36,00	16	15,90	18	6	1,174	•	•	•	•	•	•
M36	2,00	<b>TMSC 16159 N 2.00 ISO</b>	92	40,00	160	15,90	20	6	1,174	•	•	•	•	•	•
M48	2,00	<b>TMSC 16159 N 2.00 ISO</b>	92	40,00	160	15,90	20	6	1,174	•	•	•	•	•	•
M64	3,00	<b>TMSC 20199 N 3.00 ISO</b>	104	39,00	20	19,90	13	6	1,761	•	•	•	•	•	•

**Bestellbeispiel:** **TXXX 03013 N 0.40 ISO D**  
**Order sample:** Bestellnr. / Order no. Type

# VHM-Gewindefräser geradegenutet, Außengewinde, ISO 60° metrisch

## Solid carbide thread mills straight fluted, external thread, ISO 60° metric

TMSC

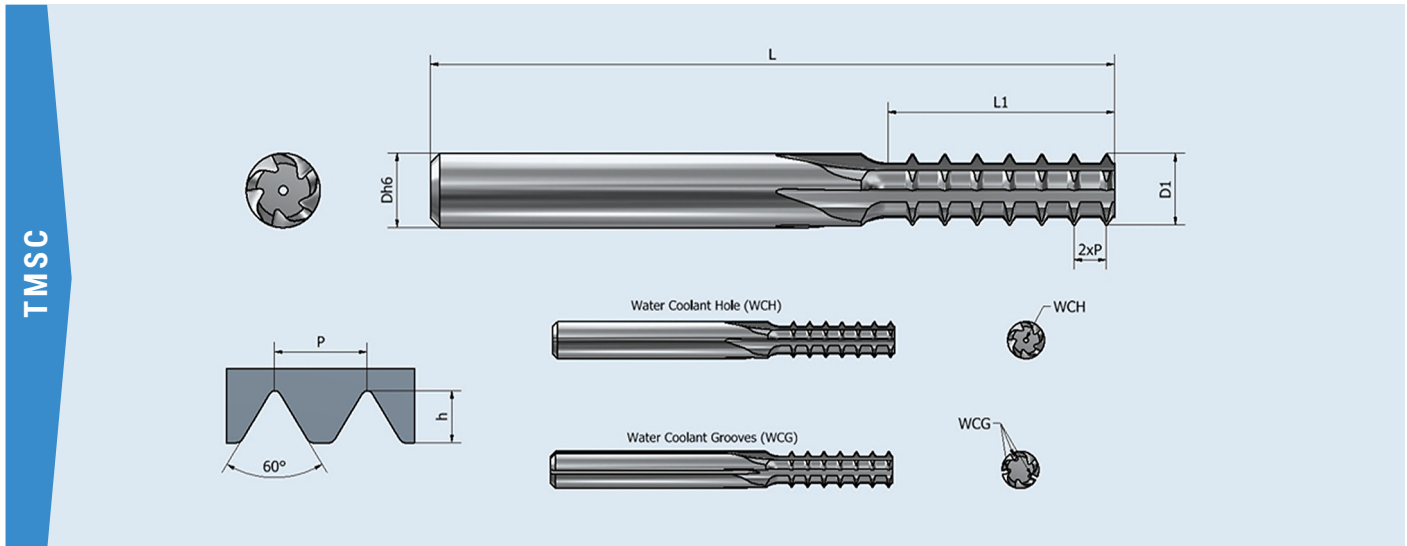


Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
										blank	blank WCH	blank WCG	ST 2 COATING	ST 2 COATING WCH	ST 2 COATING WCG
M3	0,50	<b>TMSC 06059 E 0.50 ISO</b>	57	15,00	6	5,90	30	5	0,316	•	•	•	•	•	•
M3	0,50	<b>TMSC 08079 E 0.50 ISO</b>	63	20,00	8	7,90	40	5	0,316	•	•	•	•	•	•
M4	0,70	<b>TMSC 08079 E 0.70 ISO</b>	63	19,60	8	7,90	28	5	0,443	•	•	•	•	•	•
M4.5	0,75	<b>TMSC 08079 E 0.75 ISO</b>	63	19,50	8	7,90	26	5	0,475	•	•	•	•	•	•
M5	0,80	<b>TMSC 08079 E 0.80 ISO</b>	63	20,00	8	7,90	25	5	0,506	•	•	•	•	•	•
M6	1,00	<b>TMSC 10099 E 1.00 ISO</b>	72	24,00	10	9,90	24	5	0,633	•	•	•	•	•	•
M8	1,25	<b>TMSC 10099 E 1.25 ISO</b>	72	25,00	10	9,90	20	5	0,791	•	•	•	•	•	•
M10	1,50	<b>TMSC 12119 E 1.50 ISO</b>	83	30,00	12	11,90	20	5	0,949	•	•	•	•	•	•
M12	1,75	<b>TMSC 12119 E 1.75 Iso</b>	83	29,75	12	11,90	17	5	1,107	•	•	•	•	•	•
M14	2,00	<b>TMSC 12119 E 2.00 ISO</b>	83	30,00	12	11,90	15	5	1,265	•	•	•	•	•	•
M16	2,00	<b>TMSC 16159 E 2.00 ISO</b>	92	32,00	16	15,90	16	6	1,265	•	•	•	•	•	•
M20	2,50	<b>TMSC 16159 E 2.50 ISO</b>	92	35,00	16	15,90	14	6	1,582	•	•	•	•	•	•
M24	3,00	<b>TMSC 16159 E 3.00 ISO</b>	92	36,00	16	15,90	12	6	1,898	•	•	•	•	•	•
M30	3,50	<b>TMSC 16159 E 3.50 ISO</b>	92	38,50	16	15,90	11	6	2,215	•	•	•	•	•	•
M36	4,00	<b>TMSC 16159 E 4.00 ISO</b>	92	40,00	16	15,90	10	6	2,531	•	•	•	•	•	•
M48	5,00	<b>TMSC 20199 E 5.00 ISO</b>	104	40,00	20	19,90	8	6	3,164	•	•	•	•	•	•
M64	6,00	<b>TMSC 20199 E 6.00 ISO</b>	104	36,00	20	19,90	6	6	3,796	•	•	•	•	•	•

**Bestellbeispiel:** TXXX 03013 N 0.40 ISO D  
**Order sample:** Bestellnr. / Order no. Type

# VHM-Gewindefräser geradegenutet, Innengewinde, 2 x Ø, ISO 60° metrisch / metrisch-fein

## Solid carbide thread mills straight fluted, internal thread, 2 x Ø, ISO 60° metric / metric fine



Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
										blank	blank WCH	blank WCG	ST 2 COATING	ST 2 COATING WCH	ST 2 COATING WCG

### metrisch / metric

M4	0,70	TMSC 03026 N 0.70 ISO T2	38	8,40	3	2,60	6	3	0,411						
M5	0,80	TMSC 04036 N 0.80 ISO T2	42	11,20	4	3,60	7	3	0,470						
M6	1,00	TMSC 06040 N 1.00 ISO T2	57	12,00	6	4,00	6	3	0,587						
M8	1,25	TMSC 06050 N 1.25 ISO T2	62	17,50	6	5,00	7	3	0,734						
M10	1,50	TMSC 06059 N 1.50 ISO T2	62	21,00	6	5,90	7	5	0,881						
M12	1,75	TMSC 08079 N 1.75 ISO T2	74	24,50	8	7,90	7	5	1,027						
M14	2,00	TMSC 10099 N 2.00 ISO T2	86	28,00	10	9,90	7	5	1,174						
M16	2,00	TMSC 12119 N 2.00 ISO T2	95	32,00	12	11,90	8	5	1,174						
M20	2,50	TMSC 12119 N 2.50 ISO T2	95	40,00	12	11,90	8	5	1,468						

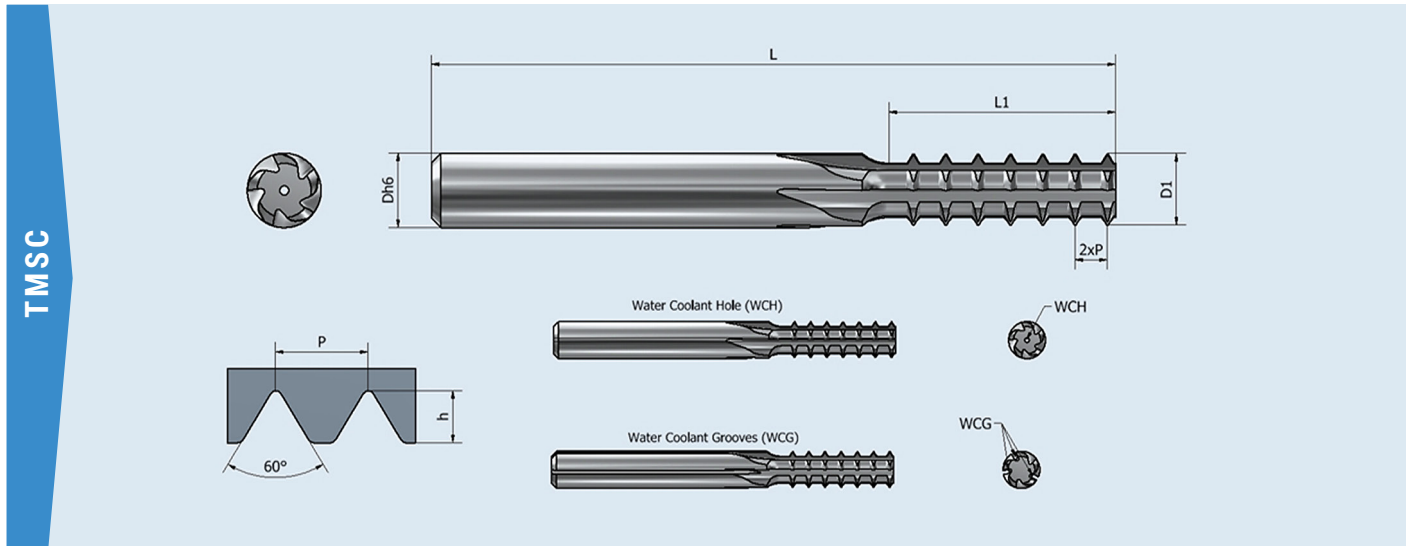
### metrisch-fein / metric-fine

M8	0,75	TMSC 06059 N 0,75 ISO T2	62	16,50	6	5,90	11	5	0,440						
M12	1,00	TMSC 08079 N 1,00 ISO T2	74	24,00	8	7,90	12	5	0,587						
M16	1,00	TMSC 12119 N 1,00 ISO T2	95	32,00	12	11,90	16	5	0,587						
M14	1,50	TMSC 10099 N 1,50 ISO T2	86	30,00	10	9,90	10	5	0,881						
M16	1,50	TMSC 12119 N 1,50 ISO T2	95	36,00	12	11,90	12	5	0,881						
M18	2,00	TMSC 12119 N 2,00 ISO T2	95	32,00	12	11,90	8	5	1,174						

**Bestellbeispiel:** TXXX 03013 N 0.40 ISO D  
**Order sample:** Bestellnr. / Order no. Type

# VHM-Gewindefräser geradegenutet, Innengewinde, 3 x Ø, ISO 60° metrisch / metrisch-fein

## Solid carbide thread mills straight fluted, internal thread, 3 x Ø, ISO 60° metric / metric fine



Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
										blank	blank WCH	blank WCG	ST 2 COATING	ST 2 COATING WCH	ST 2 COATING WCG

### metrisch / metric

M4	0,70	TMSC 03026 N 0.70 ISO T3	42	12,60	3	2,60	6	3	0,411	•	•	•	•	•	•
M5	0,80	TMSC 04036 N 0.80 ISO T3	47	16,80	4	3,60	7	3	0,470	•	•	•	•	•	•
M6	1,00	TMSC 06040 N 1.00 ISO T3	60	18,00	6	4,00	6	3	0,587	•	•	•	•	•	•
M8	1,25	TMSC 06050 N 1.25 ISO T3	72	26,25	6	5,0	7	3	0,734	•	•	•	•	•	•
M10	1,50	TMSC 06059 N 1.50 ISO T3	72	31,50	6	5,90	7	5	0,881	•	•	•	•	•	•
M12	1,75	TMSC 08079 N 1.75 ISO T3	86	36,75	8	7,90	7	5	1,027	•	•	•	•	•	•
M14	2,00	TMSC 10099 N 2.00 ISO T3	95	42,00	10	9,90	7	5	1,174	•	•	•	•	•	•
M16	2,00	TMSC 12119 N 2.00 ISO T3	115	48,00	12	11,90	8	5	1,174	•	•	•	•	•	•
M20	2,50	TMSC 12119 N 2.50 ISO T3	125	60,00	12	11,90	8	5	1,468	•	•	•	•	•	•

### metrisch-fein / metric-fine

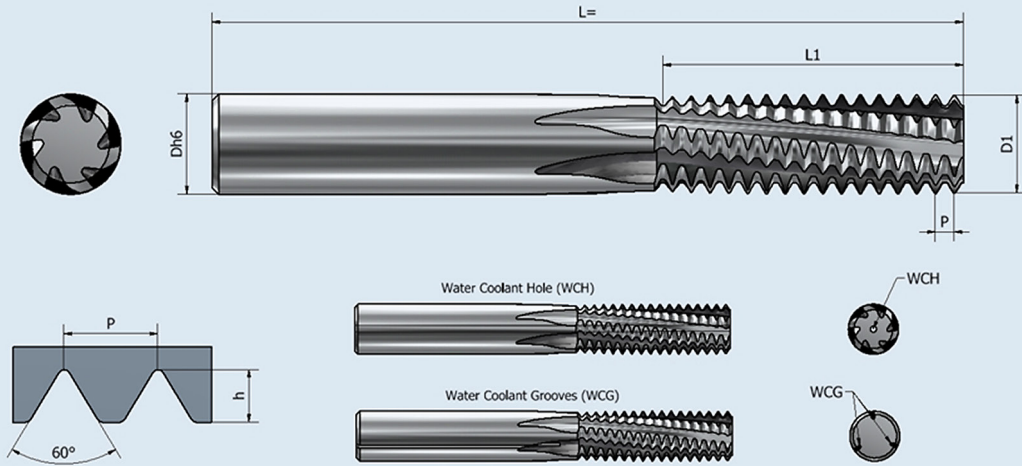
M8	0,75	TMSC 06059 N 0.75 ISO T3	72	24,75	6	5,90	11	5	0,440	•	•	•	•	•	•
M12	1,00	TMSC 08079 N 1.00 ISO T3	86	36,00	8	7,90	12	5	0,587	•	•	•	•	•	•
M16	1,00	TMSC 12119 N 1.00 ISO T3	115	48,00	12	11,90	16	5	0,587	•	•	•	•	•	•
M14	1,50	TMSC 10099 N 1.50 ISO T3	95	45,00	10	9,90	10	5	0,881	•	•	•	•	•	•
M16	1,50	TMSC 12119 N 1.50 ISO T3	115	49,50	12	11,90	11	5	0,881	•	•	•	•	•	•
M18	2,00	TMSC 12119 N 2.00 ISO T3	115	54,00	120	11,90	9	5	1,174	•	•	•	•	•	•

**Bestellbeispiel:** TXXX 03013 N 0.40 ISO D  
**Order sample:** Bestellnr. / Order no. Type

# VHM-Gewindefräser spiralgenutet, Innengewinde, 1,5 x Ø, ISO 60° metrisch

## Solid carbide thread mills helical fluted, internal thread, 1,5 x Ø, ISO 60° metric

TMHE



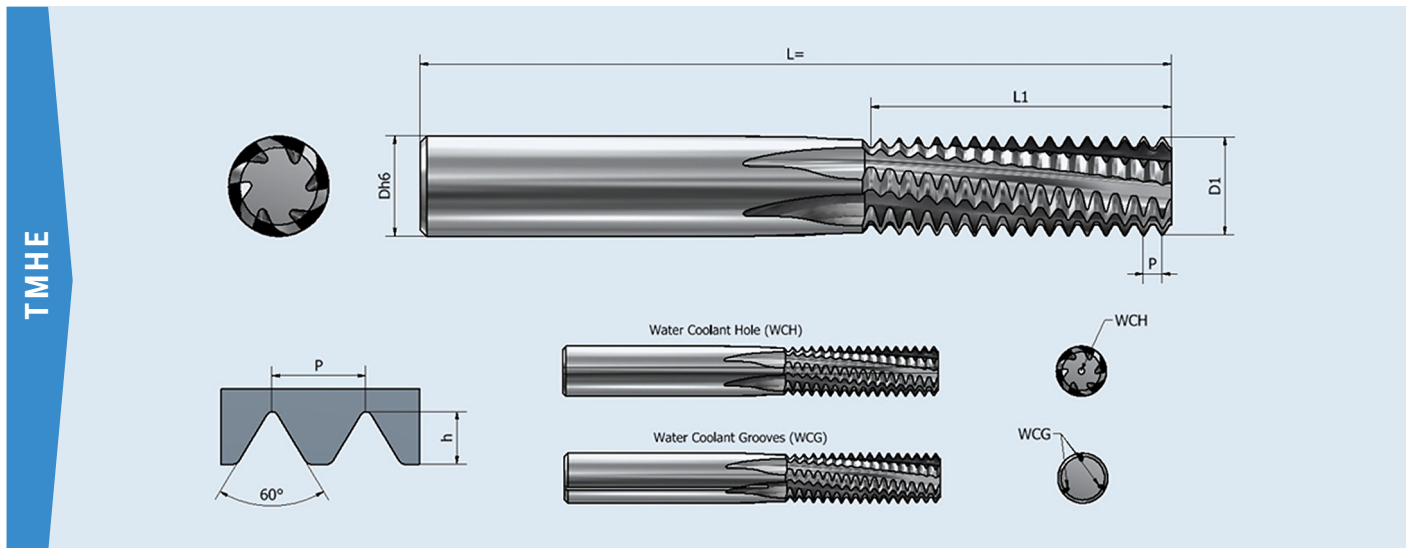
Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
										blank	blank WCH	blank WCG	ST 2 COATING	ST 2 COATING WCH	ST 2 COATING WCG
M1,6	0,35	TMHE 03010 N 0.35 ISO	38	2,45	3	1	7	3	0,205	•	•	•	•	•	•
M2	0,40	TMHE 03013 N 0.40 ISO	38	3,20	3	1,30	8	3	0,235	•	•	•	•	•	•
M2.5	0,45	TMHE 03015 N 0.45 ISO	38	3,60	3	1,50	8	3	0,264	•	•	•	•	•	•
M3	0,50	TMHE 03021 N 0.50 ISO	38	4,50	3	2,10	9	3	0,294	•	•	•	•	•	•
M3.5	0,60	TMHE 03026 N 0.60 ISO	38	5,40	3	2,60	9	3	0,352	•	•	•	•	•	•
M4	0,70	TMHE 03026 N 0.70 ISO	38	6,30	3	2,60	9	3	0,411	•	•	•	•	•	•
M4.5	0,75	TMHE 04030 N 0.75 ISO	42	6,75	4	3,0	9	3	0,440	•	•	•	•	•	•
M5	0,80	TMHE 04036 N 0.80 ISO	42	8,00	4	3,60	10	3	0,470	•	•	•	•	•	•
M6	1,00	TMHE 06040 N 1.00 ISO	57	9,00	6	4,00	9	3	0,587	•	•	•	•	•	•
M8	1,25	TMHE 06050 N 1.25 ISO	57	12,50	6	5,00	10	3	0,734	•	•	•	•	•	•
M10	1,50	TMHE 06059 N 1.50 ISO	57	15,00	6	5,90	10	5	0,881	•	•	•	•	•	•
M12	1,75	TMHE 08079 N 1.75 ISO	63	19,25	8	7,90	11	5	1,027	•	•	•	•	•	•
M14	2,00	TMHE 10099 N 2.00 ISO	72	24,00	10	9,90	12	5	1,174	•	•	•	•	•	•
M16	2,00	TMHE 12119 N 2.00 ISO	83	30,00	12	11,90	15	5	1,174	•	•	•	•	•	•
M20	2,50	TMHE 12119 N 2.50 ISO	83	30,00	12	11,90	12	5	1,468	•	•	•	•	•	•
M24	3,00	TMHE 16159 N 3.00 ISO	92	36,00	16	15,90	12	6	1,761	•	•	•	•	•	•
M30	3,50	TMHE 16159 N 3.50 ISO	92	38,50	16	15,90	11	6	2,055	•	•	•	•	•	•
M36	4,00	TMHE 16159 N 4.00 ISO	92	40,00	16	15,90	10	6	2,348	•	•	•	•	•	•
M48	5,00	TMHE 20199 N 5.00 ISO	104	40,00	20	19,90	8	6	2,936	•	•	•	•	•	•
M64	6,00	TMHE 20199 N 6.00 ISO	104	36,00	20	19,90	6	6	3,523	•	•	•	•	•	•

**Bestellbeispiel:** TXXX 03013 N 0.40 ISO D  
**Order sample:** Bestellnr. / Order no. Type

Weitere Abmessungen auf Folgeseite »  
 Further dimensions on next page »

# VHM-Gewindefräser spiralgenutet, Innengewinde, 1,5 x Ø, ISO 60° metrisch-fein

## Solid carbide thread mills helical fluted, internal thread, 1,5 x Ø, ISO 60° metric fine

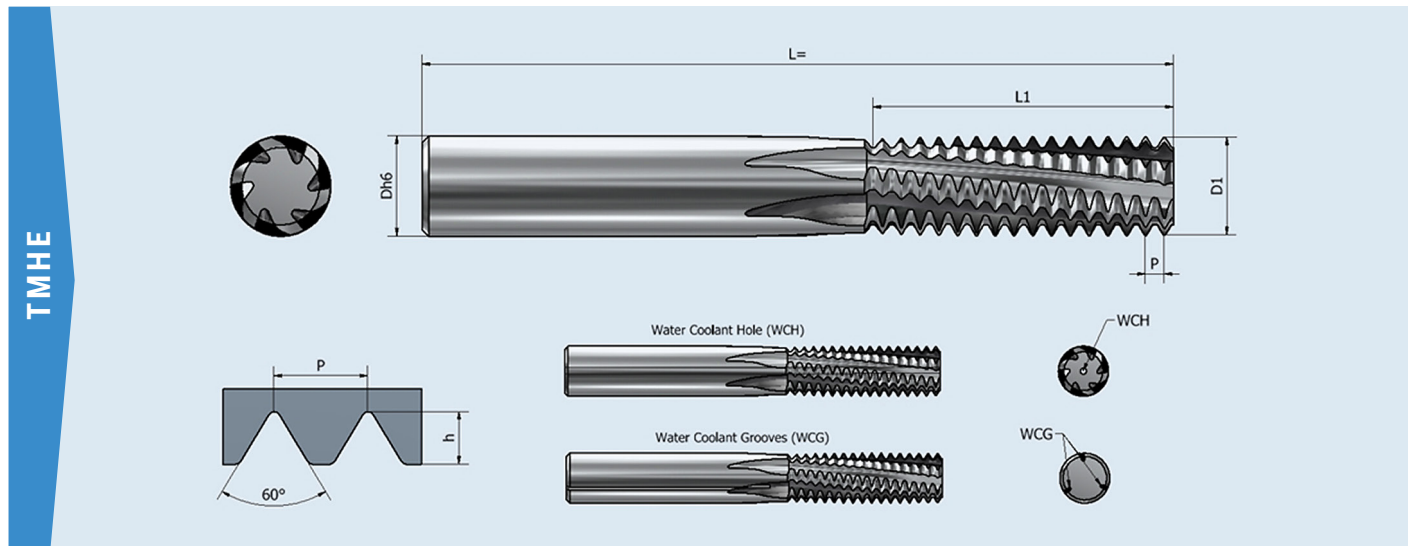


Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
										blank	blank WCH	blank WCG	ST 2 COATING	ST 2 COATING WCH	ST 2 COATING WCG
M10	0,50	TMHE 06059 N 0.50 ISO	57	15,00	6	5,90	30	5	0,294	•	•	•	•	•	•
M10	0,75	TMHE 06059 N 0.75 ISO	57	15,00	6	5,90	20	5	0,440	•	•	•	•	•	•
M12	0,50	TMHE 08079 N 0.50 ISO	63	15,00	8	7,90	30	5	0,294	•	•	•	•	•	•
M12	1,00	TMHE 08079 N 1.00 ISO	63	20,00	8	7,90	20	5	0,587	•	•	•	•	•	•
M14	1,50	TMHE 10099 N 1.50 ISO	72	24,00	10	9,90	16	5	0,881	•	•	•	•	•	•
M16	1,50	TMHE 10099 N 1.50 ISO	72	24,00	10	9,90	16	5	0,881	•	•	•	•	•	•
M18	1,50	TMHE 12119 N 1.50 ISO	83	30,00	12	11,90	20	5	0,881	•	•	•	•	•	•
M20	2,00	TMHE 12119 N 2.00 ISO	83	30,00	12	11,90	15	5	1,174	•	•	•	•	•	•
M24	2,00	TMHE 16159 N 2.00 ISO	92	36,00	16	15,90	18	6	1,174	•	•	•	•	•	•
M36	2,00	TMHE 16159 N 2.00 ISO	92	40,00	16	15,90	20	6	1,174	•	•	•	•	•	•
M48	2,00	TMHE 16159 N 2.00 ISO	92	40,00	16	15,90	20	6	1,174	•	•	•	•	•	•
M64	3,00	TMHE 20199 N 3.00 ISO	104	39,00	20	19,90	13	6	1,761	•	•	•	•	•	•

**Bestellbeispiel:** TXXX 03013 N 0.40 ISO D  
**Order sample:** Bestellnr. / Order no. Type

# VHM-Gewindefräser spiralgenutet, Innengewinde, 2 x Ø, ISO 60° metrisch

## Solid carbide thread mills helical fluted, internal thread, 2 x Ø, ISO 60° metric

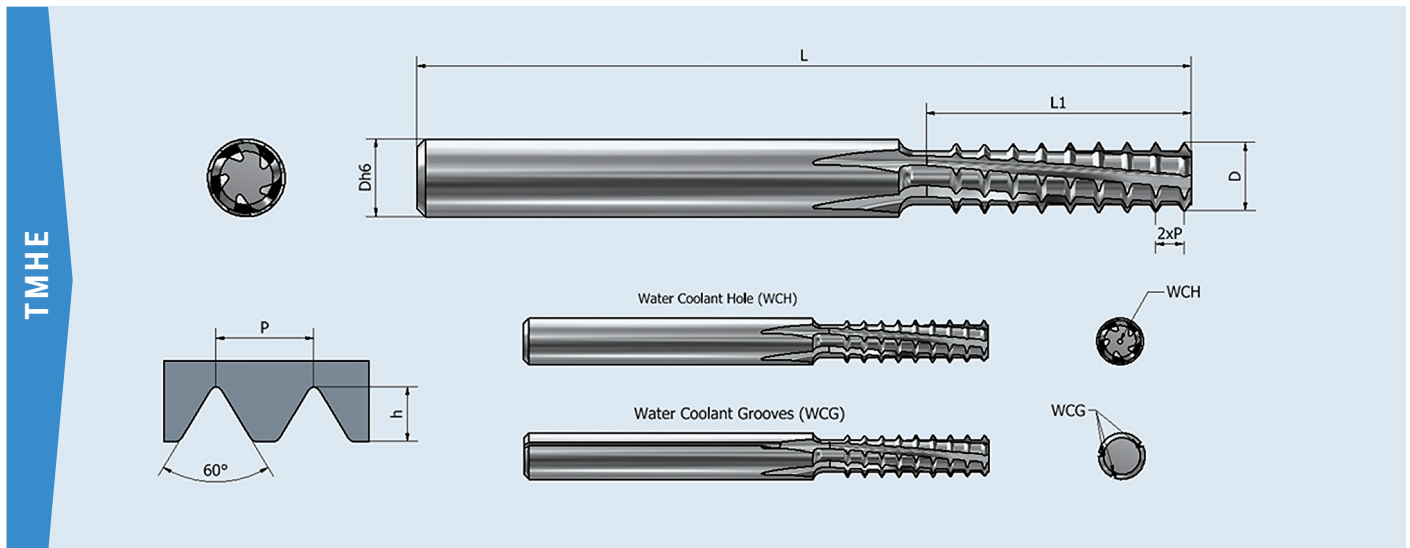


Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
										blank	blank WCH	blank WCG	ST 2 COATING	ST 2 COATING WCH	ST 2 COATING WCG
M2	0,40	TMHE 03015 N 0.40 ISO 2	38	4,00	3	1,50	10	3	0,235	•		•	•		•
M2.5	0,45	TMHE 03018 N 0.45 ISO 2	38	5,40	3	1,80	12	3	0,264	•		•	•		•
M3	0,50	TMHE 03022 N 0.50 ISO 2	38	6,00	3	2,20	12	3	0,294	•		•	•		•
M3.5	0,60	TMHE 03026 N 0.60 ISO 2	38	7,20	3	2,60	12	3	0,352	•		•	•		•
M4	0,70	TMHE 04031 N 0.70 ISO 2	42	8,40	4	3,10	12	3	0,411	•		•	•		•
M4.5	0,75	TMHE 04033 N 0.75 ISO 2	42	9,00	4	3,30	12	3	0,440	•		•	•		•
M5	0,80	TMHE 04038 N 0.80 ISO 2	42	10,40	4	3,80	13	3	0,440	•		•	•		•
M6	1,00	TMHE 06047 N 1.00 ISO 2	57	12,00	6	4,70	12	3	0,587	•	•	•	•	•	•
M8	1,25	TMHE 06059 N 1.25 ISO 2	62	16,25	6	5,90	13	5	0,734	•	•	•	•	•	•
M10	1,50	TMHE 08079 N 1.50 ISO 2	72	21,00	8	7,90	14	5	0,881	•	•	•	•	•	•
M12	1,75	TMHE 10090 N 1.75 ISO 2	72	24,50	10	9,00	14	5	1,027	•	•	•	•	•	•
M14	2,00	TMHE 10099 N 2.00 ISO 2	86	28,00	10	9,90	14	5	1,174	•	•	•	•	•	•
M16	2,00	TMHE 12119 N 2.00 ISO 2	95	32,00	12	11,90	16	5	1,174	•	•	•	•	•	•
M20	2,50	TMHE 16150 N 2.50 ISO 2	110	40,00	16	15,90	16	6	1,468	•	•	•	•	•	•
M24	3,00	TMHE 16159 N 3.00 ISO 2	120	48,00	16	15,90	16	6	1,761	•	•	•	•	•	•
M30	3,50	TMHE 20199 N 3.50 ISO 2	130	63,00	20	19,90	18	6	2,055	•	•	•	•	•	•

**Bestellbeispiel:** TXXX 03013 N 0.40 ISO D  
**Order sample:** Bestellnr. / Order no.                      Type

# VHM-Gewindefräser spiralgenutet, Innengewinde, 2,5 x Ø, ISO 60° metrisch

## Solid carbide thread mills helical fluted, internal thread, 2,5 x Ø, ISO 60° metric



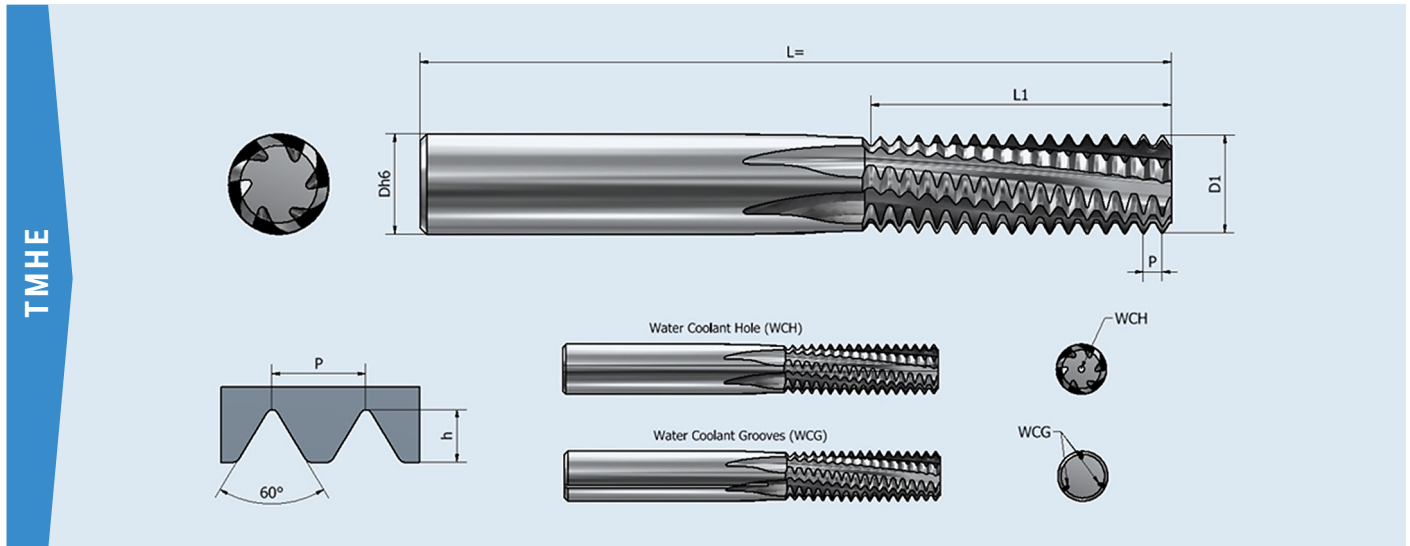
Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
										blank	blank WCH	blank WCG	ST 2 COATING	ST 2 COATING WCH	ST 2 COATING WCG
M2	0,40	TMHE 03015 N 0.40 ISO 25	42	5,60	3	1,50	7	3	0,206	•		•	•		•
M2.5	0,45	TMHE 03018 N 0.45 ISO 25	42	6,30	3	1,80	7	3	0,264	•		•	•		•
M3	0,50	TMHE 03022 N 0.50 ISO 25	42	8,00	3	2,20	8	3	0,294	•		•	•		•
M3.5	0,60	TMHE 03026 N 0.60 ISO 25	42	9,60	3	2,60	8	3	0,352	•		•	•		•
M4	0,70	TMHE 04031 N 0.70 ISO 25	47	11,20	4	3,10	8	3	0,411	•		•	•		•
M4.5	0,75	TMHE 04033 N 0.75 ISO 25	47	12,00	4	3,30	8	3	0,440	•		•	•		•
M5	0,80	TMHE 04038 N 0.80 ISO 25	47	12,80	4	3,80	8	3	0,470	•		•	•		•
M6	1,00	TMHE 06047 N 1.00 ISO 25	62	16,00	6	4,70	8	3	0,587	•	•	•	•	•	•
M8	1,25	TMHE 06059 N 1.25 ISO 25	62	20,00	6	5,90	8	5	0,734	•	•	•	•	•	•
M10	1,50	TMHE 08079 N 1.50 ISO 25	86	27,00	8	7,90	9	5	0,881	•	•	•	•	•	•
M12	1,75	TMHE 10090 N 1.75 ISO 25	95	31,50	10	9,00	9	5	1,027	•	•	•	•	•	•
M14	2,00	TMHE 10099 N 2.00 ISO 25	95	36,00	10	9,90	9	5	1,174	•	•	•	•	•	•
M16	2,00	TMHE 12119 N 2.00 ISO 25	95	40,00	12	11,90	10	5	1,174	•	•	•	•	•	•
M20	2,50	TMHE 16150 N 2.50 ISO 25	120	50,00	16	15,00	10	6	1,468	•	•	•	•	•	•
M24	3,00	TMHE 16159 N 3.00 ISO 25	120	60,00	16	15,90	10	6	1,761	•	•	•	•	•	•
M30	3,50	TMHE 20199 N 3.50 ISO 25	130	77,00	20	19,90	11	6	2,055	•	•	•	•	•	•

**Bestellbeispiel:** TXXX 03013 N 0.40 ISO D  
**Order sample:** Bestellnr. / Order no. Type



# VHM-Gewindefräser spiralgenutet, Außengewinde, 1,5 x Ø, ISO 60° metrisch

## Solid carbide thread mills helical fluted, external thread, 1,5 x Ø, ISO 60° metric

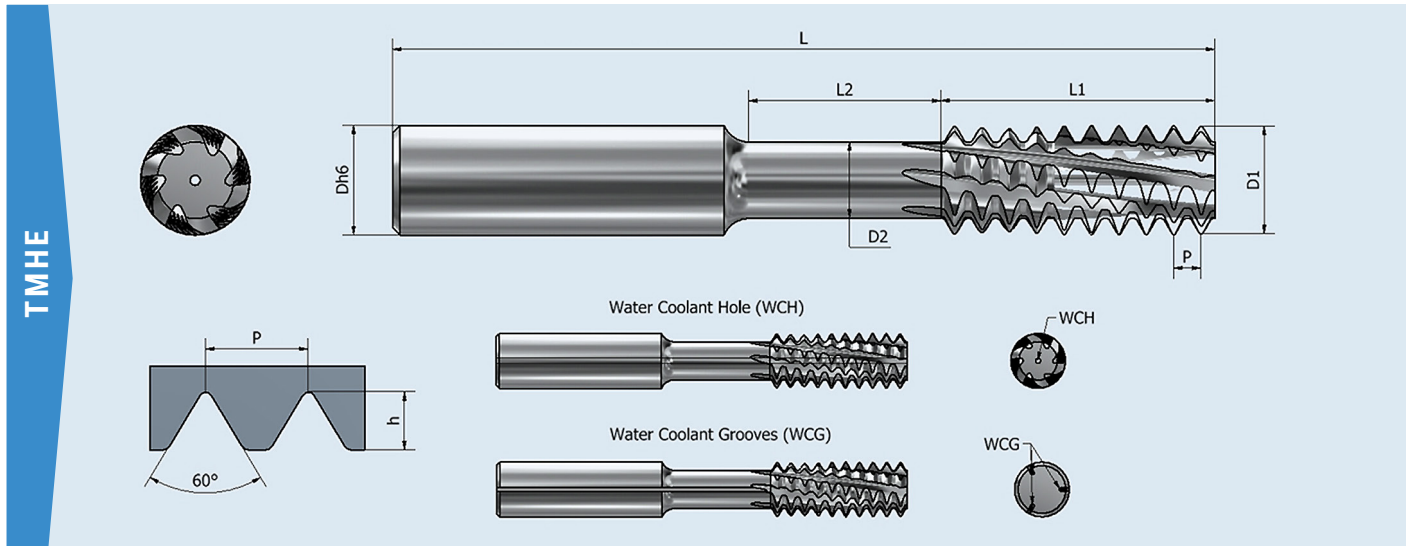


Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
										blank	blank WCH	blank WCG	ST 2 COATING	ST 2 COATING WCH	ST 2 COATING WCG
M3	0,50	TMHE 06059 E 0.50 ISO	57	15,00	6	5,90	30	5	0,316	•	•	•	•	•	•
M3	0,50	TMHE 08079 E 0.50 ISO	63	20,00	8	7,90	40	5	0,316	•	•	•	•	•	•
M4	0,70	TMHE 08079 E 0.70 ISO	63	19,60	8	7,90	28	5	0,443	•	•	•	•	•	•
M4.5	0,75	TMHE 08079 E 0.75 ISO	63	19,50	8	7,90	26	5	0,475	•	•	•	•	•	•
M5	0,80	TMHE 08079 E 0.80 ISO	63	20,00	8	7,90	25	5	0,506	•	•	•	•	•	•
M6	1,00	TMHE 10099 E 1.00 ISO	72	24,00	10	9,90	24	5	0,633	•	•	•	•	•	•
M8	1,25	TMHE 10099 E 1.25 ISO	72	25,00	10	9,90	20	5	0,791	•	•	•	•	•	•
M10	1,50	TMHE 12119 E 1.50 ISO	83	30,00	12	11,90	20	5	0,949	•	•	•	•	•	•
M12	1,75	TMHE 12119 E 1.75 ISO	83	29,75	12	11,90	17	5	1,107	•	•	•	•	•	•
M14	2,00	TMHE 12119 E 2.00 ISO	83	30,00	12	11,90	15	5	1,265	•	•	•	•	•	•
M16	2,00	TMHE 16159 E 2.00 ISO	92	32,00	16	15,90	16	6	1,265	•	•	•	•	•	•
M20	2,50	TMHE 16159 E 2.50 ISO	92	30,00	16	15,90	12	6	1,582	•	•	•	•	•	•
M24	3,00	TMHE 16159 E 3.00 ISO	92	36,00	16	15,90	12	6	1,898	•	•	•	•	•	•
M30	3,50	TMHE 16159 E 3.50 ISO	92	38,50	16	15,90	11	6	2,215	•	•	•	•	•	•
M36	4,00	TMHE 16159 E 4.00 ISO	92	40,00	16	15,90	10	6	2,531	•	•	•	•	•	•
M48	5,00	TMHE 20199 E 5.00 ISO	104	40,00	20	19,90	8	6	3,164	•	•	•	•	•	•
M64	6,00	TMHE 20199 E 6.00 ISO	104	36,00	20	19,90	6	6	3,796	•	•	•	•	•	•

**Bestellbeispiel:** TXXX 03013 N 0.40 ISO **D**  
**Order sample:** Bestellnr. / Order no. Type

# VHM-Gewindefräser spiralgenutet, Innengewinde, 2,5 x Ø, ISO 60° metrisch

## Solid carbide thread mills helical fluted, internal thread, 2,5 x Ø, ISO 60° metric

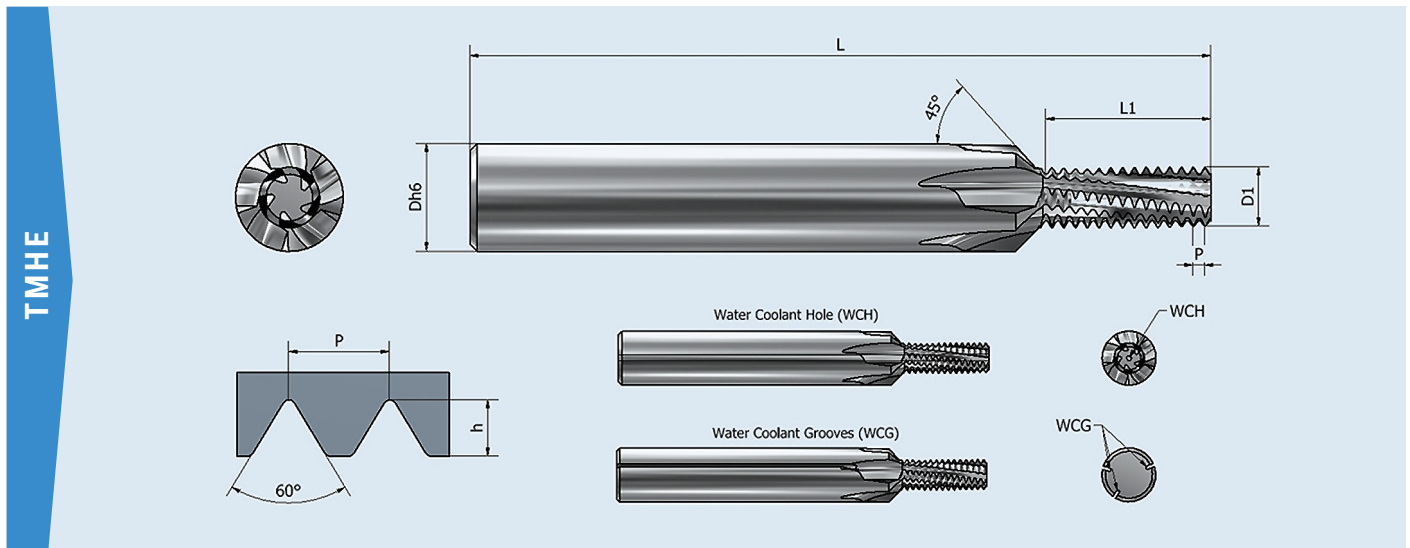


Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	L2	D	D1	D2	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
												blank	blank WCH	blank WCG	ST 2 COATING	ST 2 COATING WCH	ST 2 COATING WCG
M10	1,50	TMHE 06059 N 1.50 ISO	62	15,00	10,00	6	5,90	4,00	10	5	0,881	*	*	*	*	*	*
M12	1,75	TMHE 08079 N 1.75 ISO	72	19,25	12,00	8	7,90	5,70	11	5	1,027	*	*	*	*	*	*
M14	2,00	TMHE 10099 N 2.00 ISO	86	24,00	14,00	10	9,90	7,40	12	5	1,174	*	*	*	*	*	*
M16	2,00	TMHE 12119 N 2.00 ISO	95	30,00	15,00	12	11,90	9,40	15	5	1,174	*	*	*	*	*	*
M20	2,50	TMHE 12119 N 2.50 ISO	95	30,00	20,00	12	11,90	8,80	12	5	1,468	*	*	*	*	*	*
M24	3,00	TMHE 16159 N 3.00 ISO	120	36,00	24,00	16	15,90	12,20	12	6	1,761	*	*	*	*	*	*
M30	3,50	TMHE 16159 N 3.50 ISO	120	38,50	26,00	16	15,90	11,70	11	6	2,055	*	*	*	*	*	*
M36	4,00	TMHE 16159 N 4.00 ISO	120	40,00	28,00	16	15,90	11,10	10	6	2,348	*	*	*	*	*	*

\* Auf Anfrage / \* On request

**Bestellbeispiel:** TXXX 03013 N 0.40 ISO D  
**Order sample:** Bestellnr. / Order no. Type

**VHM-Gewindefräser spiralgenutet, mit 45° Senkfase, Innengewinde, 2 x Ø, ISO 60° metrisch**  
**Solid carbide thread mills helical fluted, with 45° chamfer, internal thread, 2 x Ø, ISO 60° metric**

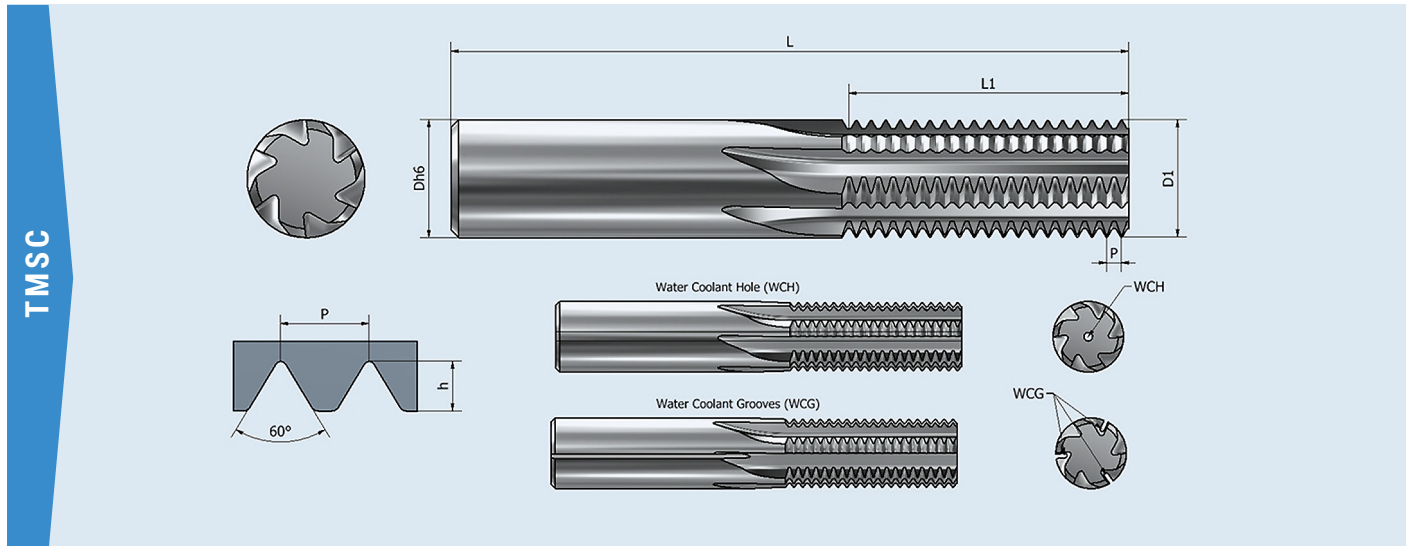


Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
										blank	blank WCH	blank WCG	ST 2 COATING	ST 2 COATING WCH	ST 2 COATING WCG
M3	0,50	TMHE 04022 N 0.50 ISO-2A	42	6,00	4	2,20	12	3	0,294	•		•	•		•
M3.5	0,60	TMHE 04026 N 0.60 ISO-2A	42	7,20	4	2,60	12	3	0,352	•		•	•		•
M4	0,70	TMHE 06031 N 0.70 ISO-2A	57	8,40	6	3,10	12	3	0,411	•		•	•		•
M4.5	0,75	TMHE 06033 N 0.75 ISO-2A	57	9,00	6	3,30	12	3	0,440	•		•	•		•
M5	0,80	TMHE 06038 N 0.80 ISO-2A	57	10,40	6	3,80	13	3	0,470	•		•	•		•
M6	1,00	TMHE 08047 N 1.00 ISO-2A	63	12,00	8	4,70	12	3	0,587	•	•	•	•	•	•
M8	1,25	TMHE 10059 N 1.25 ISO-2A	72	16,25	10	5,90	13	5	0,734	•	•	•	•	•	•
M10	1,50	TMHE 12079 N 1.50 ISO-2A	83	21,00	12	7,90	14	5	0,881	•	•	•	•	•	•
M12	1,75	TMHE 16090 N 1.75 ISO-2A	110	24,50	16	9,00	14	5	1,027	•	•	•	•	•	•
M14	2,00	TMHE 16099 N 2.00 ISO-2A	110	28,00	16	9,90	14	5	1,174	•	•	•	•	•	•
M16	2,00	TMHE 16119 N 2.00 ISO-2A	110	32,00	16	11,90	16	5	1,174	•	•	•	•	•	•
M20	2,50	TMHE 20150 N 2.50 ISO-2A	130	40,00	20	15,00	16	6	1,468	•	•	•	•	•	•
M24	3,00	TMHE 20159 N 3.00 ISO-2A	130	48,00	20	15,90	16	6	1,761	•	•	•	•	•	•
M30	3,50	TMHE 20199 N 3.50 ISO-2	130	63,00	20	19,90	18	6	2,055	•	•	•	•	•	•

**Bestellbeispiel:** TXXX 03013 N 0.40 ISO **D**  
**Order sample:** Bestellnr. / Order no. Type

# VHM-Gewindefräser geradegenutet, Innengewinde, 1,5 x Ø, UN Zoll

## Solid carbide thread mills straight fluted, internal thread, 1,5 x Ø, UN inch

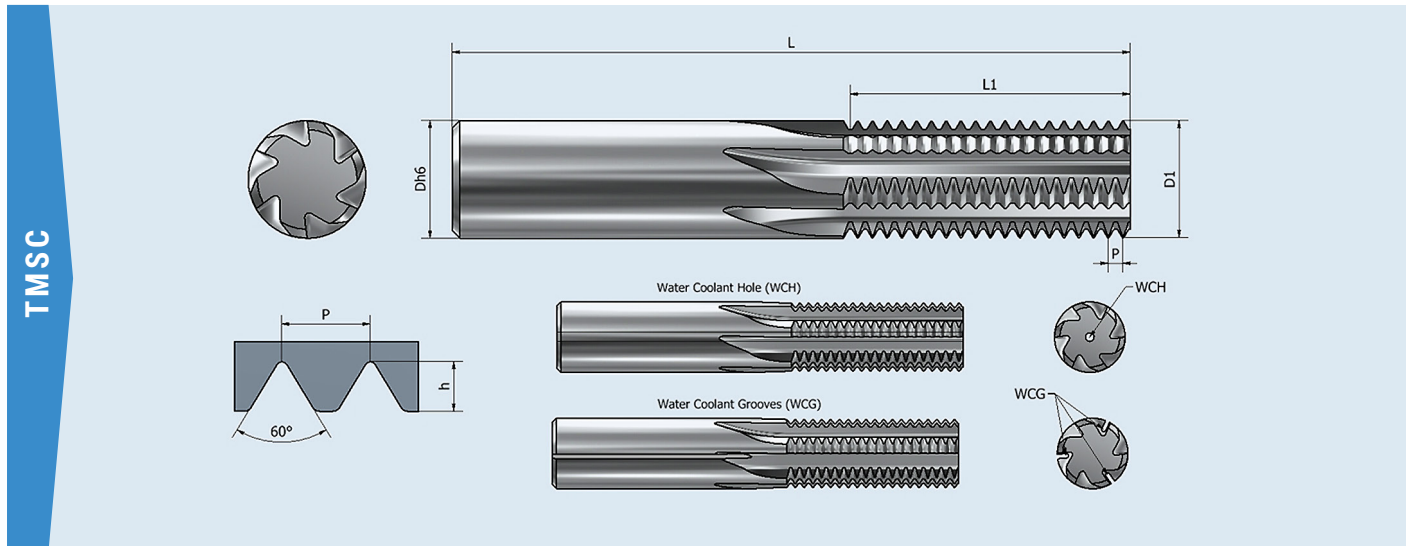


Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
										blank	blank WCH	blank WCG	ST 2 COATING	ST 2 COATING WCH	ST 2 COATING WCG
No. 0-80	0,3175	TMSC 03010 N 80 UN	38	2,540	3	1,00	8	3	0,186	*	*	*	*	*	*
No. 1-72	0,3528	TMSC 03013 N 72 UN	38	2,822	3	1,30	8	3	0,207	*	*	*	*	*	*
No. 2-64	0,3969	TMSC 03015 N 64 UN	38	3,175	3	1,50	8	3	0,233	•		•	•		•
No. 2-56	0,4538	TMSC 03015 N 56 UN	38	3,175	3	1,50	7	3	0,266	•		•	•		•
No. 3-48	0,5292	TMSC 03015 N 48 UN	38	3,704	3	1,50	7	3	0,311	•		•	•		•
No. 4-40	0,6350	TMSC 03021 N 40 UN	38	4,445	3	2,10	7	3	0,373	•		•	•		•
No. 5-44	0,5773	TMSC 03021 N 44 UN	38	4,618	3	2,10	8	3	0,339	•		•	•		•
No. 6-40	0,6350	TMSC 03021 N 40 UN	38	4,445	3	2,10	7	3	0,373	•		•	•		•
No. 6-32	0,7938	TMSC 03021 N 32 UN	38	5,556	3	2,10	7	3	0,466	•		•	•		•
No. 8-36	0,7056	TMSC 04030 N 36 UN	42	6,350	4	3,00	9	3	0,414	•		•	•		•
No. 8-32	0,7938	TMSC 04030 N 32 UN	42	6,350	4	3,00	8	3	0,466	•		•	•		•
No. 10-32	0,7938	TMSC 04035 N 32 UN	42	7,938	4	3,50	10	3	0,466	•		•	•		•
No. 10-24	1,0583	TMSC 04035 N 24 UN	42	7,408	4	3,50	7	3	0,621	•		•	•		•
No. 12-28	0,9071	TMSC 04036 N 28 UN	42	8,164	4	3,60	9	3	0,533	•		•	•		•
No. 10-24	1,0583	TMSC 06040 N 24 UN	57	8,467	6	4,00	8	3	0,621	•	•	•	•	•	•
1/4"-20	1,2700	TMSC 06040 N 20 UN	57	10,160	6	4,00	8	3	0,746	•	•	•	•	•	•
5/16"-18	1,4111	TMSC 06050 N 18 UN	57	12,700	6	5,00	9	3	0,828	•	•	•	•	•	•
3/8"-16	1,5875	TMSC 06059 N 16 UN	57	14,287	6	5,90	9	5	0,932	•	•	•	•	•	•
7/16"-14	1,8143	TMSC 08079 N 14 UN	63	16,328	8	7,90	9	5	1,065	•	•	•	•	•	•
1/2"-13	1,9538	TMSC 08079 N 13 UN	63	19,538	8	7,90	10	5	1,147	•	•	•	•	•	•
9/16"-12	2,1167	TMSC 10099 N 12 UN	72	23,284	10	9,90	11	5	1,243	•	•	•	•	•	•
5/8"-11	2,3091	TMSC 10099 N 11 UN	72	23,091	10	9,90	10	5	1,356	•	•	•	•	•	•
3/4"-10	2,5400	TMSC 12119 N 10 UN	83	27,940	12	11,90	11	5	1,491	•	•	•	•	•	•
7/8"-9	2,8222	TMSC 16159 N 9 UN	92	33,887	16	15,90	12	6	1,657	•	•	•	•	•	•
1"-8	3,1750	TMSC 16159 N 8 UN	92	38,100	16	15,90	12	6	1,864	•	•	•	•	•	•
1 1/8" 1 1/4"-7	3,6286	TMSC 16159 N 7 UN	92	36,286	16	15,90	10	6	2,131	•	•	•	•	•	•
1 3/8" 1 1/2"-6	4,2333	TMSC 20199 N 6 UN	104	38,100	20	19,90	9	6	2,486	•	•	•	•	•	•
1 3/4"-5	5,0800	TMSC 20199 N 5 UN	104	35,560	20	19,90	7	6	2,983	•	•	•	•	•	•
2"-4.5	5,6444	TMSC 20199 N 4.5 UN	104	39,511	20	19,90	7	6	3,314	•	•	•	•	•	•

\* Auf Anfrage / \* On request

# VHM-Gewindefräser geradegenutet, Innengewinde, 1,5 x Ø, UN Zoll fein

## Solid carbide thread mills straight fluted, internal thread, 1,5 x Ø, UN inch fine



Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
										blank	blank WCH	blank WCG	ST 2 COATING	ST 2 COATING WCH	ST 2 COATING WCG

### Innengewinde UN Zoll / Innengewinde UN Zoll

5/16"-32	0,7938	<b>TMSC 06059 N 32 UN</b>	57	14,288	6	5,90	18	5	0,466	•	•	•	•	•	•
7/16"-28	0,9071	<b>TMSC 08079 N 28 UN</b>	63	19,957	8	7,90	22	5	0,533	•	•	•	•	•	•
1/2"-20	1,2700	<b>TMSC 10099 N 20 UN</b>	72	22,860	10	9,90	18	5	0,746	•	•	•	•	•	•
9/16"-18	1,4111	<b>TMSC 10099 N 18 UN</b>	72	23,989	10	9,90	17	5	0,828	•	•	•	•	•	•
5/8"-16	1,5875	<b>TMSC 12119 N 16 UN</b>	83	28,575	12	11,90	18	5	0,932	•	•	•	•	•	•
5/8"-12	2,1167	<b>TMSC 12119 N 12 UN</b>	83	29,633	12	11,90	18	5	1,243	•	•	•	•	•	•

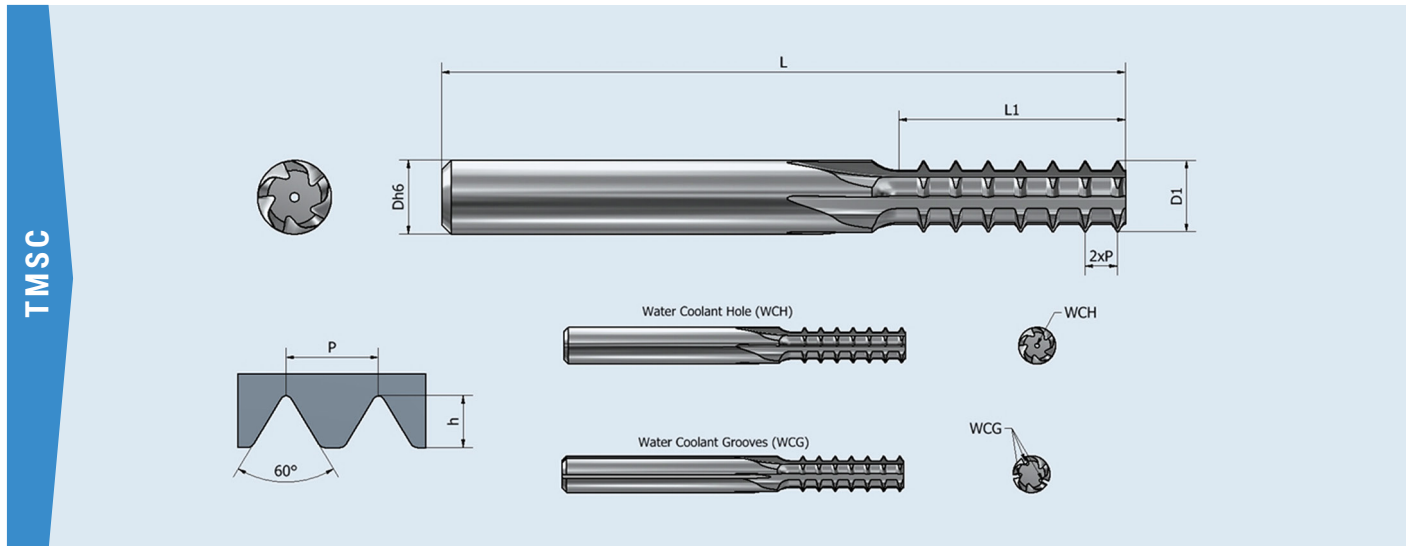
### Außengewinde UN Zoll / Außengewinde UN Zoll

No.6-32	0,7938	<b>TMSC 06059 E 32UN</b>	57	14,288	6	5,90	18	5	0,516	•	•	•	•	•	•
No.12-28	0,9071	<b>TMSC 08079 E 28UN</b>	63	19,957	8	7,90	22	5	0,589	•	•	•	•	•	•
1/4"	1,2700	<b>TMSC 10099 E 20UN</b>	72	22,860	10	9,90	18	5	0,825	•	•	•	•	•	•
5/16"	1,4111	<b>TMSC 10099 E 18UN</b>	72	23,989	10	9,90	17	5	0,917	•	•	•	•	•	•
3/8"	1,5875	<b>TMSC 12119 E 16UN</b>	83	28,575	12	11,90	18	5	1,031	•	•	•	•	•	•
9/16"	2,1167	<b>TMSC 12119 E 12UN</b>	83	29,633	12	11,90	14	5	1,375	•	•	•	•	•	•
1"	3,1750	<b>TMSC 16159 E 8UN</b>	92	38,100	16	15,90	12	6	2,062	•	•	•	•	•	•
1 3/8"	4,2333	<b>TMSC 20199 E 6UN</b>	104	38,100	20	19,90	9	6	2,750	•	•	•	•	•	•

**Bestellbeispiel:** TMSC 03013 N 0.40 ISO D  
**Order sample:** Bestellnr. / Order no. Type

# VHM-Gewindefräser geradegenutet, Innengewinde, 2 x Ø, UN Zoll

## Solid carbide thread mills straight fluted, internal thread, 2 x Ø, UN inch

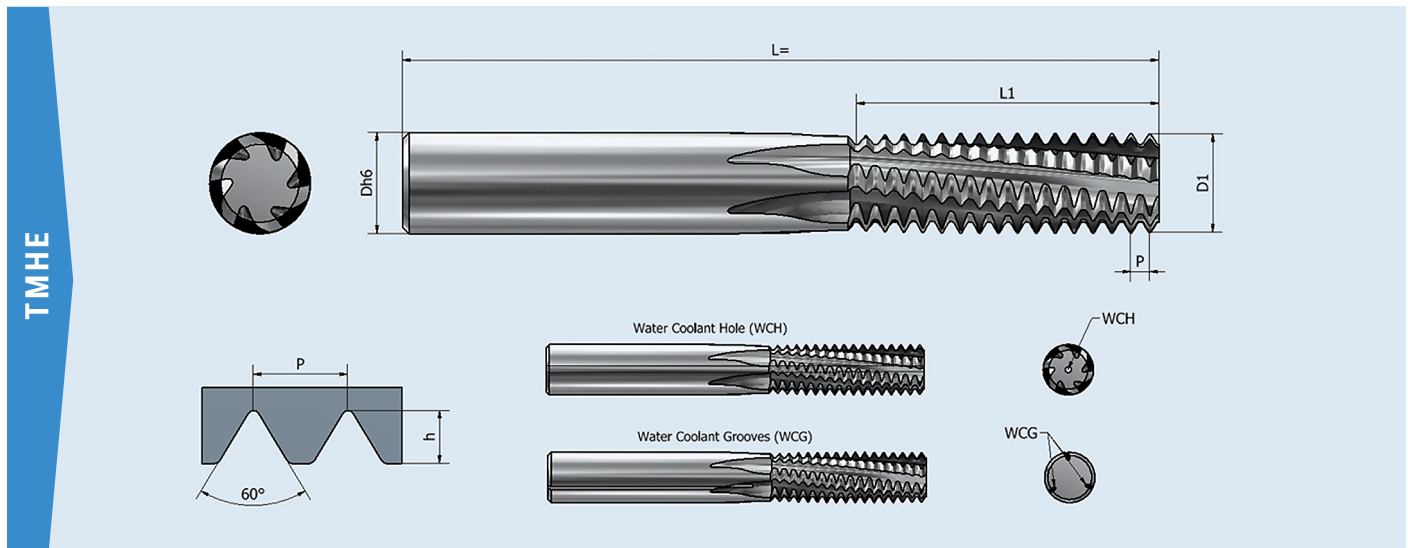


Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
										blank	blank WCH	blank WCG	ST 2 COATING	ST 2 COATING WCH	ST 2 COATING WCG
No. 4-40	0,6350	TMSC 03021 N 40 UN T2	38	6,350	3	2,10	5	3	0,373	•		•	•		•
No. 8-36	0,7056	TMSC 04030 N 36 UN T2	42	8,467	4	3,00	6	3	0,414	•		•	•		•
No. 8-32	0,7938	TMSC 04030 N 32 UN T2	42	9,525	4	3,00	6	3	0,466	•		•	•		•
1/4"-20	1,2700	TMSC 06040 N 20 UN T2	57	12,700	6	4,00	5	3	0,746	•	•	•	•	•	•
5/16"-18	1,4111	TMSC 06050 N 18 UN T2	62	16,933	6	5,00	6	3	0,828	•	•	•	•	•	•
3/8"-16	1,5875	TMSC 06059 N 16 UN T2	62	19,050	6	5,90	6	5	0,932	•	•	•	•	•	•
7/16"-14	1,8143	TMSC 08079 N 14 UN T2	74	25,400	8	7,90	7	5	1,065	•	•	•	•	•	•
1/2"-13	1,9538	TMSC 08079 N 13 UN T2	74	27,354	8	7,90	7	5	1,147	•	•	•	•	•	•
9/16"-12	2,1167	TMSC 10099 N 12 UN T2	86	29,633	10	9,90	7	5	1,243	•	•	•	•	•	•
5/8"-11	2,3091	TMSC 10099 N 11 UN T2	86	32,327	10	9,90	7	5	1,356	•	•	•	•	•	•
3/4"-10	2,5400	TMSC 12119 N 10 UN T2	95	40,640	12	11,90	8	5	1,491	•	•	•	•	•	•
7/8"-9	2,8222	TMSC 16159 N 9 UN T2	115	45,156	16	15,90	8	6	1,657	•	•	•	•	•	•
1"-8	3,1750	TMSC 16159 N 8 UN T2	115	50,800	16	15,90	8	6	1,864	•	•	•	•	•	•

**Bestellbeispiel:** TXXX 03013 N 0.40 ISO **D**  
**Order sample:** Bestellnr. / Order no. Type

# VHM-Gewindefräser spiralgenutet, Innengewinde, 1,5 x Ø, UN Zoll

## Solid carbide thread mills helical fluted, internal thread, 1,5 x Ø, UN inch

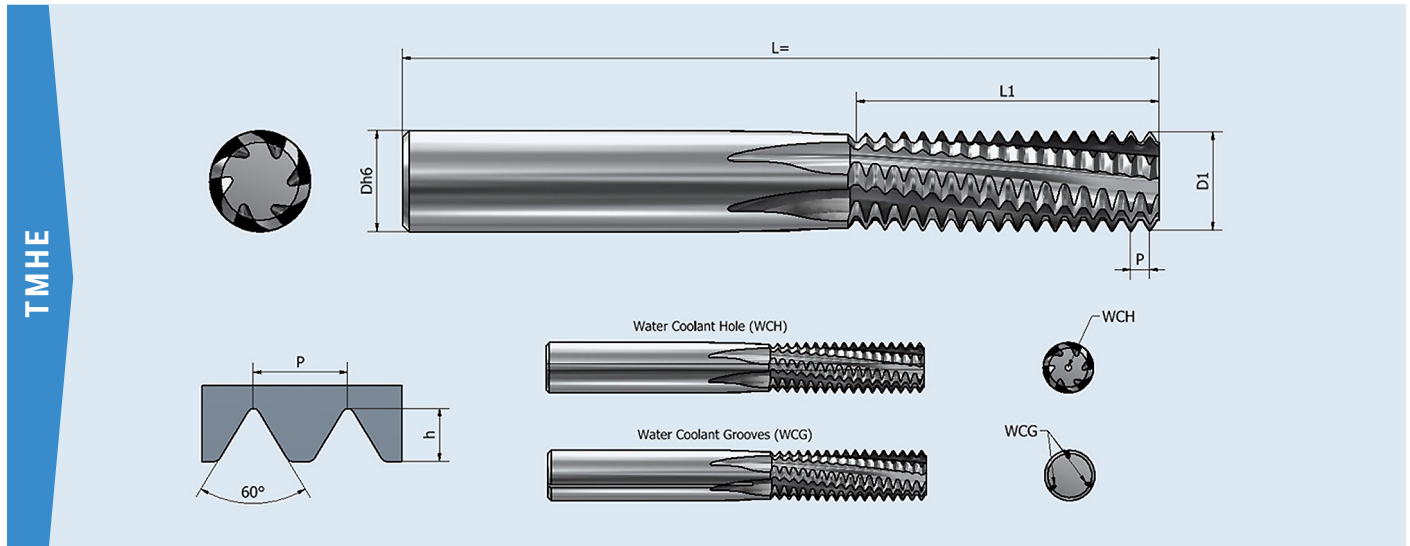


Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
										blank	blank WCH	blank WCG	ST 2 COATING	ST 2 COATING WCH	ST 2 COATING WCG
No. 0-80	0,3175	TMHE 03010 N 80 UN	38	2,540	3	1,00	8	3	0,186	*	*	*	*	*	*
No. 1-72	0,3528	TMHE 03013 N 72 UN	38	2,822	3	1,30	8	3	0,207	*	*	*	*	*	*
No. 2-64	0,3969	TMHE 03015 N 64 UN	38	3,175	3	1,50	8	3	0,233	•		•	•		•
No. 2-56	0,4538	TMHE 03015 N 56 UN	38	3,175	3	1,50	7	3	0,266	•		•	•		•
No. 3-48	0,5292	TMHE 03015 N 48 UN	38	3,704	3	1,50	7	3	0,311	•		•	•		•
No. 4-40	0,6350	TMHE 03021 N 40 UN	38	4,445	3	2,10	7	3	0,373	•		•	•		•
No. 5-44	0,5773	TMHE 03021 N 44 UN	38	4,618	3	2,10	8	3	0,339	•		•	•		•
No. 6-40	0,6350	TMHE 03021 N 40 UN	38	4,445	3	2,10	7	3	0,373	•		•	•		•
No. 6-32	0,7938	TMHE 03021 N 32 UN	38	5,556	3	2,10	7	3	0,466	•		•	•		•
No. 8-36	0,7056	TMHE 04030 N 36 UN	42	6,350	4	3,00	9	3	0,414	•		•	•		•
No. 8-32	0,7938	TMHE 04030 N 32 UN	42	6,350	4	3,00	8	3	0,466	•		•	•		•
No. 10-32	0,7938	TMHE 04035 N 32 UN	42	7,938	4	3,50	10	3	0,466	•		•	•		•
No. 10-24	1,0583	TMHE 04035 N 24 UN	42	7,408	4	3,50	7	3	0,621	•		•	•		•
No. 12-28	0,9071	TMHE 04036 N 28 UN	42	8,164	4	3,60	9	3	0,533	•		•	•		•
No. 12-24	1,0583	TMHE 06040 N 24 UN	57	8,467	6	4,00	8	3	0,621	•		•	•		•
1/4"-20	1,2700	TMHE 06040 N 24 UN	57	10,160	6	4,00	8	3	0,746	•		•	•		•
5/16"-18	1,4111	TMHE 06050 N 18 UN	57	12,700	6	5,00	9	3	0,828	•		•	•		•
3/8"-16	1,5875	TMHE 06059 N 16 UN	57	14,287	6	5,90	9	5	0,932	•	•	•	•	•	•
7/16"-14	1,8143	TMHE 08079 N 14 UN	63	16,328	8	7,90	9	5	1,065	•	•	•	•	•	•
1/2"-13	1,9538	TMHE 08079 N 13 UN	63	19,538	8	7,90	10	5	1,147	•	•	•	•	•	•
9/16"-12	2,1167	TMHE 10099 N 12 UN	72	23,283	10	9,90	11	5	1,243	•	•	•	•	•	•
5/8"-11	2,3091	TMHE 10099 N 11 UN	72	23,091	10	9,90	10	5	1,356	•	•	•	•	•	•
3/4"-10	2,5400	TMHE 12119 N 10 UN	83	27,940	12	11,90	11	5	1,491	•	•	•	•	•	•
7/8"-9	2,8222	TMHE 16159 N 9 UN	92	33,887	16	15,90	12	6	1,657	•	•	•	•	•	•
1"-8	3,1750	TMHE 16159 N 8 UN	92	38,100	16	15,90	12	6	1,864	•	•	•	•	•	•
1 1/8" - 1 1/4" - 7	3,6286	TMHE 16159 N 7 UN	92	36,286	16	15,90	10	6	2,131	•	•	•	•	•	•
1 3/8" - 1 1/2" - 6	4,2333	TMHE 20199 N 6 UN	104	38,100	20	19,90	9	6	2,486	•	•	•	•	•	•
1 3/4" - 5	5,0800	TMHE 20199 N 5 UN	104	35,560	20	19,90	7	6	2,983	•	•	•	•	•	•
2"-4.5	5,6444	TMHE 20199 N 4.5 UN	104	39,511	20	19,90	7	6	3,314	•	•	•	•	•	•

\* Auf Anfrage / \* On request

# VHM-Gewindefräser spiralgenutet, Innen- und Außengewinde, 1,5 x Ø, UN Zoll

## Solid carbide thread mills helical fluted, internal and external thread, 1,5 x Ø, UN inch



Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
										blank	blank WCH	blank WCG	ST 2 COATING	ST 2 COATING WCH	ST 2 COATING WCG

### Innengewinde UN Zoll fein / Internal thread UN inch fine

5/16"-32	0,7938	<b>TMHE 06059 N 32 UN</b>	57	14,288	6	5,90	18	5	0,466	•	•	•	•	•	•
7/16"-28	0,9071	<b>TMHE 08079 N 28 UN</b>	63	19,957	8	7,90	22	5	0,533	•	•	•	•	•	•
1/2"-20	1,2700	<b>TMHE 10099 N 20 UN</b>	72	22,860	10	9,90	18	5	0,746	•	•	•	•	•	•
9/16"-18	1,4111	<b>TMHE 10099 N 18 UN</b>	72	23,989	10	9,90	17	5	0,828	•	•	•	•	•	•
5/8"-16	1,5875	<b>TMHE 12119 N 16 UN</b>	83	28,575	12	11,90	18	5	0,932	•	•	•	•	•	•
5/8"-12	2,1167	<b>TMHE 12119 N 12 UN</b>	83	29,633	12	11,90	14	5	1,243	•	•	•	•	•	•

### Außengewinde UN Zoll / External thread UN inch

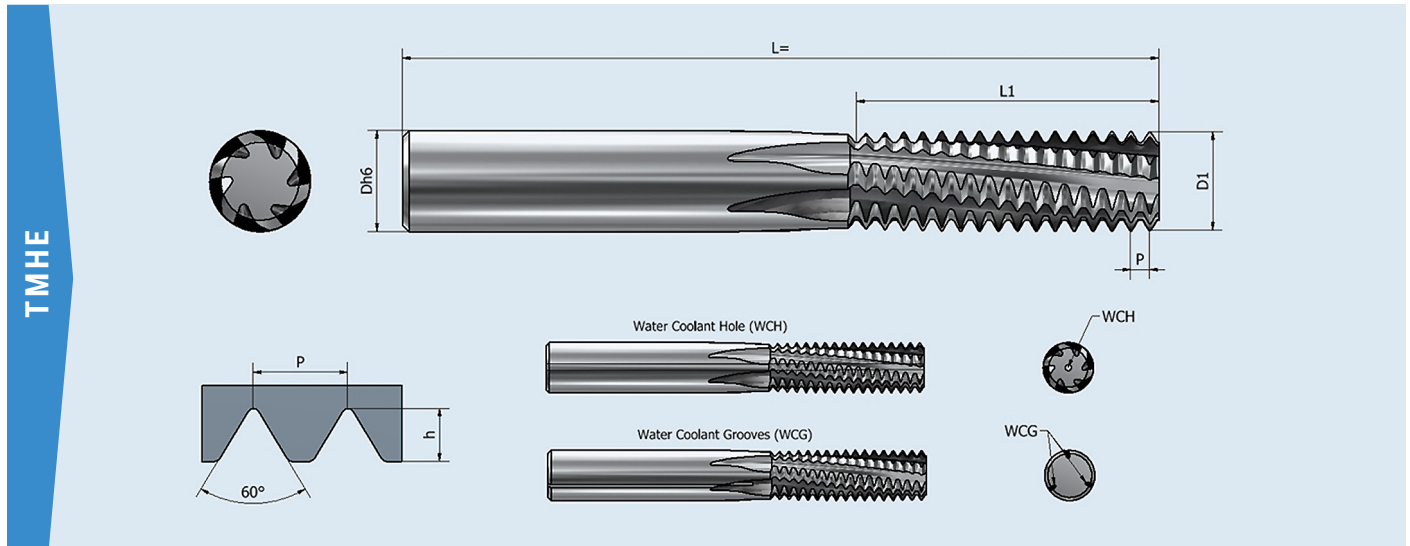
No. 6-32	0,7938	<b>TMHE 06059 E 32 UN</b>	57	14,287	6	5,90	18	5	0,516	•	•	•	•	•	•
No.12-28	0,9071	<b>TMHE 08079 E 28 UN</b>	63	19,957	8	7,90	22	5	0,589	•	•	•	•	•	•
1/4"	1,2700	<b>TMHE 10099 E 20 UN</b>	72	22,860	10	9,90	18	5	0,825	•	•	•	•	•	•
5/16"	1,4111	<b>TMHE 10099 E 18 UN</b>	72	23,989	10	9,90	17	5	0,917	•	•	•	•	•	•
3/8"	1,5875	<b>TMHE 12119 E 16 UN</b>	83	28,575	12	11,90	18	5	1,031	•	•	•	•	•	•
9/16"	2,1167	<b>TMHE 12119 E 12 UN</b>	83	29,633	12	11,90	14	5	1,375	•	•	•	•	•	•
1"	3,1750	<b>TMHE 16159 E 8 UN</b>	92	38,100	16	15,90	12	6	2,062	•	•	•	•	•	•
1 3/8"	4,2333	<b>TMHE 20199 E 6 UN</b>	104	38,100	20	19,90	9	6	2,750	•	•	•	•	•	•

**Bestellbeispiel:** TXXX 03013 N 0.40 ISO D  
**Order sample:** Bestellnr. / Order no. Type



# VHM-Gewindefräser spiralgenutet, Innengewinde, 2 x Ø, UN Zoll

## Solid carbide thread mills helical fluted, internal thread, 2 x Ø, UN inch

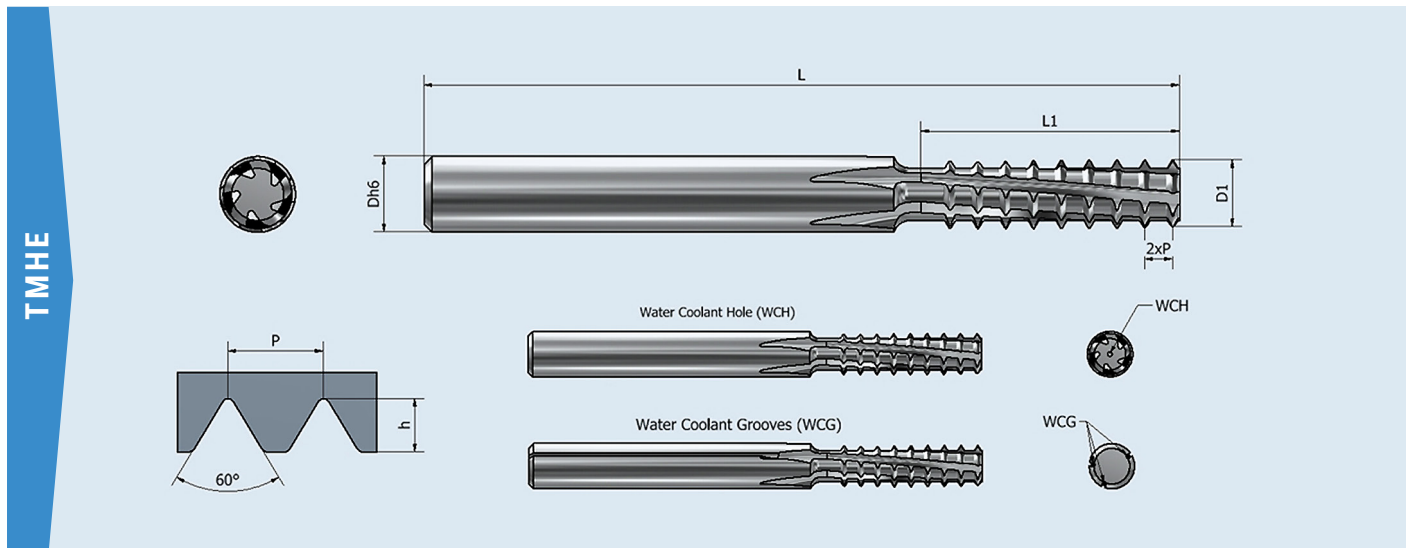


Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
										blank	blank WCH	blank WCG	ST 2 COATING	ST 2 COATING WCH	ST 2 COATING WCG
No. 2-56	0,4536	TMHE 03016 N 56 UN-2	38	4,536	3	1,60	10	3	0,266	•		•	•		•
No. 3-48	0,5292	TMHE 03019 N 48 UN-2	38	5,292	3	1,90	10	3	0,311	•		•	•		•
No. 4-40	0,6350	TMHE 03021 N 40 UN-2	38	5,715	3	2,10	9	3	0,373	•		•	•		•
No. 5-44	0,5773	TMHE 03020 N 44 UN-2	38	6,350	3	2,00	11	3	0,339	•		•	•		•
No. 6-40	0,6350	TMHE 03024 N 40 UN-2	38	7,620	3	2,40	12	3	0,373	•		•	•		•
No. 6-32	0,7938	TMHE 03025 N 32 UN-2	38	7,144	3	2,50	9	3	0,466	•		•	•		•
No. 8-36	0,7056	TMHE 04031 N 36 UN-2	42	8,467	4	3,10	12	3	0,414	•		•	•		•
No. 8-32	0,7938	TMHE 04031 N 32 UN-2	42	8,731	4	3,10	11	3	0,466	•		•	•		•
No. 10-32	0,7938	TMHE 04035 N 32 UN-2	47	11,113	4	3,50	14	3	0,466	•		•	•		•
No. 10-24	1,0583	TMHE 04035 N 24 UN-2	47	10,583	4	3,50	10	3	0,621	•		•	•		•
No. 12-28	0,9071	TMHE 06041 N 28 UN-2	47	11,792	6	4,10	13	3	0,533	•		•	•		•
No. 12-24	1,0583	TMHE 06041 N 24 UN-2	57	11,641	6	4,10	11	3	0,621	•		•	•		•
1/4"-20	1,2700	TMHE 06047 N 20 UN-2	62	12,700	6	4,70	10	3	0,746	•	•	•	•	•	•
5/16"-18	1,4111	TMHE 06059 N 18 UN-2	62	16,933	6	5,90	12	5	0,828	•	•	•	•	•	•
3/8"-16	1,5875	TMHE 08075 N 16 UN-2	63	19,050	8	7,50	12	5	0,932	•	•	•	•	•	•
7/16"-14	1,8143	TMHE 10085 N 14 UN-2	72	23,586	10	8,50	13	5	1,065	•	•	•	•	•	•
1/2"-13	1,9538	TMHE 10099 N 13 UN-2	86	25,400	10	9,90	13	5	1,147	•	•	•	•	•	•
9/16"-12	2,1167	TMHE 12105 N 12 UN-2	83	29,633	12	10,50	14	5	1,243	•	•	•	•	•	•
5/8"-11	2,1167	TMHE 12119 N11 UN-2	95	32,327	12	11,90	14	5	1,356	•	•	•	•	•	•
3/4"-10	2,5400	TMHE 16124 N 10 UN-2	92	38,100	16	12,40	15	6	1,491	•	•	•	•	•	•
7/8"-9	2,8222	TMHE 16157 N 9 UN-2	120	45,156	16	15,70	16	6	1,657	•	•	•	•	•	•
1"-8	3,1750	TMHE 20189 N 8 UN-2	120	50,800	20	18,90	16	6	1,864	•	•	•	•	•	•
1 1/8" 1/4"-7	3,6286	TMHE 20189 N 7 UN-2	130	58,057	20	18,90	16	6	2,131	•	•	•	•	•	•

Bestellbeispiel: **TXXX 03013 N 0.40 ISO D**  
 Order sample: Bestellnr. / Order no. Type

# VHM-Gewindefräser spiralgenutet, Innengewinde, 2,5 x Ø, UN Zoll

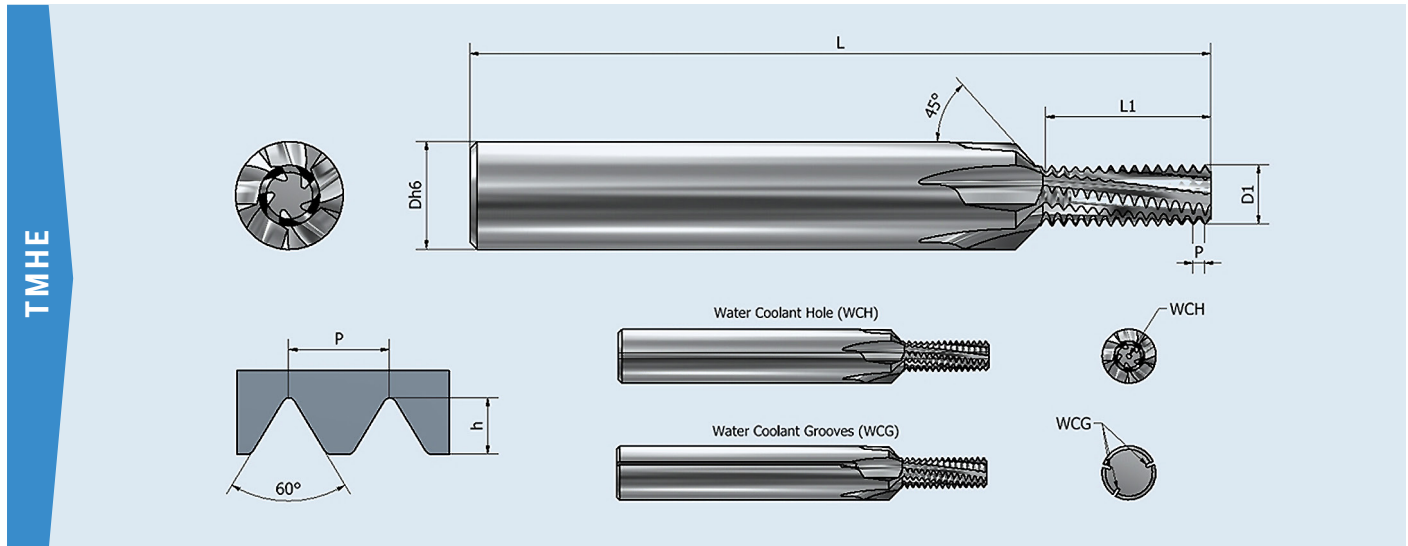
## Solid carbide thread mills helical fluted, internal thread, 2,5 x Ø, UN inch



Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
										blank	blank WCH	blank WCG	ST 2 COATING	ST 2 COATING WCH	ST 2 COATING WCG
No. 2.56	0,4536	TMHE 03016 N 56 UN-25	38	5,443	3	1,60	6	3	0,266	•		•	•		•
No. 4-40	0,6350	TMHE 03021 N 40 UN-25	38	7,620	3	2,10	5	3	0,373	•		•	•		•
No. 6-32	0,7938	TMHE 03025 N 32 UN-25	42	9,525	3	2,50	6	3	0,466	•		•	•		•
No. 8-32	0,7938	TMHE 04031 N 32 UN-25	42	11,113	4	3,10	7	3	0,466	•		•	•		•
No.10-32	0,7938	TMHE 04035 N 32 UN-25	47	12,700	4	3,50	8	3	0,466	•		•	•		•
No.10-24	1,0583	TMHE 04035 N 24 UN-25	47	12,700	4	3,50	6	3	0,621	•		•	•		•
1/4"-28	0,9071	TMHE 06047 N 28 UN-25	62	16,328	6	4,70	9	3	0,533	•		•	•		•
1/4"-20	1,2700	TMHE 06047 N 20 UN-25	62	17,780	6	4,70	7	3	0,746	•		•	•		•
5/16"-24	1,0583	TMHE 06059 N 24 UN-25	62	21,166	6	5,90	10	5	0,621	•	•	•	•	•	•
5/16"-18	1,4111	TMHE 06059 N 18 UN-25	62	19,755	6	5,90	7	5	0,828	•	•	•	•	•	•
3/8"-24	1,0583	TMHE 08075 N 24 UN-25	74	25,400	8	7,50	12	5	0,621	•	•	•	•	•	•
3/8"-16	1,5875	TMHE 08075 N 16 UN-25	74	25,400	8	7,50	8	5	0,932	•	•	•	•	•	•
7/16"-20	1,2700	TMHE 10085 N 20 UN-25	86	27,940	10	8,50	11	5	0,746	•	•	•	•	•	•
7/16"-14	1,8143	TMHE 10085 N 14 UN-25	95	29,029	10	8,50	8	5	1,065	•	•	•	•	•	•
1/2"-20	1,2700	TMHE 10099 N 20 UN-25	95	33,020	10	9,90	13	5	0,746	•	•	•	•	•	•
1/2"-13	1,9538	TMHE 10099 N 13 UN-25	95	35,169	10	9,90	9	5	1,147	•	•	•	•	•	•
9/16"-18	1,4111	TMHE 12105 N 18 UN-25	95	36,689	12	10,50	13	5	0,828	•	•	•	•	•	•
9/16"-16	1,5875	TMHE 12105 N 16 UN-25	95	38,100	12	10,50	12	5	0,932	•	•	•	•	•	•
5/8"-18	1,4111	TMHE 12119 N 18 UN-25	95	42,333	12	11,90	15	5	0,828	•	•	•	•	•	•
5/8"-11	2,3091	TMHE 12119 N 11 UN-25	95	41,546	12	11,90	9	5	1,356	•	•	•	•	•	•
3/4"-16	1,5875	TMHE 16124 N 16 UN-25	120	47,625	16	12,40	15	6	0,932	•	•	•	•	•	•
3/4"-12	2,1167	TMHE 16124 N 12 UN-25	120	50,800	16	12,40	12	5	1,234	•	•	•	•	•	•
3/4"-10	2,5400	THME 16124 N 10 UN-25	120	50,800	16	12,40	10	6	1,491	•	•	•	•	•	•
7/8"-9	2,8222	THME 16157 N 9 UN-25	130	56,444	16	15,70	10	6	1,657	•	•	•	•	•	•
1"-8	3,1750	TMHE 20189 N 8 UN-25	140	63,500	20	18,90	10	6	1,864	•	•	•	•	•	•
1 1/8"-7	3,6286	TMHE 20189 N 7 UN-25	140	72,571	20	18,90	10	6	2,131	•	•	•	•	•	•

# VHM-Gewindefräser spiralgenutet, Innengewinde, 2 x Ø, mit 45° Senkfase, UN Zoll

## Solid carbide thread mills helical fluted, internal thread, 2 x Ø, with 45° chamfer, UN inch



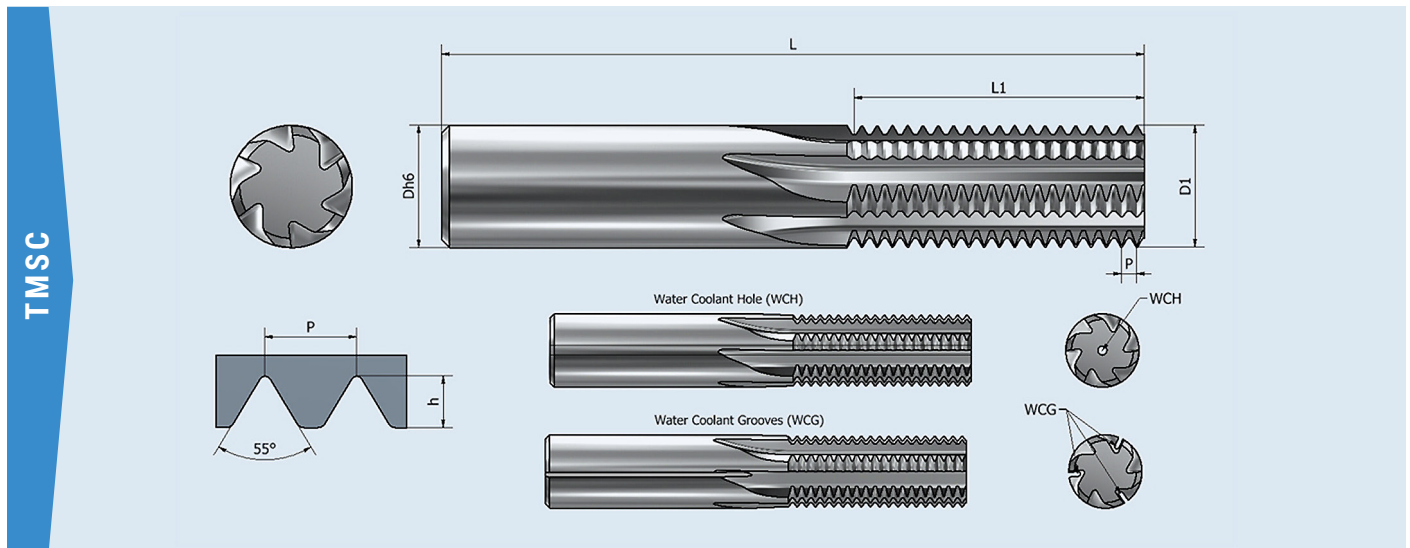
Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
										blank	blank WCH	blank WCG	ST 2 COATING	ST 2 COATING WCH	ST 2 COATING WCG
No. 2-56	0,4536	TMHE 04016 N 56 UN 2A	42	4,536	4	1,60	10	3	0,266	*	*	*	*	*	*
No. 3-48	0,5292	TMHE 04019 N 48 UN 2A	42	5,292	4	1,90	10	3	0,311	*	*	*	*	*	*
No. 4-40	0,6350	TMHE 04020 N 40 UN 2A	42	5,715	4	2,00	9	3	0,373	•		•	•		•
No. 5-44	0,5773	TMHE 04020 N 44 UN 2A	42	6,350	4	2,00	11	3	0,339	•		•	•		•
No. 6-40	0,6350	TMHE 04024 N 40 UN 2A	42	7,620	4	2,40	12	3	0,373	•		•	•		•
No. 6-32	0,7938	TMHE 04025 N 32 UN 2A	42	7,144	4	2,50	9	3	0,466	•		•	•		•
No. 8-36	0,7056	TMHE 06031 N 36 UN 2A	57	8,467	6	3,10	12	3	0,414	•		•	•		•
No. 8-32	0,7938	TMHE 06031 N 32 UN 2A	57	8,731	6	3,10	11	3	0,466	•		•	•		•
No. 10-32	0,7938	TMHE 06035 N 32 UN 2A	57	11,113	6	3,50	14	3	0,466	•		•	•		•
No. 10-24	1,0583	TMHE 06035 N 24 UN 2A	57	10,583	6	3,50	10	3	0,621	•		•	•		•
No. 12-28	0,9071	TMHE 08041 N 28 UN 2A	63	11,792	8	4,10	13	3	0,533	•		•	•		•
No. 12-24	1,0583	TMHE 08041 N 24UN 2A	63	11,641	8	4,10	11	3	0,621	•		•	•		•
1/4"-20	1,2700	TMHE 08047 N 20 UN 2A	63	12,700	8	4,70	10	3	0,746	•		•	•		•
5/16"-18	1,4111	TMHE 10059 N 18 UN 2A	72	16,933	10	5,90	12	5	0,828	•	•	•	•		•
3/8"-16	1,5875	TMHE 12075 N 16 UN 2A	83	19,050	12	7,50	12	5	0,932	•	•	•	•		•
7/16"-14	1,8143	TMHE 16085 N 14 UN 2A	110	23,586	16	8,50	13	5	1,065	•	•	•	•		•
1/2"-13	1,9538	TMHE 16099 N 13 UN 2A	110	25,400	16	9,90	13	5	1,147	•	•	•	•		•
9/16"-12	2,1167	TMHE 16105 N 12 UN 2A	110	29,633	16	10,50	14	5	1,243	•	•	•	•		•
5/8"-11	2,3091	TMHE 16119 N 11 UN 2A	110	32,327	16	11,90	14	5	1,356	•	•	•	•		•
3/4"-10	2,5400	TMHE 16124 N 10 UN 2A	110	38,100	16	12,40	15	6	1,491	•	•	•	•		•
7/8"-9	2,8222	TMHE 20157 N 9 UN 2A	130	45,156	20	15,70	16	6	1,657	•	•	•	•		•
1"-8	3,1750	TMHE 25189 N 8 UN 2A	130	50,800	25	18,90	16	6	1,864	•	•	•	•		•
1 1/8"	3,6286	TMHE 25189 N 7 UN 2A	130	58,057	25	18,90	16	6	2,131	•	•	•	•		•
1 1/4"-7										•	•	•	•		•

\* Auf Anfrage / \* On request

**Bestellbeispiel:** TXXX 03013 N 0.40 ISO D  
**Order sample:** Bestellnr. / Order no. Type

# VHM-Gewindefräser geradegenutet, Innen- und Außengewinde, BSW Zoll

## Solid carbide thread mills straight fluted, internal and external thread, BSW inch

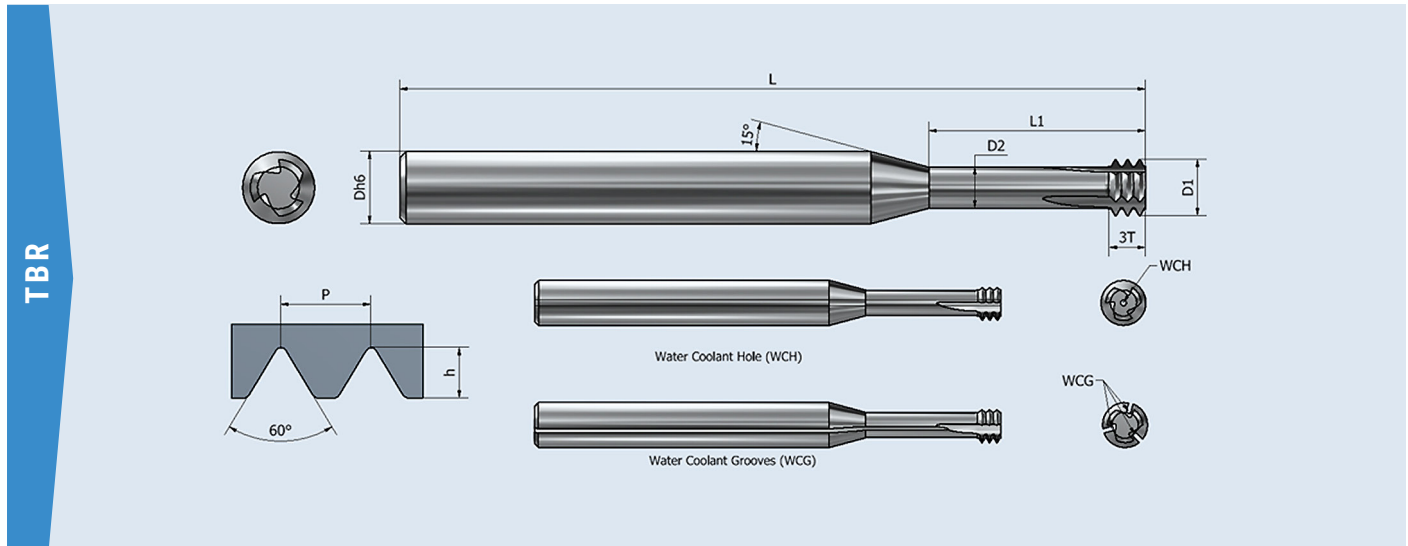


Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
										blank	blank WCH	blank WCG	ST 2 COATING	ST 2 COATING WCH	ST 2 COATING WCG
3/32"	0,5292	<b>TMSC 03015 NE 48 BSW</b>	38	3,704	3	1,50	7	3	0,339	•		•	•		•
1/8"	0,6350	<b>TMSC 03021 NE 40 BSW</b>	38	4,445	3	2,10	7	3	0,407	•		•	•		•
5/32"	0,7938	<b>TMSC 03026 NE 32 BSW</b>	38	5,556	3	2,60	7	3	0,508	•		•	•		•
1/4"	1,2700	<b>TMSC 06040 NE 20 BSW</b>	57	10,160	6	4,00	8	3	0,813	•		•	•		•
5/16"	1,4111	<b>TMSC 06050 NE 18 BSW</b>	57	11,289	6	5,00	8	3	0,904	•		•	•		•
3/8"	1,5875	<b>TMSC 06059 NE 16 BSW</b>	57	14,288	6	5,90	9	5	1,016	•	•	•	•	•	•
7/16"	1,8143	<b>TMSC 08079 NE 14 BSW</b>	63	18,143	8	7,90	10	5	1,162	•	•	•	•	•	•
1/2" - 9/16"	2,1167	<b>TMSC 08079 NE 12 BSW</b>	63	19,050	8	7,90	9	5	1,355	•	•	•	•	•	•
5/8"	2,3091	<b>TMSC 10099 NE 11 BSW</b>	72	23,091	10	9,90	10	5	1,479	•	•	•	•	•	•
3/4"	2,5400	<b>TMSC 12119 NE 10 BSW</b>	83	27,940	12	11,90	11	5	1,626	•	•	•	•	•	•
7/8"	2,8222	<b>TMSC 12119 NE 9 BSW</b>	83	28,222	12	11,90	10	5	1,807	•	•	•	•	•	•
1"	3,1750	<b>TMSC 16159 NE 8 BSW</b>	92	34,925	16	15,90	11	6	2,033	•	•	•	•	•	•
1 1/8" - 1 1/4"	3,6286	<b>TMSC 16159 NE 7 BSW</b>	92	36,286	16	15,90	10	6	2,323	•	•	•	•	•	•
1 3/8" - 1 1/2"	4,2333	<b>TMSC 16159 NE 6 BSW</b>	92	38,100	16	15,90	9	6	2,711	•	•	•	•	•	•
1 5/8" - 1 3/4"	5,0800	<b>TMSC 20199 NE 5 BSW</b>	104	40,640	20	19,90	8	6	3,253	•	•	•	•	•	•
1 7/8" - 2"	5,6444	<b>TMSC 20199 NE 4.5 BSW</b>	104	39,511	20	19,90	7	6	3,614	•	•	•	•	•	•

**Bestellbeispiel:** TXXX 03013 N 0.40 ISO **D**  
**Order sample:** Bestellnr. / Order no. Type

# VHM-Gewindewirbler geradegenutet, Innengewinde, 2 x / 3 x Ø, ISO 60° metrisch

## Solid carbide thread whirling tool, straight fluted, internal thread, 2 x / 3x Ø, ISO 60° metric



Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	D2	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
											blank	blank WCH	blank WCG	ST 2 COATING WCH	ST 2 COATING WCG	

### Gewindewirbler 2 x Ø geradegenutet / Thread whirling tool 2 x Ø straight fluted

M1	0,25	TBR 03007 N 0.25 ISO 1T	38	2,00	3	0,70	0,30	1	3	0,147	•		•	•		•
M1.4	0,30	TBR 03010 N 0.30 ISO 1T	38	2,80	3	1,00	0,55	1	3	0,176	•		•	•		•
M1.6	0,35	TBR 03012 N 0.35 ISO 1T	38	3,20	3	1,20	0,70	1	3	0,206	•		•	•		•
M2	0,40	TBR 03015 N 0.40 ISO 1T	38	4,00	3	1,50	0,93	1	3	0,235	•		•	•		•
M2.5	0,45	TBR 03018 N 0.45 ISO 1T	38	5,00	3	1,80	1,17	1	3	0,264	•		•	•		•
M3	0,50	TBR 03022 N 0.50 ISO 3T	38	6,00	3	2,20	1,50	3	3	0,294	•		•	•		•
M3.5	0,60	TBR 03026 N 0.60 ISO 3T	38	7,00	3	2,60	1,80	3	3	0,352	•		•	•		•
M4	0,70	TBR 04031 N 0.70 ISO 3T	42	8,00	4	3,10	2,20	3	3	0,411	•		•	•		•
M4.5	0,75	TBR 04033 N 0.75 ISO 3T	42	9,00	4	3,30	2,36	3	3	0,440	•		•	•		•
M5	0,80	TBR 06038 N 0.80 ISO 3T	57	10,00	6	3,80	2,80	3	3	0,470	•		•	•		•
M6	1,00	TBR 06047 N 1.00 ISO 3T	57	12,00	6	4,70	3,40	3	3	0,587	•		•	•		•
M8	1,25	TBR 06059 N 1.25 ISO 3T	62	16,00	6	5,90	4,30	3	5	0,734	•	•	•	•	•	•
M10	1,50	TBR 08079 N 1.50 ISO 3T	74	20,00	8	7,90	6,00	3	5	0,881	•	•	•	•	•	•

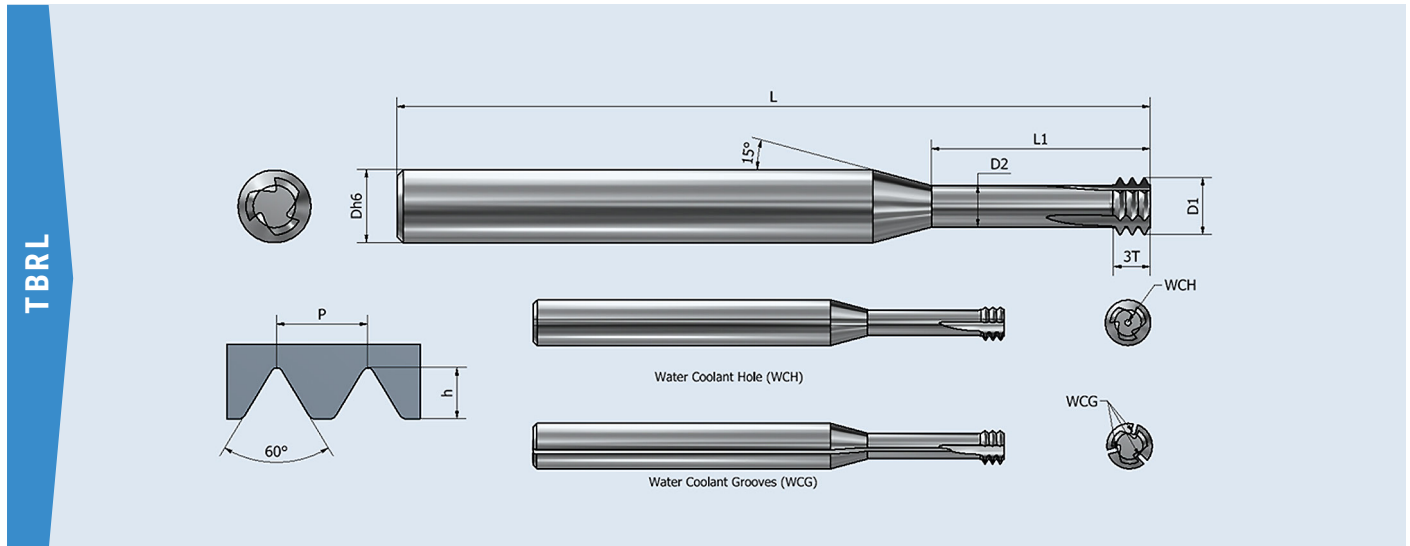
### Gewindewirbler 3 x Ø geradegenutet / Thread whirling tool 3 x Ø straight fluted

M1	0,25	TBRL 03007 N 0.25 ISO 1T	38	3	3	0,70	0,30	1	3	0,147	•		•	•		•
M1.4	0,3	TBRL 03010 N 0.30 ISO 1T	38	4,2	3	1,00	0,55	1	3	0,176	•		•	•		•
M1.6	0,35	TBRL 03012 N 0.35 ISO 1T	38	4,8	3	1,20	0,70	1	3	0,206	•		•	•		•
M2	0,40	TBRL 03015 N 0.40 ISO 1T	38	6,00	3	1,50	0,93	1	3	0,235	•		•	•		•
M2.5	0,45	TBRL 03018 N 0.45 ISO 1T	38	7,50	3	1,80	1,17	1	3	0,264	•		•	•		•
M3	0,50	TBRL 03022 N 0.50 ISO 3T	42	9,00	3	2,20	1,50	3	3	0,294	•		•	•		•
M3.5	0,60	TBRL 03026 N 0.60 ISO 3T	42	10,50	3	2,60	1,80	3	3	0,352	•		•	•		•
M4	0,70	TBRL 04031 N 0.70 ISO 3T	47	12,00	4	3,10	2,20	3	3	0,411	•		•	•		•
M4.5	0,75	TBRL 04033 N 0.75 ISO 3T	47	13,50	4	3,30	2,36	3	3	0,440	•		•	•		•
M5	0,80	TBRL 06038 N 0.80 ISO 3T	57	15,00	6	3,80	2,80	3	3	0,470	•		•	•		•
M6	1,00	TBRL 06047 N 1.00 ISO 3T	62	18,00	6	4,70	3,40	3	3	0,587	•		•	•		•
M8	1,25	TBRL 06059 N 1.25 ISO 3T	65	24,00	6	5,90	4,30	3	5	0,734	•	•	•	•	•	•
M10	1,50	TBRL 08079 N 1.50 ISO 3T	86	30,00	8	7,90	6,00	3	5	0,881	•	•	•	•	•	•

Bestellbeispiel: **TXXX 03013 N 0.40 ISO D**  
 Order sample: Bestellnr. / Order no. Type

# VHM-Gewindefräser spiralgenutet, Innengewinde, 3 x Ø, UN Zoll

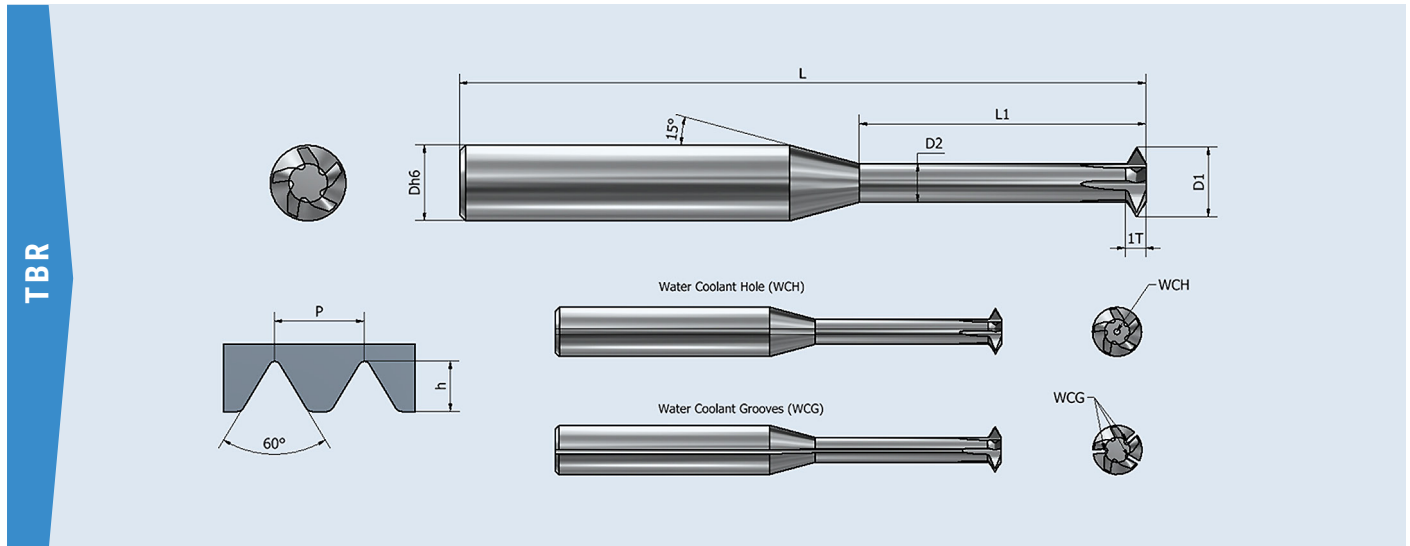
## Solid carbide thread mills helical fluted, internal thread, 3 x Ø, UN inch



Norm / Norm	Steig. / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	NF	Z	h	Type A	Type B	Type C	Type D	Type E	Type F
										blank	blank WCH	blank WCG	ST 2 COATING	ST 2 COATING WCH	ST 2 COATING WCG
No. 0-80	0,3175	TBRL 03010 N 80" UN 1T	38	4,600	3	1,00	1	3	0,186	•		•	•		•
No. 1-72	0,3528	TBRL 03014 N 72" UN 1T	38	5,600	3	1,40	1	3	0,207	•		•	•		•
No. 2-64	0,3969	TBRL 03016 N 64 UN 1T	38	6,600	3	1,60	1	3	0,233	•		•	•		•
No. 2-56	0,4538	TBRL 03016 N 56 UN 1T	38	6,600	3	1,60	1	3	0,266	•		•	•		•
No. 3-48	0,5292	TBRL 03019 N 48 UN 3T	38	7,600	3	1,90	3	3	0,311	•		•	•		•
No. 4-40	0,6350	TBRL 03021 N 40 UN 3T	42	8,600	3	2,10	3	3	0,373	•		•	•		•
No. 5-44	0,5773	TBRL 03024 N 44 UN 3T	42	9,600	3	2,40	3	3	0,339	•		•	•		•
No. 6-40	0,6350	TBRL 03025 N 40 UN 3T	42	10,600	3	2,50	3	3	0,373	•		•	•		•
No. 6-32	0,7938	TBRL 03025 N 32 UN 3T	42	10,600	3	2,50	3	3	0,466	•		•	•		•
No. 8-36	0,7056	TBRL 04031 N 36 UN 3T	42	12,600	4	3,10	3	3	0,414	•		•	•		•
No. 8-32	0,7938	TBRL 04031 N 32 UN 3T	42	12,600	4	3,10	3	3	0,466	•		•	•		•
No. 10-32	0,7938	TBRL 04035 N 32 UN 3T	42	14,600	4	3,50	3	3	0,466	•		•	•		•
No. 10-24	1,0583	TBRL 04035 N 24 UN 3T	42	14,600	4	3,50	3	3	0,621	•		•	•		•
No. 12-28	0,9071	TBRL 06041 N 28 UN 3T	62	16,600	6	4,10	3	3	0,533	•		•	•		•
No. 12-24	1,0583	TBRL 06041 N 24 UN 3T	62	16,600	6	4,10	3	3	0,621	•		•	•		•
1/4"-20	1,2700	TBRL 06047 N 20 UN 3T	62	20,000	6	4,70	3	3	0,746	•		•	•		•
5/16"-18	1,4111	TBRL 06059 N 18 UN 3T	72	25,000	6	5,90	3	5	0,828	•	•	•	•	•	•
3/8"-16	1,5875	TBRL 08075 N 16 UN 3T	86	30,000	8	7,50	3	5	0,932	•	•	•	•	•	•
7/16"-14	1,8143	TBRL 10085 N 14 UN 3T	95	35,000	10	8,50	3	5	1,065	•	•	•	•	•	•
1/2"-13	1,9538	TBRL 10099 N 13 UN 3T	95	40,000	10	9,90	3	5	1,147	•	•	•	•	•	•

**Bestellbeispiel:** TXXX 03013 N 0.40 ISO **D**  
**Order sample:** Bestellnr. / Order no. Type

# Gewindewirbler, Teilprofil, Innen- und Außengewinde, Metrisch / Zoll, lange Ausführung Solid carbide thread whirling tool, partial profile, internal and external, metric / UN, long version



Steigung / pitch mm	Best.-Nr. / Order no.	L	L1	D	D1	D2	NF	Z	h	R	Type A	Type B	Type C	Type D	Type E	Type F
											blank	blank WCH	blank WCG	ST 2 COATING WCH	ST 2 COATING WCG	ST 2 COATING WCG

## Teilprofil 60° / Partial profile 60°

0,50-1,50 / 48"-16"	<b>TBR 06059 NE A60 1T</b>	72	30	6	5,9	3,210	1	5	1,345	0,03	•	•	•	•	•	•
0,50-3,00 / 48"-8"	<b>TBR 12119 NE AG60 1T</b>	115	48	12	11,9	6,400	1	5	2,720	0,03	•	•	•	•	•	•

## M+UN Innen / Internal

3,50-5,00 / 7"-5"	<b>TBR 20199 N N60 1T</b>	120	52	20	19,9	12,330	1	6	3,784	0,20	•	•	•	•	•	•
5,50-6,00 / 4,5"-4"	<b>TBR 20199 N Q60 1T</b>	140	68	20	19,9	11,490	1	6	4,203	0,30	•	•	•	•	•	•

## M+UN Außen / External

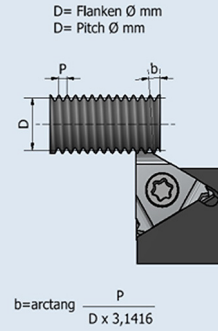
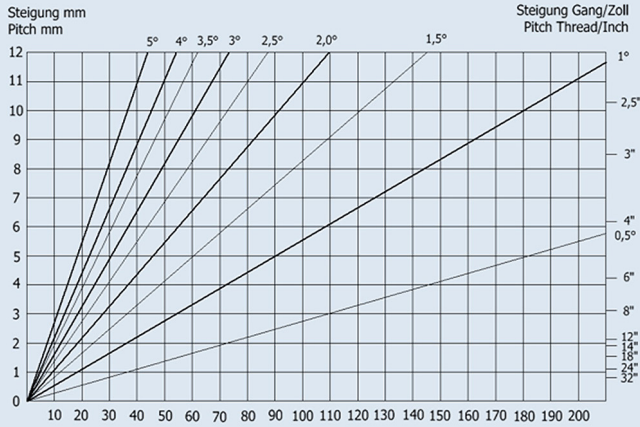
3,50-5,00 / 7"-5"	<b>TBR 20199 E N60 1T</b>	120	52	20	19,9	12,730	1	6	3,584	0,40	•	•	•	•	•	•
5,50-6,00 / 4,5"-4"	<b>TBR 20199 E Q60 1T</b>	140	68	20	19,9	11,490	1	6	4,203	0,65	•	•	•	•	•	•

## Teilprofil 55° / Partial profile 55°

0,50-1,50 / 48"-16"	<b>TBR 06059 NE A55 1T</b>	72	30	6	5,9	3,210	1	5	1,380	0,06	•	•	•	•	•	•
0,50-3,00 / 48"-8"	<b>TBR 16159 NE AG55 1T</b>	120	48	16	15,9	6,400	1	6	3,200	0,06	•	•	•	•	•	•
3,50-5,00 / 7"-5"	<b>TBR 20199 NE N55 1T</b>	120	52	20	19,9	12,330	1	6	3,784	0,50	•	•	•	•	•	•
5,50-6,00 / 4,5"-4"	<b>TBR 20199 NE Q55 1T</b>	140	68	20	19,9	11,490	1	6	4,203	0,70	•	•	•	•	•	•

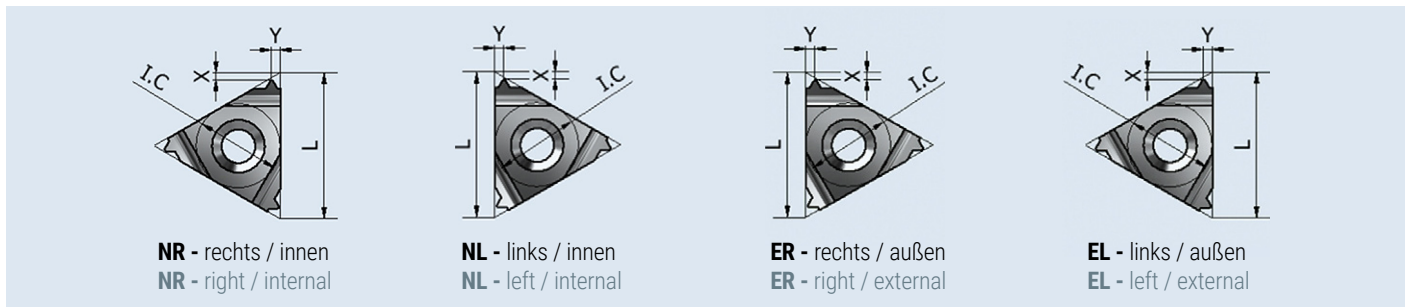
**Bestellbeispiel:** TXXX 03013 N 0.40 ISO D  
**Order sample:** Bestellnr. / Order no. Type

# Tabelle für Steigungswinkel Table for helix angle



## Wendeplatten Code-System Thread turning insert code system

<b>11</b>	<b>ER</b>	<b>0.35</b>	<b>ISO</b>	<b>3M</b>	<b>CM</b>
<b>L</b> Theoretische Seitenlänge der Platte Theoretical insert length	<b>ER</b> rechts /außen right / external <b>EL</b> links /außen left / external <b>NR</b> rechts /innen right / internal <b>EL</b> links /innen left / internal	<b>Steigung</b> mm / Zoll mm / inch	<b>Norm</b>	<b>Anzahl Zähne</b> Number of teeth	<b>CM</b> Spezialsorten für besondere Anwendungen Special grades for specific applications



**IC**  
Innenkreisdurchmesser  
Inner circle diameter

**X**  
Vertikale Referenz Profilposition  
Vertical reference profile position

**Y**  
Horizontale Referenz Profilposition  
Horizontal reference profile position

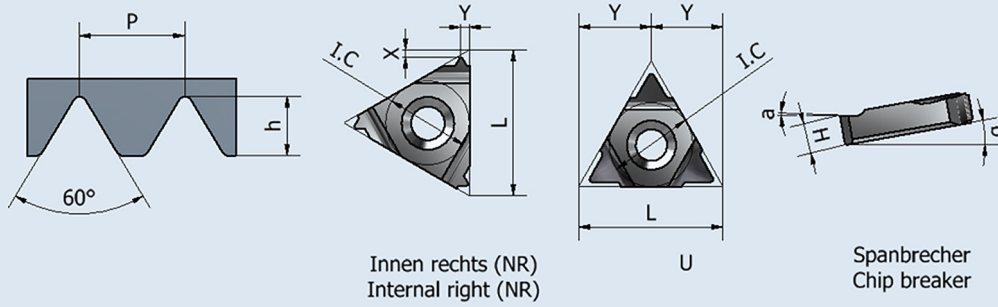
IC	Steigung pitch	Rechts Right	Links Left	L	X	Y	U-Platte Spacer	Halter Tool holder
1/4" - 6,35	0,35	<b>11NR 0.35 ISO</b>	<b>11NL 0.35 ISO</b>	11	0,80	0,30	--	PO**.-11NR



# VHM-Gewindedrehplatten, rechts, Innengewinde, ISO 60° metrisch

## Solid carbide thread turning inserts, right, internal thread, ISO 60° metric

11-16NR



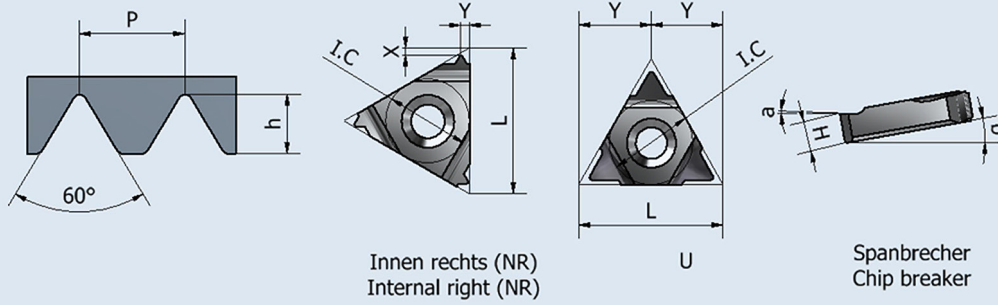
IC Zoll / inch mm	L	Steigung / pitch mm	Bestellnr. / Order no.	X mm	Y mm	a	b	H mm	U-Platte / Spacer	Halter / Tool holder	blank	ST 2 COATING	SD COATING
1/4" - 6,35	11	0,35	<b>11NR 0.35 ISO</b>	0,80	0,30	2°	15°	3,00 0/-0,05	---	PO**.-11NR	•	•	•
1/4" - 6,35	11	0,40	<b>11NR 0.40 ISO</b>	0,70	0,40	2°	15°	3,00 0/-0,05	---	PO**.-11NR	•	•	•
1/4" - 6,35	11	0,45	<b>11NR 0.45 ISO</b>	0,80	0,40	2°	15°	3,00 0/-0,05	---	PO**.-11NR	•	•	•
1/4" - 6,35	11	0,50	<b>11NR 0.50 ISO</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO**.-11NR	•	•	•
1/4" - 6,35	11	0,60	<b>11NR 0.60 ISO</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO**.-11NR	•	•	•
1/4" - 6,35	11	0,70	<b>11NR 0.70 ISO</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO**.-11NR	•	•	•
1/4" - 6,35	11	0,75	<b>11NR 0.75 ISO</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO**.-11NR	•	•	•
1/4" - 6,35	11	0,80	<b>11NR 0.80 ISO</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO**.-11NR	•	•	•
1/4" - 6,35	11	1,00	<b>11NR 1.00 ISO</b>	0,60	0,70	2°	15°	3,00 0/-0,05	---	PO**.-11NR	•	•	•
1/4" - 6,35	11	1,25	<b>11NR 1.25 ISO</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO**.-11NR	•	•	•
1/4" - 6,35	11	1,50	<b>11NR 1.50 ISO</b>	0,80	1,00	2°	15°	3,00 0/-0,05	---	PO**.-11NR	•	•	•
1/4" - 6,35	11	1,75	<b>11NR 1.75 ISO</b>	0,80	1,10	2°	15°	3,00 0/-0,05	---	PO**.-11NR	•	•	•
3/8" - 9,525	16	0,35	<b>16NR 0.35 ISO</b>	0,80	0,30	2°	15°	3,40 0/-0,05	YE3	PO**.-16NR	•	•	•
3/8" - 9,525	16	0,40	<b>16NR 0.40 ISO</b>	0,80	0,40	2°	15°	3,40 0/-0,05	YE3	PO**.-16NR	•	•	•
3/8" - 9,525	16	0,45	<b>16NR 0.45 ISO</b>	0,80	0,40	2°	15°	3,40 0/-0,05	YE3	PO**.-16NR	•	•	•
3/8" - 9,525	16	0,50	<b>16NR 0.50 ISO</b>	0,60	0,60	2°	15°	3,40 0/-0,05	YE3	PO**.-16NR	•	•	•
3/8" - 9,525	16	0,60	<b>16NR 0.60 ISO</b>	0,60	0,60	2°	15°	3,40 0/-0,05	YE3	PO**.-16NR	•	•	•
3/8" - 9,525	16	0,70	<b>16NR 0.70 ISO</b>	0,60	0,60	2°	15°	3,40 0/-0,05	YE3	PO**.-16NR	•	•	•
3/8" - 9,525	16	0,75	<b>16NR 0.75 ISO</b>	0,60	0,60	2°	15°	3,40 0/-0,05	YE3	PO**.-16NR	•	•	•
3/8" - 9,525	16	0,80	<b>16NR 0.80 ISO</b>	0,60	0,60	2°	15°	3,40 0/-0,05	YE3	PO**.-16NR	•	•	•
3/8" - 9,525	16	1,00	<b>16NR 1.00 ISO</b>	0,60	0,70	2°	15°	3,40 0/-0,05	YE3	PO**.-16NR	•	•	•
3/8" - 9,525	16	1,25	<b>16NR 1.25 ISO</b>	0,80	0,90	2°	15°	3,40 0/-0,05	YE3	PO**.-16NR	•	•	•
3/8" - 9,525	16	1,50	<b>16NR 1.50 ISO</b>	0,80	1,00	2°	15°	3,40 0/-0,05	YE3	PO**.-16NR	•	•	•
3/8" - 9,525	16	1,75	<b>16NR 1.75 ISO</b>	0,90	1,20	2°	15°	3,40 0/-0,05	YE3	PO**.-16NR	•	•	•
3/8" - 9,525	16	2,00	<b>16NR 2.00 ISO</b>	1,00	1,30	2°	15°	3,40 0/-0,05	YE3	PO**.-16NR	•	•	•
3/8" - 9,525	16	2,50	<b>16NR 2.50 ISO</b>	1,10	1,50	2°	15°	3,40 0/-0,05	YE3	PO**.-16NR	•	•	•
3/8" - 9,525	16	3,00	<b>16NR 3.00 ISO</b>	1,10	1,50	2°	15°	3,40 0/-0,05	YE3	PO**.-16NR	•	•	•

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# VHM-Gewindedrehplatten, rechts, Innengewinde, ISO 60° metrisch

## Solid carbide thread turning inserts, right, internal thread, ISO 60° metric

22-27NR / 22-27UNR-L



IC Zoll / inch mm	L	Steigung pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
1/2" - 12,70	22	3,50	<b>22NR 3.50 ISO</b>	1,60	2,30	2°	15°	4,60 0/-0,05	YE4	PO**.-**.-22NR	•	•	•
1/2" - 12,70	22	4,00	<b>22NR 4.00 ISO</b>	1,60	2,30	2°	15°	4,60 0/-0,05	YE4	PO**.-**.-22NR	•	•	•
1/2" - 12,70	22	4,50	<b>22NR 4.50 ISO</b>	1,60	2,40	2°	15°	4,60 0/-0,05	YE4	PO**.-**.-22NR	•	•	•
1/2" - 12,70	22	5,00	<b>22NR 5.00 ISO</b>	1,60	2,30	2°	15°	4,60 0/-0,05	YE4	PO**.-**.-22NR	•	•	•
5/8" - 15,875	27	5,50	<b>27NR 5.50 ISO</b>	1,60	2,30	2°	15°	6,20 0/-0,05	YE5	PO**.-**.-27NR	•	•	•
5/8" - 15,875	27	6,00	<b>27NR 6.00 ISO</b>	1,80	2,90	2°	15°	6,20 0/-0,05	YE5	PO**.-**.-27NR	•	•	•

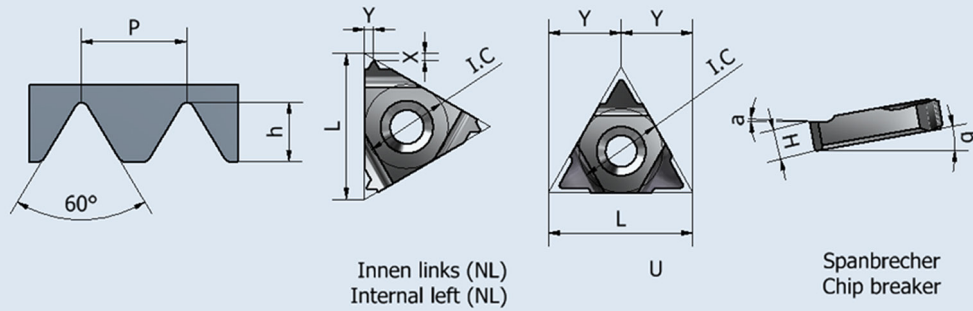
Universell anwendbar für Innen- und Außengewinde / Universally applicable for internal and external threads

1/2"U- 12,70	22	5,50	<b>22UNR-L 5.50 ISO</b>	2,40	11,00	2°	10°	4,60 0/-0,05	YE4U	PO**.-**.-22UNR	•	•	•
1/2"U- 12,70	22	6,00	<b>22UNR-L 6.00 ISO</b>	2,10	11,00	2°	10°	4,60 0/-0,05	YE4U	PO**.-**.-22UNR	•	•	•
5/8"U- 15,875	27	8,00	<b>27UNR-L 8.00 ISO</b>	2,40	13,50	2°	10°	6,20 0/-0,05	YE5U	PO**.-**.-27UNR	•	•	•

# VHM-Gewindedrehplatten, links, Innengewinde, ISO 60° metrisch

## Solid carbide thread turning inserts, left, internal thread, ISO 60° metric

11-16 NL



Innen links (NL)  
Internal left (NL)

Spanbrecher  
Chip breaker

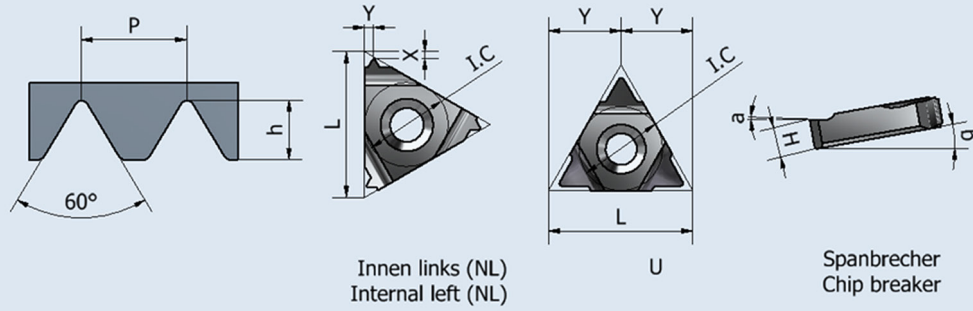
IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
1/4" - 6,35	11	0,35	<b>11NL 0.35 ISO</b>	0,80	0,30	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	0,40	<b>11NL 0.40 ISO</b>	0,70	0,40	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	0,45	<b>11NL 0.45 ISO</b>	0,80	0,40	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	0,50	<b>11NL 0.50 ISO</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	0,60	<b>11NL 0.60 ISO</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	0,70	<b>11NL 0.70 ISO</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	0,75	<b>11NL 0.75 ISO</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	0,80	<b>11NL 0.80 ISO</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	1,00	<b>11NL 1.00 ISO</b>	0,60	0,70	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	1,25	<b>11NL 1.25 ISO</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	1,50	<b>11NL 1.50 ISO</b>	0,80	1,00	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	1,75	<b>11NL 1.75 ISO</b>	0,80	1,10	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
3/8" - 9,525	16	0,35	<b>16NL 0.35 ISO</b>	0,80	0,30	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	0,40	<b>16 NL 0.40 ISO</b>	0,80	0,40	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	0,45	<b>16NL 0.45 ISO</b>	0,80	0,40	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	0,50	<b>16NL 0.50 ISO</b>	0,60	0,60	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	0,60	<b>16NL 0.60 ISO</b>	0,60	0,60	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	0,70	<b>16NL 0.70 ISO</b>	0,60	0,60	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	0,75	<b>16NL 0.75 ISO</b>	0,60	0,60	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	0,80	<b>16NL 0.80 ISO</b>	0,60	0,60	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	1,00	<b>16NL 1.00 ISO</b>	0,60	0,70	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	1,25	<b>16NL 1.25 ISO</b>	0,80	0,90	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	1,50	<b>16NL 1.50 ISO</b>	0,80	1,00	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	1,75	<b>16NL 1.75 ISO</b>	0,90	1,20	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	2,00	<b>16NL 2.00 ISO</b>	1,00	1,30	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	2,50	<b>16NL 2.50 ISO</b>	1,10	1,50	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	3,00	<b>16NL 3.00 ISO</b>	1,10	1,50	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•

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# VHM-Gewindedrehplatten, links, Innengewinde, ISO 60° metrisch

## Solid carbide thread turning inserts, left, internal thread, ISO 60° metric

22-27NL / 22-27UNR-L



IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
1/2" - 12,70	22	3,50	<b>22NL 3.50 ISO</b>	1,60	2,30	2°	15°	4,60 0/-0,05	Y14	PO***-22NL	•	•	•
1/2" - 12,70	22	4,00	<b>22NL 4.00 ISO</b>	1,60	2,30	2°	15°	4,60 0/-0,05	Y14	PO***-22NL	•	•	•
1/2" - 12,70	22	4,50	<b>22NL 4.50 ISO</b>	1,60	2,40	2°	15°	4,60 0/-0,05	Y14	PO***-22NL	•	•	•
1/2" - 12,70	22	5,00	<b>22NL 5.00 ISO</b>	1,60	2,30	2°	15°	4,60 0/-0,05	Y14	PO***-22NL	•	•	•
5/8" -15,875	27	5,50	<b>27NL 5.50 ISO</b>	1,60	2,30	2°	15°	6,20 0/-0,05	Y15	PO***-27NL	•	•	•
5/8" -15,875	27	6,00	<b>27NL 6.00 ISO</b>	1,80	2,90	2°	15°	6,20 0/-0,05	Y15	PO***-27NL	•	•	•

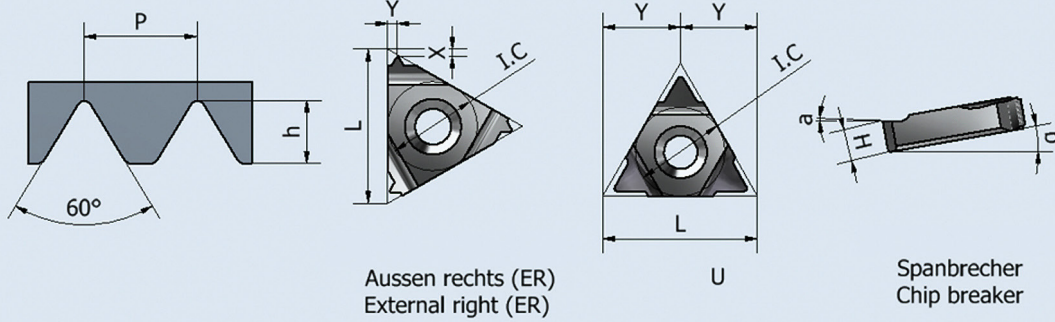
Universell anwendbar für Innen- und Außengewinde / Universally applicable for internal and external threads

1/2"U- 12,70	22	5,50	<b>22UNR-L 5.50 ISO</b>	2,40	11,00	2°	10°	4,60 0/-0,05	Y14U	PO***-22UNL	•	•	•
1/2"U- 12,70	22	6,00	<b>22UNR-L 6.00 ISO</b>	2,10	11,00	2°	10°	4,60 0/-0,05	Y14U	PO***-22UNL	•	•	•
5/8"U- 15,875	27	8,00	<b>27UNR-L 8.00 ISO</b>	2,40	13,50	2°	10°	6,20 0/-0,05	Y15U	PO***-27UNL	•	•	•

# VHM-Gewindedrehplatten, rechts, Außengewinde, ISO 60° metrisch

## Solid carbide thread turning inserts, right, external thread, ISO 60° metric

11-16ER



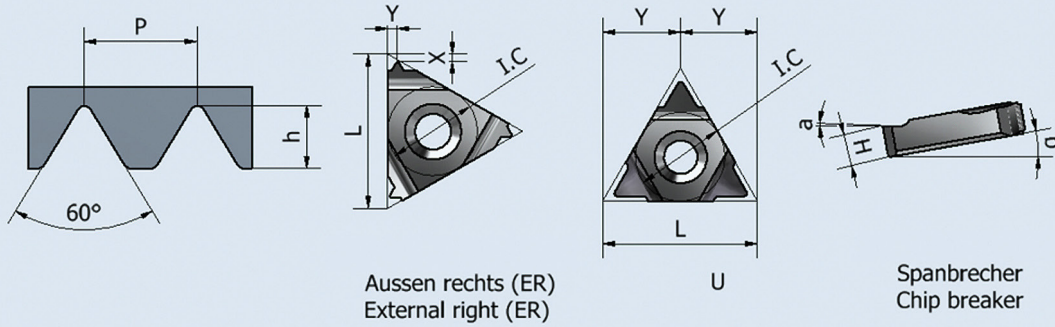
IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
1/4" - 6,35	11	0,35	<b>11ER 0.35 ISO</b>	0,80	0,40	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	0,40	<b>11ER 0.40 ISO</b>	0,70	0,40	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	0,45	<b>11ER 0.45 ISO</b>	0,80	0,40	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	0,50	<b>11ER 0.50 ISO</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	0,60	<b>11ER 0.60 ISO</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	0,70	<b>11ER 0.70 ISO</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	0,75	<b>11ER 0.75 ISO</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	0,80	<b>11ER 0.80 ISO</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	1,00	<b>11ER 1.00 ISO</b>	0,60	0,70	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	1,25	<b>11ER 1.25 ISO</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	1,50	<b>11ER 1.50 ISO</b>	0,80	1,00	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	1,75	<b>11ER 1.75 ISO</b>	0,80	1,10	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
3/8" - 9,525	16	0,35	<b>16ER 0.35 ISO</b>	0,80	0,40	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	0,40	<b>16ER 0.40 ISO</b>	0,80	0,40	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	0,45	<b>16ER 0.45 ISO</b>	0,80	0,40	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	0,50	<b>16ER 0.50 ISO</b>	0,60	0,60	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	0,60	<b>16ER 0.60 ISO</b>	0,60	0,60	2°	15°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	0,70	<b>16ER 0.70 ISO</b>	0,60	0,60	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	0,75	<b>16ER 0.75 ISO</b>	0,60	0,60	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	0,80	<b>16ER 0.80 ISO</b>	0,60	0,60	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	1,00	<b>16ER 1.00 ISO</b>	0,60	0,70	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	1,25	<b>16ER 1.25 ISO</b>	0,80	0,90	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	1,50	<b>16ER 1.50 ISO</b>	0,80	1,00	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	1,75	<b>16ER 1.75 ISO</b>	0,90	1,20	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	2,00	<b>16ER 2.00 ISO</b>	1,00	1,30	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	2,50	<b>16ER 2.50 ISO</b>	1,10	1,50	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	3,00	<b>16ER 3.00 ISO</b>	1,10	1,60	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•

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# VHM-Gewindedrehplatten, rechts, Außengewinde, ISO 60° metrisch

## Solid carbide thread turning inserts, right, external thread, ISO 60° metric

22-27ER / 22-27UER-L



IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
1/2" - 12,70	22	3,50	<b>22ER 3.50 ISO</b>	1,60	2,30	2°	10°	4,60 0/-0,05	YE4	PO**-*-22ER	•	•	•
1/2" - 12,70	22	4,00	<b>22ER 4.00 ISO</b>	1,60	2,30	2°	10°	4,60 0/-0,05	YE4	PO**-*-22ER	•	•	•
1/2" - 12,70	22	4,50	<b>22ER 4.50 ISO</b>	1,60	2,40	2°	10°	4,60 0/-0,05	YE4	PO**-*-22ER	•	•	•
1/2" - 12,70	22	5,00	<b>22ER 5.00 ISO</b>	1,60	2,50	2°	10°	4,60 0/-0,05	YE4	PO**-*-22ER	•	•	•
5/8" - 15,875	27	5,50	<b>27ER 5.50 ISO</b>	1,60	2,70	2°	10°	6,20 0/-0,05	YE5	PO**-*-27ER	•	•	•
5/8" - 15,875	27	6,00	<b>27ER 6.00 ISO</b>	1,80	3,00	2°	10°	6,20 0/-0,05	YE5	PO**-*-27ER	•	•	•

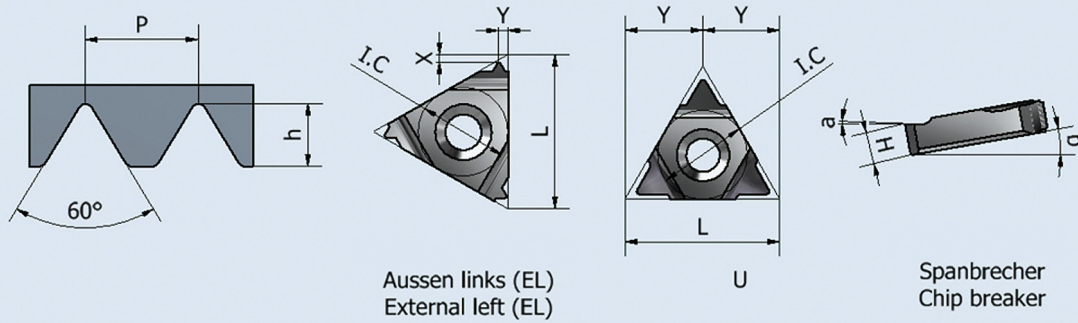
Universell anwendbar für Innen- und Außengewinde / Universally applicable for internal and external threads

1/2"U- 12,70	22	5,50	<b>22UER-L 5.50 ISO</b>	2,40	11,00	2°	10°	4,60 0/-0,05	YE4U	PO**-*-22UER	•	•	•
1/2"U- 12,70	22	6,00	<b>22UER-L 6.00 ISO</b>	2,10	11,00	2°	10°	4,60 0/-0,05	YE4U	PO**-*-22UER	•	•	•
5/8"U- 15,875	27	8,00	<b>27UER-L 8.00 ISO</b>	2,40	13,50	2°	10°	6,20 0/-0,05	YE5U	PO**-*-27UER	•	•	•

# VHM-Gewindedrehplatten, links, Außengewinde, ISO 60° metrisch

## Solid carbide thread turning inserts, left, external thread, ISO 60° metric

11-16EL



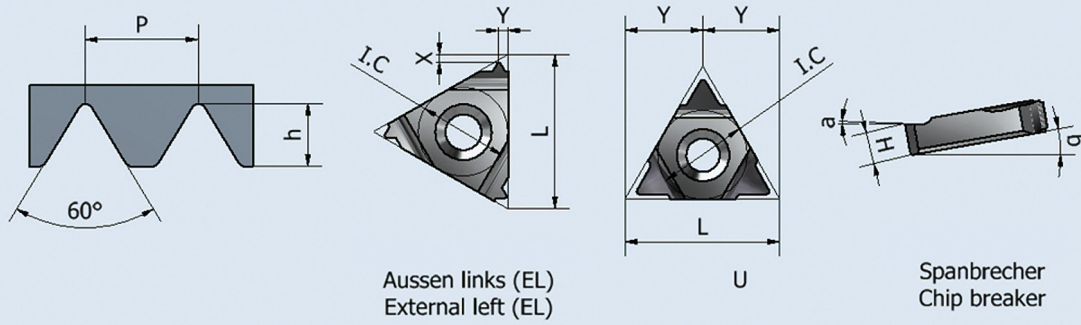
IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
1/4" - 6,35	11	0,35	11EL 0.35 ISO	0,80	0,40	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	0,40	11EL 0.40 ISO	0,70	0,40	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	0,45	11EL 0.45 ISO	0,80	0,40	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	0,50	11EL 0.50 ISO	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	0,60	11EL 0.60 ISO	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	0,70	11EL 0.70 ISO	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	0,75	11EL 0.75 ISO	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	0,80	11EL 0.80 ISO	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	1,00	11EL 1.00 ISO	0,60	0,70	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	1,25	11EL 1.25 ISO	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	1,50	11EL 1.50 ISO	0,80	1,00	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	1,75	11EL 1.75 ISO	0,80	1,10	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
3/8" - 9,525	16	0,35	16EL 0.35 ISO	0,80	0,40	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	0,40	16EL 0.40 ISO	0,80	0,40	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	0,45	16EL 0.45 ISO	0,80	0,40	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	0,50	16EL 0.50 ISO	0,60	0,60	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	0,60	16EL 0.60 ISO	0,60	0,60	2°	15°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	0,70	16EL 0.70 ISO	0,60	0,60	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	0,75	16EL 0.75 ISO	0,60	0,60	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	0,80	16EL 0.80 ISO	0,60	0,60	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	1,00	16EL 1.00 ISO	0,60	0,70	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	1,25	16EL 1.25 ISO	0,80	0,90	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	1,50	16EL 1.50 ISO	0,80	1,00	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	1,75	16EL 1.75 ISO	0,90	1,20	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	2,00	16EL 2.00 ISO	1,00	1,30	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	2,50	16EL 2.50 ISO	1,10	1,50	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	3,00	16EL 3.00 ISO	1,10	1,60	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•

Weitere Abmessungen auf Folgeseite »  
Further dimensions on next page »

# VHM-Gewindedrehplatten, links, Außengewinde, ISO 60° metrisch

## Solid carbide thread turning inserts, left, external thread, ISO 60° metric

22-27EL / 22-27UER-L



IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
1/2" - 12,70	22	3,50	<b>22EL 3.50 ISO</b>	1,60	2,30	2°	10°	4,60 0/-0,05	YI4	PO***-22EL	•	•	•
1/2" - 12,70	22	4,00	<b>22EL 4.00 ISO</b>	1,60	2,30	2°	10°	4,60 0/-0,05	YI4	PO***-22EL	•	•	•
1/2" - 12,70	22	4,50	<b>22EL 4.50 ISO</b>	1,60	2,40	2°	10°	4,60 0/-0,05	YI4	PO***-22EL	•	•	•
1/2" - 12,70	22	5,00	<b>22EL 5.00 ISO</b>	1,60	2,50	2°	10°	4,60 0/-0,05	YI4	PO***-22EL	•	•	•
5/8" - 15,875	27	5,50	<b>27EL 5.50 ISO</b>	1,60	2,70	2°	10°	6,20 0/-0,05	YI5	PO***-27EL	•	•	•
5/8" - 15,875	27	6,00	<b>27EL 6.00 ISO</b>	1,80	3,00	2°	10°	6,20 0/-0,05	YI5	PO***-27EL	•	•	•

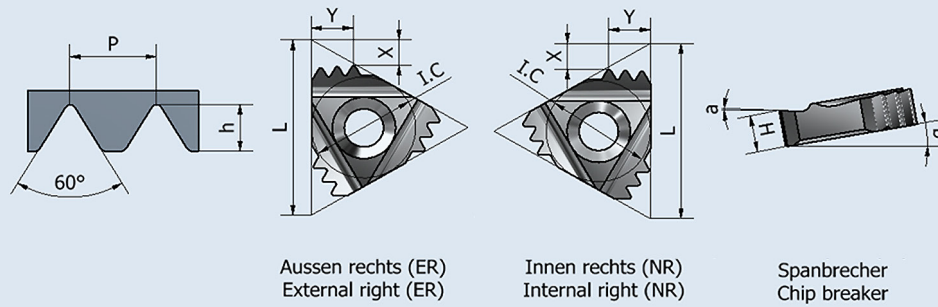
Universell anwendbar für Innen- und Außengewinde / Universally applicable for internal and external threads

1/2"U- 12,70	22	5,50	<b>22UER-L 5.50 ISO</b>	2,40	11,00	2°	10°	4,60 0/-0,05	YI4U	PO***-22EL	•	•	•
1/2"U- 12,70	22	6,00	<b>22UER-L 6.00 ISO</b>	2,10	11,00	2°	10°	4,60 0/-0,05	YI4U	PO***-22UEL	•	•	•
5/8"U- 15,875	27	8,00	<b>27UER-L 8.00 ISO</b>	2,40	13,50	2°	10°	6,20 0/-0,05	YI5U	PO***-27UEL	•	•	•



# VHM-Gewindedrehplatten, mehrzahnig, rechts, Außen- und Innengewinde, ISO 60° metrisch Solid carbide thread turning inserts, multi-tooth, right, external + internal thread, ISO 60° metric

16-27ER / 16-27NR



Aussen rechts (ER)  
External right (ER)

Innen rechts (NR)  
Internal right (NR)

Spanbrecher  
Chip breaker

IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
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## Außengewinde rechts / External thread right

3/8" - 9,525	16	1,00	<b>16ER 1.00 ISO 3M</b>	1,80	2,60	2°	10°	3,40 0/-0,05	YE3M	PO***-16ER	•	•	•
3/8" - 9,525	16	1,50	<b>16ER 1.50 ISO 2M</b>	1,60	2,40	2°	10°	3,40 0/-0,05	YE3M	PO***-16ER	•	•	•
1/2" - 12,70	22	1,50	<b>22ER 1.50 ISO 3M</b>	2,50	3,80	2°	10°	4,60 0/-0,05	YE4M	PO***-22ER	•	•	•
1/2" - 12,70	22	2,00	<b>22ER 2.00 ISO 2M</b>	2,10	3,10	2°	10°	4,60 0/-0,05	YE4M	PO***-22ER	•	•	•
1/2" - 12,70	22	2,00	<b>22ER 2.00 ISO 3M</b>	3,20	5,10	2°	10°	4,60 0/-0,05	YE4M	PO***-22ER	•	•	•
5/8" - 15,875	27	3,00	<b>27ER 3.00 ISO 2M</b>	3,00	4,60	2°	10°	6,20 0/-0,05	YE5M	PO***-27ER	•	•	•

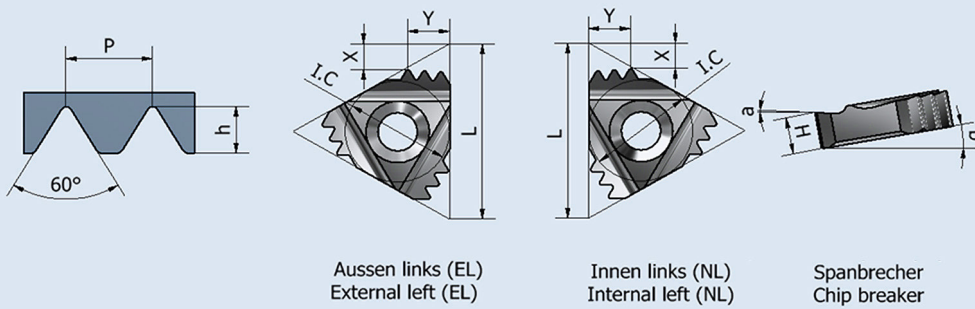
## Innengewinde rechts / Internal thread right

3/8" - 9,525	16	1,00	<b>16NR 1.00 ISO 3M</b>	1,70	2,60	2°	15°	3,40 0/-0,05	YE3M	PO***-16NR	•	•	•
3/8" - 9,525	16	1,50	<b>16NR 1.50 ISO 2M</b>	1,60	2,40	2°	15°	3,40 0/-0,05	YE3M	PO***-16NR	•	•	•
1/2" - 12,70	22	1,50	<b>22NR 1.50 ISO 3M</b>	2,40	3,80	2°	15°	4,60 0/-0,05	YE4M	PO***-22NR	•	•	•
1/2" - 12,70	22	2,00	<b>22NR 2.00 ISO 2M</b>	2,00	3,00	2°	15°	4,60 0/-0,05	YE4M	PO***-22NR	•	•	•
1/2" - 12,70	22	2,00	<b>22NR 2.00 ISO 3M</b>	3,10	4,90	2°	15°	4,60 0/-0,05	YE4M	PO***-22NR	•	•	•
5/8" - 15,875	27	3,00	<b>27NR 3.00 ISO 2M</b>	2,70	4,30	2°	15°	6,20 0/-0,05	YE5M	PO***-27NR	•	•	•

# VHM-Gewindedrehplatten, mehrzahnig, links, Außen- und Innengewinde, ISO 60° metrisch

## Solid carbide thread turning inserts, multi-tooth, left, external + internal thread, ISO 60° metric

16-27EL / 16-27NL



Aussen links (EL)  
External left (EL)

Innen links (NL)  
Internal left (NL)

Spanbrecher  
Chip breaker

IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
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### Außengewinde links / External thread left

3/8" - 9,525	16	1,00	<b>16EL 1.00 ISO 3M</b>	1,80	2,60	2°	10°	3,40 0/-0,05	YI3M	PO***-16EL	•	•	•
3/8" - 9,525	16	1,50	<b>16EL 1.50 ISO 2M</b>	1,60	2,40	2°	10°	3,40 0/-0,05	YI3M	PO***-16EL	•	•	•
1/2" - 12,70	22	1,50	<b>22EL 1.50 ISO 3M</b>	2,50	3,80	2°	10°	4,60 0/-0,05	YI4M	PO***-22EL	•	•	•
1/2" - 12,70	22	2,00	<b>22EL 2.00 ISO 2M</b>	2,10	3,10	2°	10°	4,60 0/-0,05	YI4M	PO***-22EL	•	•	•
1/2" - 12,70	22	2,00	<b>22EL 2.00 ISO 3M</b>	3,20	5,10	2°	10°	4,60 0/-0,05	YI4M	PO***-22EL	•	•	•
5/8" - 15,875	27	3,00	<b>27EL 3.00 ISO 2M</b>	3,00	4,60	2°	10°	6,20 0/-0,05	YI5M	PO***-27EL	•	•	•

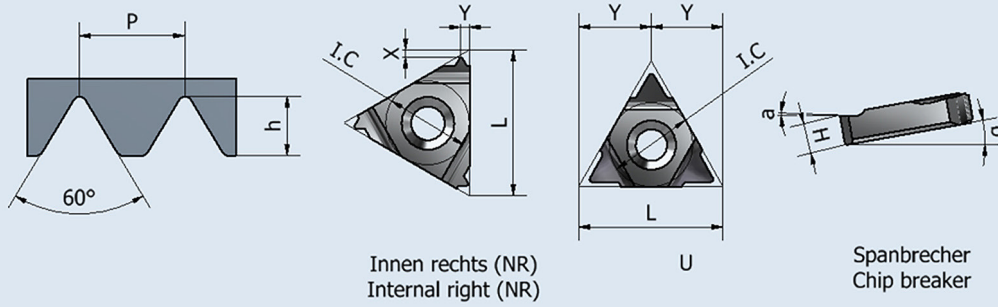
### Innengewinde links / Internal thread left

3/8" - 9,525	16	1,00	<b>16NL 1.00 ISO 3M</b>	1,70	2,60	2°	15°	3,40 0/-0,05	YI3M	PO***-16NL	•	•	•
3/8" - 9,525	16	1,50	<b>16NL 1.50 ISO 2M</b>	1,60	2,40	2°	15°	3,40 0/-0,05	YI3M	PO***-16NL	•	•	•
1/2" - 12,70	22	1,50	<b>22NL 1.50 ISO 3M</b>	2,40	3,80	2°	15°	4,60 0/-0,05	YI4M	PO***-22NL	•	•	•
1/2" - 12,70	22	2,00	<b>22NL 2.00 ISO 2M</b>	2,00	3,00	2°	15°	4,60 0/-0,05	YI4M	PO***-22NL	•	•	•
1/2" - 12,70	22	2,00	<b>22NL 2.00 ISO 3M</b>	3,10	4,90	2°	15°	4,60 0/-0,05	YI4M	PO***-22NL	•	•	•
5/8" - 15,875	27	3,00	<b>27NL 3.00 ISO 2M</b>	2,70	4,30	2°	15°	6,20 0/-0,05	YI5M	PO***-27NL	•	•	•

# VHM-Gewindedrehplatten, rechts, Innengewinde, UN Zoll

## Solid carbide thread turning inserts, right, internal thread, UN inch

11-16NR



Innen rechts (NR)  
Internal right (NR)

Spanbrecher  
Chip breaker

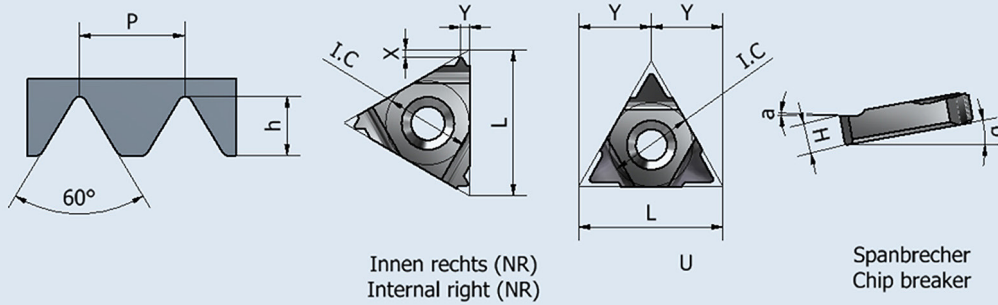
IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
1/4" - 6,35	11	72"-0,3528	<b>11NR 72 UN</b>	0,80	0,30	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	64"-0,3969	<b>11NR 64 UN</b>	0,80	0,40	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	56"-0,4536	<b>11NR56 UN</b>	0,70	0,40	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	48"-0,5292	<b>11NR 48 UN</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	44"-0,5773	<b>11NR 44 UN</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	40"-0,6350	<b>11NR 40 UN</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	36"-0,7056	<b>11NR 36 UN</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	32"-0,7938	<b>11NR 32 UN</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	28"-0,9071	<b>11NR 28 UN</b>	0,60	0,70	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	27"-0,9407	<b>11NR 27 UN</b>	0,70	0,80	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	24"-1,0583	<b>11NR 24 UN</b>	0,70	0,80	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	20"-1,2700	<b>11NR 20 UN</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	18"- 1,4111	<b>11NR 18 UN</b>	0,80	1,00	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	16"-1,5875	<b>11NR 16 UN</b>	0,90	1,10	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	14"-1,8143	<b>11NR 14 UN</b>	0,90	1,10	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
3/8" - 9,525	16	72"-0,3528	<b>16NR 72 UN</b>	0,80	0,30	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	64"-0,3969	<b>16NR 64 UN</b>	0,80	0,40	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	56"-0,4536	<b>16NR 56 UN</b>	0,70	0,40	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	48"-0,5292	<b>16NR 48 UN</b>	0,60	0,60	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	44"-0,5773	<b>16NR 44 UN</b>	0,60	0,60	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	40"-0,6350	<b>16NR 40 UN</b>	0,60	0,60	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	36"-0,7056	<b>16NR 36 UN</b>	0,60	0,60	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	32"-0,7938	<b>16NR 32 UN</b>	0,60	0,60	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	28"-0,9071	<b>16NR 28 UN</b>	0,60	0,70	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	27"-0,9407	<b>16NR 27 UN</b>	0,70	0,80	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•

Weitere Abmessungen auf Folgeseite »  
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# VHM-Gewindedrehplatten, rechts, Innengewinde, UN Zoll

## Solid carbide thread turning inserts, right, internal thread, UN inch

16-27NR / 22-27UNR-L



IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
3/8" - 9,525	16	24"-1,0583	<b>16NR 24UN</b>	0,70	0,80	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	20"-1,2700	<b>16NR 20 UN</b>	0,80	0,90	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	18"-1,4111	<b>16NR 18 UN</b>	0,80	1,00	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	16"-1,5875	<b>16NR 16 UN</b>	0,90	1,10	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	14"-1,8143	<b>16NR 14 UN</b>	0,90	1,20	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	13"-1,9538	<b>16NR 13 UN</b>	1,00	1,30	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	12"-2,1167	<b>16NR 12 UN</b>	1,10	1,40	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	11,5"-2,2087	<b>16NR 11.5 UN</b>	1,10	1,50	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	11"-2,3091	<b>16NR 11 UN</b>	1,10	1,50	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	10"-2,5400	<b>16NR 10 UN</b>	1,10	1,50	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	9"-2,8222	<b>16NR 9 UN</b>	1,20	1,70	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	8"-3,1750	<b>16NR 8 UN</b>	1,10	1,50	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
1/2" - 12,70	22	7"-3,6286	<b>22NR 7 UN</b>	1,60	2,30	2°	15°	4,60 0/-0,05	YE4	PO***-22NR	•	•	•
1/2" - 12,70	22	6"-4,2333	<b>22NR 6 UN</b>	1,60	2,30	2°	15°	4,60 0/-0,05	YE4	PO***-22NR	•	•	•
1/2" - 12,70	22	5"-5,0800	<b>22NR 5 UN</b>	1,60	2,30	2°	15°	4,60 0/-0,05	YE4	PO***-22NR	•	•	•
1/2" - 12,70	22	4,5"-5,6444	<b>22NR 4.5 UN</b>	1,70	2,40	2°	15°	6,20 0/-0,05	YE4	PO***-22NR	•	•	•
5/8" - 15,875	27	4-6",3500	<b>27NR 4 UN</b>	1,80	2,30	2°	15°	6,20 0/-0,05	YE5	PO***-27NR	•	•	•

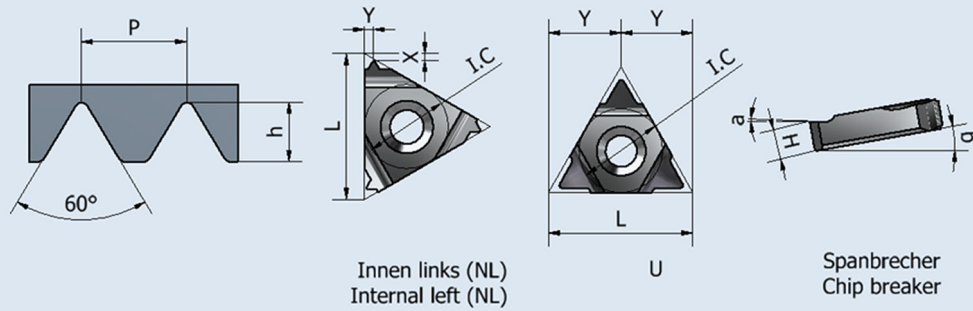
Universell anwendbar für Innen- und Außengewinde / Universally applicable for internal and external threads

1/2"U- 12,70	22	4,5"-5,6444	<b>22UNR-L 4.5 UN</b>	2,40	11,00	2°	10°	4,60 0/-0,05	YE4U	PO***-22UNR	•	•	•
1/2"U- 12,70	22	4"-6,3500	<b>22UNR-L 4 UN</b>	2,40	11,00	2°	10°	4,60 0/-0,05	YE4U	PO***-22UNR	•	•	•
5/8"U- 15,875	27	3"-8,4666	<b>27UNR-L 3 UN</b>	2,70	13,50	2°	10°	6,20 0/-0,05	YE5U	PO***-27UNR	•	•	•

# VHM-Gewindedrehplatten, links, Innengewinde, UN Zoll

## Solid carbide thread turning inserts, left, internal thread, UN inch

11-16NL



Innen links (NL)  
Internal left (NL)

Spanbrecher  
Chip breaker

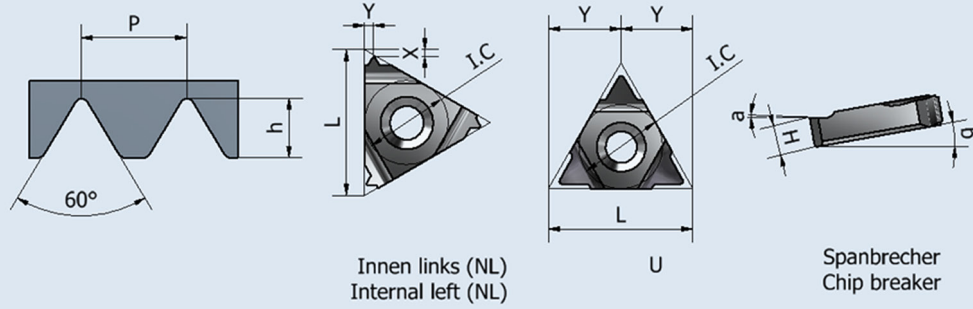
IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
1/4" - 6,35	11	72"-0,3528	<b>11NL 72 UN</b>	0,80	0,30	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	64"-0,3969	<b>11NL 64 UN</b>	0,80	0,40	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	56"-0,4536	<b>11NL 56 UN</b>	0,70	0,40	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	48"-0,5292	<b>11NL 48 UN</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	44"-0,5773	<b>11NL 44 UN</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	40"-0,6350	<b>11NL 40 UN</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	36"-0,7056	<b>11NL 36 UN</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	32"-0,7938	<b>11NL 32 UN</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	28"-0,9071	<b>11NL 28 UN</b>	0,60	0,70	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	27"-0,9407	<b>11NL 27 UN</b>	0,70	0,80	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	24"-1,0583	<b>11NL 24 UN</b>	0,70	0,80	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	20"-1,2700	<b>11NL 20 UN</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	18"-1,4111	<b>11NL 18 UN</b>	0,80	1,00	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	16"-1,5875	<b>11NL 16 UN</b>	0,90	1,10	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
1/4" - 6,35	11	14"-1,8143	<b>11NL 14 UN</b>	0,90	1,10	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
3/8" - 9,525	16	72"-0,3528	<b>16NL 72 UN</b>	0,80	0,30	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	64"-0,3969	<b>16NL 64 UN</b>	0,80	0,40	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	56"-0,4536	<b>16NL 56 UN</b>	0,70	0,40	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	48"-0,5292	<b>16NL 48 UN</b>	0,60	0,60	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	44"-0,5773	<b>16NL 44 UN</b>	0,60	0,60	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	40"-0,6350	<b>16NL 40 UN</b>	0,60	0,60	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	36"-0,7056	<b>16NL 36 UN</b>	0,60	0,60	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	32"-0,7938	<b>16NL 32 UN</b>	0,60	0,60	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	28"-0,9071	<b>16NL 28 UN</b>	0,60	0,70	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•
3/8" - 9,525	16	27"-0,9407	<b>16NL 27 UN</b>	0,70	0,80	2°	15°	3,40 0/-0,05	Y13	PO***-16NL	•	•	•

Weitere Abmessungen auf Folgeseite »  
Further dimensions on next page »

# VHM-Gewindedrehplatten, links, Innengewinde, UN Zoll

## Solid carbide thread turning inserts, left, internal thread, UN inch

16-27NL / 22-27UNR-L



IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
3/8" - 9,525	16	24"-1,0583	<b>16NL 24 UN</b>	0,70	0,80	2°	15°	3,40 0/-0,05	YI3	PO***-16NL	•	•	•
3/8" - 9,525	16	20"-1,2700	<b>16NL 20 UN</b>	0,80	0,90	2°	15°	3,40 0/-0,05	YI3	PO***-16NL	•	•	•
3/8" - 9,525	16	18"-1,4111	<b>16NL 18 UN</b>	0,80	1,00	2°	15°	3,40 0/-0,05	YI3	PO***-16NL	•	•	•
3/8" - 9,525	16	16"-1,5875	<b>16NL 16 UN</b>	0,90	1,10	2°	15°	3,40 0/-0,05	YI3	PO***-16NL	•	•	•
3/8" - 9,525	16	14"-1,8143	<b>16NL 14 UN</b>	0,90	1,20	2°	15°	3,40 0/-0,05	YI3	PO***-16NL	•	•	•
3/8" - 9,525	16	13"-1,9538	<b>16NL 13 UN</b>	1,00	1,30	2°	15°	3,40 0/-0,05	YI3	PO***-16NL	•	•	•
3/8" - 9,525	16	12"-2,1167	<b>16NL 12 UN</b>	1,10	1,40	2°	15°	3,40 0/-0,05	YI3	PO***-16NL	•	•	•
3/8" - 9,525	16	11,5"-2,2087	<b>16NL 11.5 UN</b>	1,10	1,50	2°	15°	3,40 0/-0,05	YI3	PO***-16NL	•	•	•
3/8" - 9,525	16	11"-2,3091	<b>16NL 11 UN</b>	1,10	1,50	2°	15°	3,40 0/-0,05	YI3	PO***-16NL	•	•	•
3/8" - 9,525	16	10"-2,5400	<b>16NL 10 UN</b>	1,10	1,50	2°	15°	3,40 0/-0,05	YI3	PO***-16NL	•	•	•
3/8" - 9,525	16	9"-2,8222	<b>16NL 9 UN</b>	1,20	1,70	2°	15°	3,40 0/-0,05	YI3	PO***-16NL	•	•	•
3/8" - 9,525	16	8"-3,1750	<b>16NL 8 UN</b>	1,10	1,50	2°	15°	3,40 0/-0,05	YI3	PO***-16NL	•	•	•
1/2" - 12,70	22	7"-3,6286	<b>22NL 7 UN</b>	1,60	2,30	2°	15°	4,60 0/-0,05	YI4	PO***-22NL	•	•	•
1/2" - 12,70	22	6"-4,2333	<b>22NL 6 UN</b>	1,60	2,30	2°	15°	4,60 0/-0,05	YI4	PO***-22NL	•	•	•
1/2" - 12,70	22	5"-5,0800	<b>22NL 5 UN</b>	1,60	2,30	2°	15°	4,60 0/-0,05	YI4	PO***-22NL	•	•	•
1/2" - 12,70	22	4,5"-5,6444	<b>22NL 4.5 UN</b>	1,70	2,40	2°	15°	6,20 0/-0,05	YI4	PO***-22NL	•	•	•
5/8" - 15,875	27	4-6",3500	<b>27NL 4 UN</b>	1,80	2,30	2°	15°	6,20 0/-0,05	YI5	PO***-27NL	•	•	•

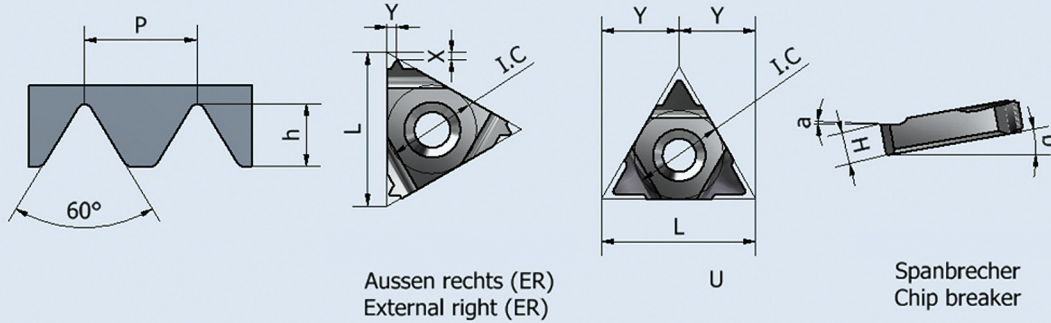
Universell anwendbar für Innen- und Außengewinde / Universally applicable for internal and external threads

1/2"U- 12,70	22	4,5"-5,6444	<b>22UNR-L 4.5 UN</b>	2,40	11,00	2°	10°	4,60 0/-0,05	YI4U	PO***-22UNL	•	•	•
1/2"U- 12,70	22	4"-6,3500	<b>22UNR-L 4 UN</b>	2,40	11,00	2°	10°	4,60 0/-0,05	YI4U	PO***-22UNL	•	•	•
5/8"U- 15,875	27	3"-8,4666	<b>27UNR-L 3 UN</b>	2,70	13,50	2°	10°	6,20 0/-0,05	YI5U	PO***-27UNL	•	•	•

# VHM-Gewindedrehplatten, rechts, Außengewinde, UN Zoll

## Solid carbide thread turning inserts, right, external thread, UN inch

11-16ER



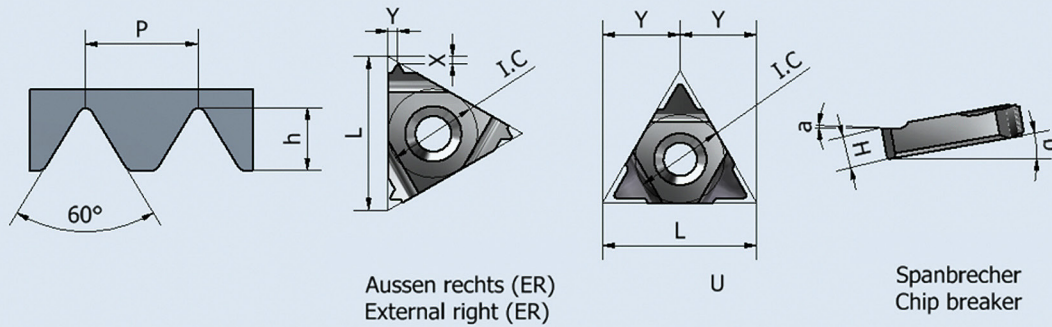
IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
1/4" - 6,35	11	72"-0,3528	<b>11ER 72 UN</b>	0,80	0,40	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	64"-0,3969	<b>11ER 64 UN</b>	0,80	0,40	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	56"-0,4536	<b>11ER56 UN</b>	0,70	0,40	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	48"-0,5292	<b>11ER 48 UN</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	44"-0,5773	<b>11ER 44 UN</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	40"-0,6350	<b>11ER 40 UN</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	36"-0,7056	<b>11ER 36 UN</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	32"-0,7938	<b>11ER 32 UN</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	28"-0,9071	<b>11ER 28 UN</b>	0,60	0,70	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	27"-0,9407	<b>11ER 27 UN</b>	0,70	0,80	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	24"-1,0583	<b>11ER 24 UN</b>	0,70	0,80	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	20"-1,2700	<b>11ER 20 UN</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	18"-1,4111	<b>11ER 18 UN</b>	0,80	1,00	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	16"-1,5875	<b>11ER 16 UN</b>	0,90	1,10	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	14"-1,8143	<b>11ER 14 UN</b>	0,90	1,10	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
3/8" - 9,525	16	72"-0,3528	<b>16ER 72 UN</b>	0,80	0,40	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	64"-0,3969	<b>16ER 64 UN</b>	0,80	0,40	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	56"-0,4536	<b>16ER 56 UN</b>	0,70	0,40	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	48"-0,5292	<b>16ER 48 UN</b>	0,60	0,60	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	44"-0,5773	<b>16ER 44 UN</b>	0,60	0,60	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	40"-0,6350	<b>16ER 40 UN</b>	0,60	0,60	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	36"-0,7056	<b>16ER 36 UN</b>	0,60	0,60	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	32"-0,7938	<b>16ER 32 UN</b>	0,60	0,60	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	28"-0,9071	<b>16ER 28 UN</b>	0,60	0,70	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	27"-0,9407	<b>16ER 27 UN</b>	0,70	0,80	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	24"-1,0583	<b>16ER 24UN</b>	0,70	0,80	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•

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# VHM-Gewindedrehplatten, rechts, Außengewinde, UN Zoll

## Solid carbide thread turning inserts, right, external thread, UN inch

16-27ER / 22-27UER-L



Aussen rechts (ER)  
External right (ER)

Spanbrecher  
Chip breaker

IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
3/8" - 9,525	16	20"-1,2700	<b>16ER 20 UN</b>	0,80	0,90	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	18"-1,4111	<b>16ER 18 UN</b>	0,80	1,00	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	16"-1,5875	<b>16ER 16 UN</b>	0,90	1,10	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	14"-1,8143	<b>16ER 14 UN</b>	1,00	1,20	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	13"-1,9538	<b>16ER 13 UN</b>	1,00	1,30	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	12"-2,1167	<b>16ER 12 UN</b>	1,10	1,40	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	11,5"-2,2087	<b>16ER 11.5 UN</b>	1,10	1,50	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	11"-2,3091	<b>16ER 11 UN</b>	1,10	1,50	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	10"-2,5400	<b>16ER 10 UN</b>	1,10	1,50	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	9"-2,8222	<b>16ER 9 UN</b>	1,20	1,70	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	8"-3,1750	<b>16ER 8 UN</b>	1,20	1,60	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
1/2" - 12,70	22	7"-3,6286	<b>22ER 7 UN</b>	1,60	2,30	2°	10°	4,60 0/-0,05	YE4	PO**-***-22ER	•	•	•
1/2" - 12,70	22	6"-4,2333	<b>22ER 6 UN</b>	1,60	2,30	2°	10°	4,60 0/-0,05	YE4	PO**-***-22ER	•	•	•
1/2" - 12,70	22	5"-5,0800	<b>22ER 5 UN</b>	1,70	2,50	2°	10°	4,60 0/-0,05	YE4	PO**-***-22ER	•	•	•
1/2" - 12,70	22	4,5"-5,6444	<b>22ER 4.5 UN</b>	1,90	2,60	2°	10°	6,20 0/-0,05	YE5	PO**-***-27ER	•	•	•
5/8" -15,875	27	4-6,3500	<b>27ER 4 UN</b>	2,10	3,00	2°	10°	6,20 0/-0,05	YE5	PO**-***-27ER	•	•	•

Universell anwendbar für Innen- und Außengewinde / Universally applicable for internal and external threads

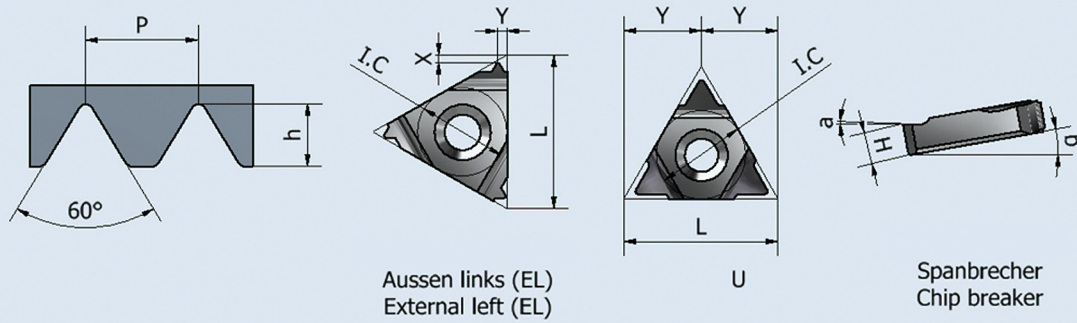
1/2"U- 12,70	22	4,5"-5,6444	<b>22UER-L 4.5 UN</b>	2,00	11,00	2°	10°	4,60 0/-0,05	YE4U	PO**-***-22UER	•	•	•
1/2"U- 12,70	22	4"-6,3500	<b>22UER-L 4 UN</b>	2,00	11,00	2°	10°	4,60 0/-0,05	YE4U	PO**-***-22UER	•	•	•
5/8"U- 15,875	27	3"-8,4666	<b>27UER-L 3 UN</b>	2,50	13,50	2°	10°	6,20 0/-0,05	YE5U	PO**-***-27UER	•	•	•



# VHM-Gewindedrehplatten, links, Außengewinde, UN Zoll

## Solid carbide thread turning inserts, left, external thread, UN inch

11-16EL



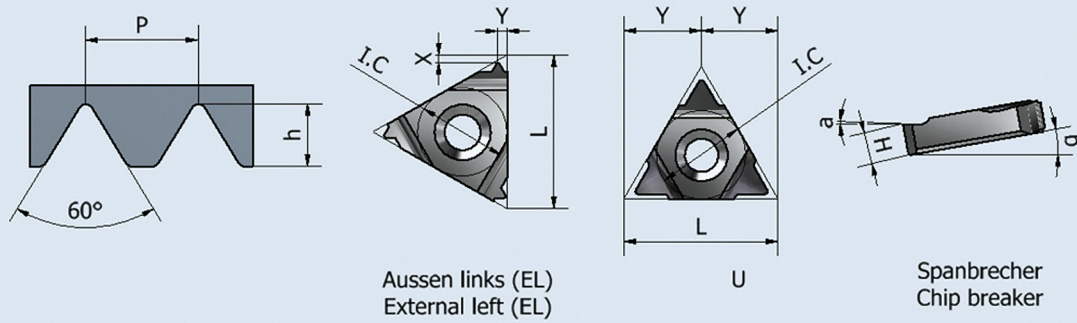
IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
1/4" - 6,35mm	11	72"-0,3528	<b>11EL 72 UN</b>	0,80	0,40	2°	15°	3,00 0/-0,05	---	PO**-*-11EL	•	•	•
1/4" - 6,35mm	11	64"-0,3969	<b>11EL 64 UN</b>	0,80	0,40	2°	15°	3,00 0/-0,05	---	PO**-*-11EL	•	•	•
1/4" - 6,35mm	11	56"-0,4536	<b>11EL 56 UN</b>	0,70	0,40	2°	15°	3,00 0/-0,05	---	PO**-*-11EL	•	•	•
1/4" - 6,35	11	48"-0,5292	<b>11EL 48 UN</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO**-*-11EL	•	•	•
1/4" - 6,35	11	44"-0,5773	<b>11EL 44 UN</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO**-*-11EL	•	•	•
1/4" - 6,35	11	40"-0,6350	<b>11EL 40 UN</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO**-*-11EL	•	•	•
1/4" - 6,35	11	36"-0,7056	<b>11EL 36 UN</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO**-*-11EL	•	•	•
1/4" - 6,35	11	32"-0,7938	<b>11EL 32 UN</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO**-*-11EL	•	•	•
1/4" - 6,35	11	28"-0,9071	<b>11EL 28 UN</b>	0,60	0,70	2°	15°	3,00 0/-0,05	---	PO**-*-11EL	•	•	•
1/4" - 6,35	11	27"-0,9407	<b>11EL 27 UN</b>	0,70	0,80	2°	15°	3,00 0/-0,05	---	PO**-*-11EL	•	•	•
1/4" - 6,35	11	24"-1,0583	<b>11EL 24 UN</b>	0,70	0,80	2°	15°	3,00 0/-0,05	---	PO**-*-11EL	•	•	•
1/4" - 6,35	11	20"-1,2700	<b>11EL 20 UN</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO**-*-11EL	•	•	•
1/4" - 6,35	11	18"-1,4111	<b>11EL 18 UN</b>	0,80	1,00	2°	15°	3,00 0/-0,05	---	PO**-*-11EL	•	•	•
1/4" - 6,35	11	16"-1,5875	<b>11EL 16 UN</b>	0,90	1,10	2°	15°	3,00 0/-0,05	---	PO**-*-11EL	•	•	•
1/4" - 6,35	11	14"-1,8143	<b>11EL 14 UN</b>	0,90	1,10	2°	15°	3,00 0/-0,05	---	PO**-*-11EL	•	•	•
3/8" - 9,525	16	72"-0,3528	<b>16EL 72 UN</b>	0,80	0,40	2°	10°	3,40 0/-0,05	YI3	PO**-*-16EL	•	•	•
3/8" - 9,525	16	64"-0,3969	<b>16EL 64 UN</b>	0,80	0,40	2°	10°	3,40 0/-0,05	YI3	PO**-*-16EL	•	•	•
3/8" - 9,525	16	56"-0,4536	<b>16EL 56 UN</b>	0,70	0,40	2°	10°	3,40 0/-0,05	YI3	PO**-*-16EL	•	•	•
3/8" - 9,525	16	48"-0,5292	<b>16EL 48 UN</b>	0,60	0,60	2°	10°	3,40 0/-0,05	YI3	PO**-*-16EL	•	•	•
3/8" - 9,525	16	44"-0,5773	<b>16EL 44 UN</b>	0,60	0,60	2°	10°	3,40 0/-0,05	YI3	PO**-*-16EL	•	•	•
3/8" - 9,525	16	40"-0,6350	<b>16EL 40 UN</b>	0,60	0,60	2°	10°	3,40 0/-0,05	YI3	PO**-*-16EL	•	•	•
3/8" - 9,525	16	36"-0,7056	<b>16EL 36 UN</b>	0,60	0,60	2°	10°	3,40 0/-0,05	YI3	PO**-*-16EL	•	•	•
3/8" - 9,525	16	32"-0,7938	<b>16EL 32 UN</b>	0,60	0,60	2°	10°	3,40 0/-0,05	YI3	PO**-*-16EL	•	•	•
3/8" - 9,525	16	28"-0,9071	<b>16EL 28 UN</b>	0,60	0,70	2°	10°	3,40 0/-0,05	YI3	PO**-*-16EL	•	•	•
3/8" - 9,525	16	27"-0,9407	<b>16EL 27 UN</b>	0,70	0,80	2°	10°	3,40 0/-0,05	YI3	PO**-*-16EL	•	•	•
3/8" - 9,525	16	24"-1,0583	<b>16EL 24 UN</b>	0,70	0,80	2°	10°	3,40 0/-0,05	YI3	PO**-*-16EL	•	•	•

Weitere Abmessungen auf Folgeseite »  
Further dimensions on next page »

# VHM-Gewindedrehplatten, links, Außengewinde, UN Zoll

## Solid carbide thread turning inserts, left, external thread, UN inch

16-27EL / 22-27UER-L



IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
3/8" - 9,525	16	20"-1,2700	<b>16EL 20 UN</b>	0,80	0,90	2°	10°	3,40 0/-0,05	YI3	PO**-***-16EL	•	•	•
3/8" - 9,525	16	18"-1,4111	<b>16EL 18 UN</b>	0,80	1,00	2°	10°	3,40 0/-0,05	YI3	PO**-***-16EL	•	•	•
3/8" - 9,525	16	16"-1,5875	<b>16EL 16 UN</b>	0,90	1,10	2°	10°	3,40 0/-0,05	YI3	PO**-***-16EL	•	•	•
3/8" - 9,525	16	14"-1,8143	<b>16EL 14 UN</b>	1,00	1,20	2°	10°	3,40 0/-0,05	YI3	PO**-***-16EL	•	•	•
3/8" - 9,525	16	13"-1,9538	<b>16EL 13 UN</b>	1,00	1,30	2°	10°	3,40 0/-0,05	YI3	PO**-***-16EL	•	•	•
3/8" - 9,525	16	12"-2,1167	<b>16EL 12 UN</b>	1,10	1,40	2°	10°	3,40 0/-0,05	YI3	PO**-***-16EL	•	•	•
3/8" - 9,525	16	11,5"-2,2087	<b>16EL 11.5 UN</b>	1,10	1,50	2°	10°	3,40 0/-0,05	YI3	PO**-***-16EL	•	•	•
3/8" - 9,525	16	11"-2,3091	<b>16EL 11 UN</b>	1,10	1,50	2°	10°	3,40 0/-0,05	YI3	PO**-***-16EL	•	•	•
3/8" - 9,525	16	10"-2,5400	<b>16EL 10 UN</b>	1,10	1,50	2°	10°	3,40 0/-0,05	YI3	PO**-***-16EL	•	•	•
3/8" - 9,525	16	9"-2,8222	<b>16EL 9 UN</b>	1,20	1,70	2°	10°	3,40 0/-0,05	YI3	PO**-***-16EL	•	•	•
3/8" - 9,525	16	8"-3,1750	<b>16EL 8 UN</b>	1,20	1,60	2°	10°	3,40 0/-0,05	YI3	PO**-***-16EL	•	•	•
1/2" - 12,70	22	7"-3,6286	<b>22EL 7 UN</b>	1,60	2,30	2°	10°	4,60 0/-0,05	YI4	PO**-***-22EL	•	•	•
1/2" - 12,70	22	6"-4,2333	<b>22EL 6 UN</b>	1,60	2,30	2°	10°	4,60 0/-0,05	YI4	PO**-***-22EL	•	•	•
1/2" - 12,70	22	5"-5,0800	<b>22EL 5 UN</b>	1,70	2,50	2°	10°	4,60 0/-0,05	YI4	PO**-***-22EL	•	•	•
1/2" - 12,70	22	4,5"-5,6444	<b>22EL 4.5 UN</b>	1,90	2,60	2°	10°	6,20 0/-0,05	YI5	PO**-***-27EL	•	•	•
5/8" -15,875	27	4-6,3500	<b>27EL 4 UN</b>	2,10	3,00	2°	10°	6,20 0/-0,05	YI5	PO**-***-27EL	•	•	•

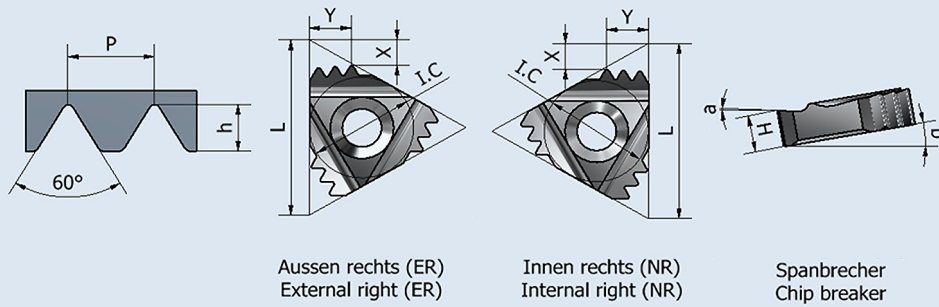
Universell anwendbar für Innen- und Außengewinde / Universally applicable for internal and external threads

1/2"U- 12,70	22	4,5"-5,6444	<b>22UER-L 4.5 UN</b>	2,00	11,00	2°	10°	4,60 0/-0,05	YI4U	PO**-***-22UEL	•	•	•
1/2"U- 12,70	22	4"-6,3500	<b>22UER-L 4 UN</b>	2,00	11,00	2°	10°	4,60 0/-0,05	YI4U	PO**-***-22UEL	•	•	•
5/8"U- 15,875	27	3"-8,4666	<b>27UER-L 3 UN</b>	2,50	13,50	2°	10°	6,20 0/-0,05	YI5U	PO**-***-27UEL	•	•	•

# VHM-Gewindedrehplatten, mehrzahnig, rechts, Außen- und Innengewinde, UN Zoll

## Solid carbide thread turning inserts, multi-tooth, right, external and internal thread, UN inch

16-27ER / 16-27NR



Aussen rechts (ER)  
External right (ER)

Innen rechts (NR)  
Internal right (NR)

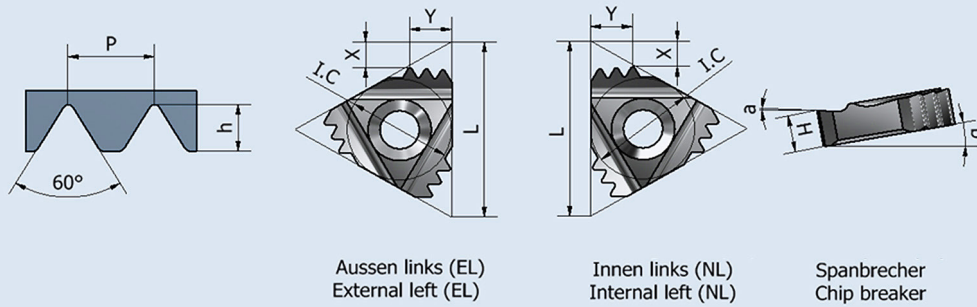
Spanbrecher  
Chip breaker

IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
Außengewinde UN Zoll rechts / External thread UN inch right													
3/8" - 9,525	16	16"-1,5875	<b>16ER 16 UN 2M</b>	1,70	2,50	2°	10°	3,40 0/-0,05	YE3M	PO**-**-16ER	•	•	•
1/2" - 12,70	22	16"-1,5875	<b>22ER 16 UN 3M</b>	2,60	4,10	2°	10°	4,60 0/-0,05	YE4M	PO**-**-22ER	•	•	•
1/2" - 12,70	22	12"-2,1167	<b>22ER 12 UN 2M</b>	2,10	3,20	2°	10°	4,60 0/-0,05	YE4M	PO**-**-22ER	•	•	•
1/2" - 12,70	22	12"-2,1167	<b>22ER 12 UN 3M</b>	3,40	5,30	2°	10°	4,60 0/-0,05	YE4M	PO**-**-22ER	•	•	•
5/8" - 15,875	27	8"-3,1750	<b>27ER 8 UN 2M</b>	3,20	5,00	2°	10°	6,20 0/-0,05	YE5M	PO**-**-27ER	•	•	•
Innengewinde UN Zoll rechts / Internal thread UN inch right													
3/8" - 9,525	16	16"-1,5875	<b>16NR 16 UN 2M</b>	1,70	2,40	2°	15°	3,40 0/-0,05	YI3M	PO**-**-16NR	•	•	•
1/2" - 12,70	22	16"-1,5875	<b>22NR 16 UN 3M</b>	2,50	4,00	2°	15°	4,60 0/-0,05	YI4M	PO**-**-22NR	•	•	•
1/2" - 12,70	22	12"-2,1167	<b>22NR 12 UN 2M</b>	2,10	3,20	2°	15°	4,60 0/-0,05	YI4M	PO**-**-22NR	•	•	•
1/2" - 12,70	22	12"-2,1167	<b>22NR 12 UN 3M</b>	3,30	5,20	2°	15°	4,60 0/-0,05	YI4M	PO**-**-22NR	•	•	•
5/8" - 15,875	27	8"-3,1750	<b>27NR 8 UN 2M</b>	3,00	4,80	2°	15°	6,20 0/-0,05	YI5M	PO**-**-27NR	•	•	•

# VHM-Gewindedrehplatten, mehrzahnig, links, Außen- und Innengewinde, UN Zoll

## Solid carbide thread turning inserts, multi-tooth, left, external and internal thread, UN inch

16-27EL / 16-27NL



Aussen links (EL)  
External left (EL)

Innen links (NL)  
Internal left (NL)

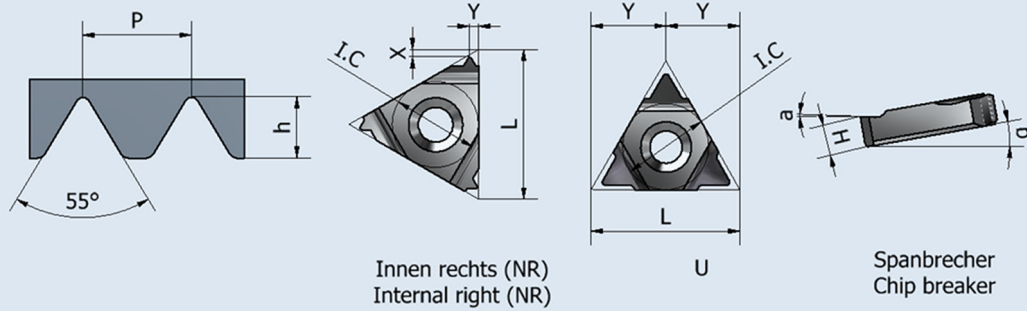
Spanbrecher  
Chip breaker

IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
Außengewinde UN Zoll links / External thread UN inch links													
3/8" - 9,525	16	16"-1,5875	<b>16EL 16 UN 2M</b>	1,70	2,50	2°	10°	3,40 0/-0,05	YI3M	PO**-**-16EL	•	•	•
1/2" - 12,70	22	16"-1,5875	<b>22EL 16 UN 3M</b>	2,60	4,10	2°	10°	4,60 0/-0,05	YI4M	PO**-**-22EL	•	•	•
1/2" - 12,70	22	12"-2,1167	<b>22EL 12 UN 2M</b>	2,10	3,20	2°	10°	4,60 0/-0,05	YI4M	PO**-**-22EL	•	•	•
1/2" - 12,70	22	12"-2,1167	<b>22EL 12 UN 3M</b>	3,40	5,30	2°	10°	4,60 0/-0,05	YI4M	PO**-**-22EL	•	•	•
5/8" - 15,875	27	8"-3,1750	<b>27EL 8 UN 2M</b>	3,20	5,00	2°	10°	6,20 0/-0,05	YI5M	PO**-**-27EL	•	•	•
Innengewinde UN Zoll links / Internal thread UN inch links													
3/8" - 9,525	16	16"-1,5875	<b>16NL 16 UN 2M</b>	1,70	2,40	2°	15°	3,40 0/-0,05	YE3M	PO**-**-16NL	•	•	•
1/2" - 12,70	22	16"-1,5875	<b>22NL 16 UN 3M</b>	2,50	4,00	2°	15°	4,60 0/-0,05	YE4M	PO**-**-22NL	•	•	•
1/2" - 12,70	22	12"-2,1167	<b>22NL 12 UN 2M</b>	2,10	3,20	2°	15°	4,60 0/-0,05	YE4M	PO**-**-22NL	•	•	•
1/2" - 12,70	22	12"-2,1167	<b>22NL 12 UN 3M</b>	3,30	5,20	2°	15°	4,60 0/-0,05	YE4M	PO**-**-22NL	•	•	•
5/8" - 15,875	27	8"-3,1750	<b>27NL 8 UN 2M</b>	3,00	4,80	2°	15°	6,20 0/-0,05	YE5M	PO**-**-27NL	•	•	•

# VHM-Gewindedrehplatten, rechts, Innengewinde, BSW Zoll

## Solid carbide thread turning inserts, right, internal thread, BSW inch

11-16NR



Innen rechts (NR)  
Internal right (NR)

Spanbrecher  
Chip breaker

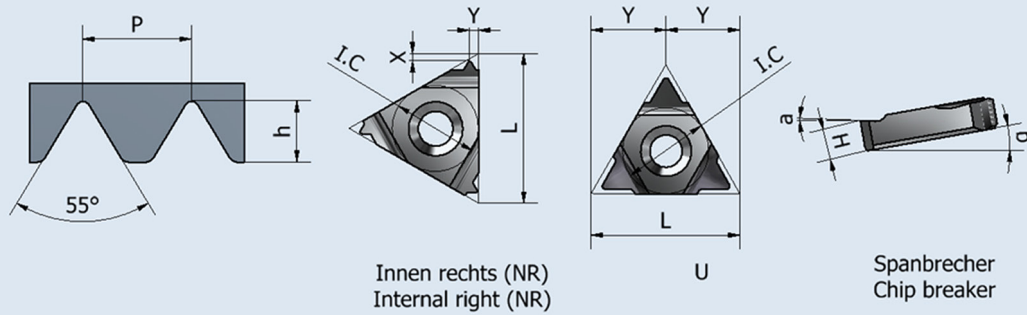
IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
1/4" - 6,35	11	72"-0,3528	<b>11NR 72 W</b>	0,80	0,40	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	60"-0,4233	<b>11NR 60 W</b>	0,80	0,40	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	56"-0,4536	<b>11NR56 W</b>	0,70	0,40	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	48"-0,5292	<b>11NR 48 W</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	40"-0,6350	<b>11NR 40 W</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	36"-0,7056	<b>11NR 36 W</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	32"-0,7938	<b>11NR 32 W</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	28"-0,9071	<b>11NR 28 W</b>	0,60	0,70	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	26"-0,9769	<b>11NR 26 W</b>	0,70	0,80	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	24"-1,0583	<b>11NR 24 W</b>	0,70	0,80	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	22"-1,1545	<b>11NR 22 W</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	20"-1,2700	<b>11NR 20 W</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	19"-1,3368	<b>11NR 19 W</b>	0,80	1,00	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	18"-1,4111	<b>11NR 18 W</b>	0,80	1,00	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	16"-1,5875	<b>11NR 16 W</b>	0,90	1,10	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
1/4" - 6,35	11	14"-1,8143	<b>11NR 14 W</b>	0,90	1,10	2°	15°	3,00 0/-0,05	---	PO***-11NR	•	•	•
3/8" - 9,525	16	72"-0,3528	<b>16NR 72 W</b>	0,70	0,40	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	60"-0,4233	<b>16NR 60 W</b>	0,70	0,40	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	56"-0,4536	<b>16NR 56 W</b>	0,70	0,40	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	48"-0,5292	<b>16NR 48 W</b>	0,60	0,60	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	40"-0,6350	<b>16NR 40 W</b>	0,60	0,60	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	36"-0,7056	<b>16NR 36 W</b>	0,60	0,60	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	32"-0,7938	<b>16NR 32 W</b>	0,60	0,60	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	28"-0,9071	<b>16NR 28 W</b>	0,60	0,70	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	26"-1,0583	<b>16NR 26 W</b>	0,70	0,80	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•

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Further dimensions on next page »

# VHM-Gewindedrehplatten, rechts, Innengewinde, BSW Zoll

## Solid carbide thread turning inserts, right, internal thread, BSW inch

16-27NR / 22-27UENR-L



Innen rechts (NR)  
Internal right (NR)

Spanbrecher  
Chip breaker

IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
3/8" - 9,525	16	24"-1,0583	<b>16NR 24 W</b>	0,70	0,80	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	22"-1,1545	<b>16NR 22 W</b>	0,80	0,90	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	20"-1,2700	<b>16NR 20 W</b>	0,80	0,90	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	19"-1,3368	<b>16NR 19 W</b>	0,80	1,00	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	18"-1,4111	<b>16NR 18 W</b>	0,80	1,00	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	16"-1,5875	<b>16NR 16 W</b>	0,90	1,10	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	14"-1,8143	<b>16NR 14 W</b>	1,00	1,20	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	12"-2,1167	<b>16NR 12 W</b>	1,10	1,40	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	11"-2,3091	<b>16NR 11 W</b>	1,10	1,50	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	10"-2,5400	<b>16NR 10 W</b>	1,10	1,50	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	9"-2,8222	<b>16NR 9 W</b>	1,20	1,70	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
3/8" - 9,525	16	8"-3,1750	<b>16NR 8 W</b>	1,20	1,70	2°	15°	3,40 0/-0,05	YE3	PO***-16NR	•	•	•
1/2" - 12,70	22	7"-3,6286	<b>22NR 7 W</b>	1,60	2,30	2°	15°	4,60 0/-0,05	YE4	PO***-22NR	•	•	•
1/2" - 12,70	22	6"-4,2333	<b>22NR 6 W</b>	1,60	2,30	2°	15°	4,60 0/-0,05	YE4	PO***-22NR	•	•	•
1/2" - 12,70	22	5"-5,0800	<b>22NR 5 W</b>	1,70	2,70	2°	15°	4,60 0/-0,05	YE4	PO***-22NR	•	•	•
1/2" - 12,70	22	4,5"-5,6444	<b>22NR 4.5 W</b>	1,80	2,90	2°	15°	6,20 0/-0,05	YE4	PO***-22NR	•	•	•
5/8" - 15,875	27	4-6,3500	<b>27NR 4 W</b>	2,00	2,90	2°	15°	6,20 0/-0,05	YE5	PO***-27NR	•	•	•

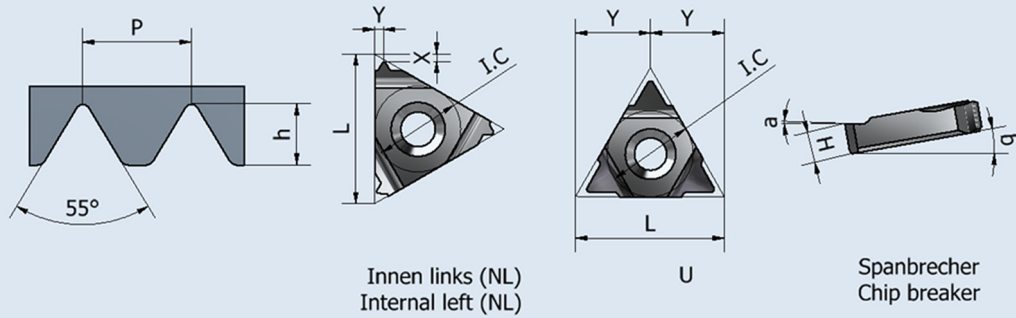
Universell anwendbar für Innen- und Außengewinde / Universally applicable for internal and external threads

1/2"U- 12,70	22	4,5"-5,6444	<b>22UENR-L 4.5 W</b>	2,30	11,00	2°	10°	4,60 0/-0,05	YE4U	PO***-22UNR	•	•	•
1/2"U- 12,70	22	4"-6,3500	<b>22UENR-L 4 W</b>	1,80	11,00	2°	10°	4,60 0/-0,05	YE4U	PO***-22UNR	•	•	•
5/8"U- 15,875	27	3,5"-7,2571	<b>27UENR-L 3.5 W</b>	2,10	13,50	2°	10°	6,20 0/-0,05	YE5U	PO***-27UNR	•	•	•
5/8"U- 15,875	27	3,25"-7,815	<b>22UENR-L 3.5 W</b>	2,00	13,50	2°	10°	6,20 0/-0,05	YE5U	PO***-27UNR	•	•	•
5/8"U- 15,875	27	3"-8,4666	<b>22UENR-L 3 W</b>	2,30	13,50	2°	10°	6,20 0/-0,05	YE5U	PO***-27UNR	•	•	•
5/8"U- 15,875	27	2,75"-9,236	<b>27UENR-L 2.75 W</b>	2,40	13,50	2°	10°	6,20 0/-0,05	YE5U	PO***-27UNR	•	•	•

# VHM-Gewindedrehplatten, links, Innengewinde, BSW Zoll

## Solid carbide thread turning inserts, left, internal thread, BSW inch

11-16NL



Innen links (NL)  
Internal left (NL)

Spanbrecher  
Chip breaker

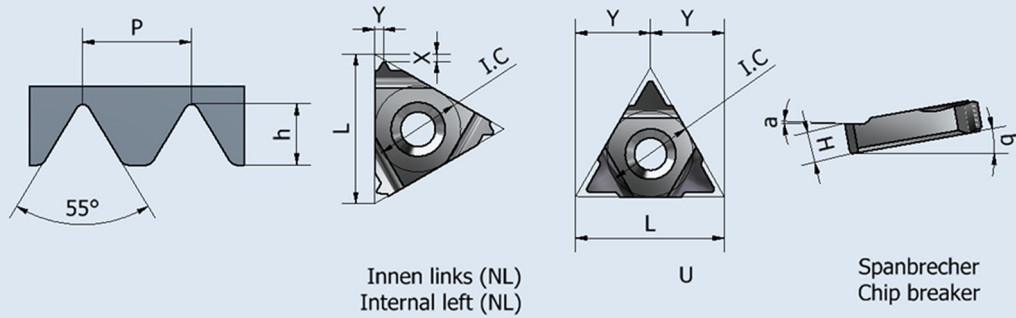
IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
1/4" - 6,35	11	72"-0,3528	<b>11NL 72 W</b>	0,80	0,40	2°	15°	3,00 0/-0,05	---	PO**.*-11NL	•	•	•
1/4" - 6,35	11	60"-0,4233	<b>11NL 60 W</b>	0,80	0,40	2°	15°	3,00 0/-0,05	---	PO**.*-11NL	•	•	•
1/4" - 6,35	11	56"-0,4536	<b>11NL 56 W</b>	0,70	0,40	2°	15°	3,00 0/-0,05	---	PO**.*-11NL	•	•	•
1/4" - 6,35	11	48"-0,5292	<b>11NL 48 W</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO**.*-11NL	•	•	•
1/4" - 6,35	11	40"-0,6350	<b>11NL 40 W</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO**.*-11NL	•	•	•
1/4" - 6,35	11	36"-0,7056	<b>11NL 36 W</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO**.*-11NL	•	•	•
1/4" - 6,35	11	32"-0,7938	<b>11NL 32 W</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO**.*-11NL	•	•	•
1/4" - 6,35	11	28"-0,9071	<b>11NL 28 W</b>	0,60	0,70	2°	15°	3,00 0/-0,05	---	PO**.*-11NL	•	•	•
1/4" - 6,35	11	26"-0,9769	<b>11NL 26 W</b>	0,70	0,80	2°	15°	3,00 0/-0,05	---	PO**.*-11NL	•	•	•
1/4" - 6,35	11	24"-1,0583	<b>11NL 24 W</b>	0,70	0,80	2°	15°	3,00 0/-0,05	---	PO**.*-11NL	•	•	•
1/4" - 6,35	11	22"-1,1545	<b>11NL 22 W</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO**.*-11NL	•	•	•
1/4" - 6,35	11	20"-1,2700	<b>11NL 20 W</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO**.*-11NL	•	•	•
1/4" - 6,35	11	19"-1,3368	<b>11NL 19 W</b>	0,80	1,00	2°	15°	3,00 0/-0,05	---	PO**.*-11NL	•	•	•
1/4" - 6,35	11	18"- 1,4111	<b>11NL 18 W</b>	0,80	1,00	2°	15°	3,00 0/-0,05	---	PO**.*-11NL	•	•	•
1/4" - 6,35	11	16"-1,5875	<b>11NL 16 W</b>	0,90	1,10	2°	15°	3,00 0/-0,05	---	PO**.*-11NL	•	•	•
1/4" - 6,35	11	14"-1,8143	<b>11NL 14 W</b>	0,90	1,10	2°	15°	3,00 0/-0,05	---	PO**.*-11NL	•	•	•
3/8" - 9,525	16	72"-0,3528	<b>16NL 72 W</b>	0,70	0,40	2°	15°	3,40 0/-0,05	Y13	PO**.*-16NL	•	•	•
3/8" - 9,525	16	60"-0,4233	<b>16NL 60 W</b>	0,70	0,40	2°	15°	3,40 0/-0,05	Y13	PO**.*-16NL	•	•	•
3/8" - 9,525	16	56"-0,4536	<b>16NL 56 W</b>	0,70	0,40	2°	15°	3,40 0/-0,05	Y13	PO**.*-16NL	•	•	•
3/8" - 9,525	16	48"-0,5292	<b>16NL 48 W</b>	0,60	0,60	2°	15°	3,40 0/-0,05	Y13	PO**.*-16NL	•	•	•
3/8" - 9,525	16	40"-0,6350	<b>16NL 40 W</b>	0,60	0,60	2°	15°	3,40 0/-0,05	Y13	PO**.*-16NL	•	•	•
3/8" - 9,525	16	36"-0,7056	<b>16NL 36 W</b>	0,60	0,60	2°	15°	3,40 0/-0,05	Y13	PO**.*-16NL	•	•	•
3/8" - 9,525	16	32"-0,7938	<b>16NL 32 W</b>	0,60	0,60	2°	15°	3,40 0/-0,05	Y13	PO**.*-16NL	•	•	•
3/8" - 9,525	16	28"-0,9071	<b>16NL 28 W</b>	0,60	0,70	2°	15°	3,40 0/-0,05	Y13	PO**.*-16NL	•	•	•
3/8" - 9,525	16	26"-1,0583	<b>16NL 26 W</b>	0,70	0,80	2°	15°	3,40 0/-0,05	Y13	PO**.*-16NL	•	•	•
3/8" - 9,525	16	24"-1,0583	<b>16NL 24 W</b>	0,70	0,80	2°	15°	3,40 0/-0,05	Y13	PO**.*-16NL	•	•	•

Weitere Abmessungen auf Folgeseite »  
Further dimensions on next page »

# VHM-Gewindedrehplatten, links, Innengewinde, BSW Zoll

## Solid carbide thread turning inserts, left, internal thread, BSW inch

16-27NL / 22-27UENR-L



IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
3/8" - 9,525	16	22"-1,1545	<b>16NL 22 W</b>	0,80	0,90	2°	15°	3,40 0/-0,05	YI3	PO**.*-16NL	•	•	•
3/8" - 9,525	16	20"-1,2700	<b>16NL 20 W</b>	0,80	0,90	2°	15°	3,40 0/-0,05	YI3	PO**.*-16NL	•	•	•
3/8" - 9,525	16	19"-1,3368	<b>16NL 19 W</b>	0,80	1,00	2°	15°	3,40 0/-0,05	YI3	PO**.*-16NL	•	•	•
3/8" - 9,525	16	18"-1,4111	<b>16NL 18 W</b>	0,80	1,00	2°	15°	3,40 0/-0,05	YI3	PO**.*-16NL	•	•	•
3/8" - 9,525	16	16"-1,5875	<b>16NL 16 W</b>	0,90	1,10	2°	15°	3,40 0/-0,05	YI3	PO**.*-16NL	•	•	•
3/8" - 9,525	16	14"-1,8143	<b>16NL 14 W</b>	1,00	1,20	2°	15°	3,40 0/-0,05	YI3	PO**.*-16NL	•	•	•
3/8" - 9,525	16	12"-2,1167	<b>16NL 12 W</b>	1,10	1,40	2°	15°	3,40 0/-0,05	YI3	PO**.*-16NL	•	•	•
3/8" - 9,525	16	11"-2,3091	<b>16NL 11 W</b>	1,10	1,50	2°	15°	3,40 0/-0,05	YI3	PO**.*-16NL	•	•	•
3/8" - 9,525	16	10"-2,5400	<b>16NL 10 W</b>	1,10	1,50	2°	15°	3,40 0/-0,05	YI3	PO**.*-16NL	•	•	•
3/8" - 9,525	16	9"-2,8222	<b>16NL 9 W</b>	1,20	1,70	2°	15°	3,40 0/-0,05	YI3	PO**.*-16NL	•	•	•
3/8" - 9,525	16	8"-3,1750	<b>16NL 8 W</b>	1,20	1,70	2°	15°	3,40 0/-0,05	YI3	PO**.*-16NL	•	•	•
1/2" - 12,70	22	7"-3,6286	<b>22NL 7 W</b>	1,60	2,30	2°	15°	4,60 0/-0,05	YI4	PO**.*-22NL	•	•	•
1/2" - 12,70	22	6"-4,2333	<b>22NL 6 W</b>	1,60	2,30	2°	15°	4,60 0/-0,05	YI4	PO**.*-22NL	•	•	•
1/2" - 12,70	22	5"-5,0800	<b>22NL 5 W</b>	1,70	2,70	2°	15°	4,60 0/-0,05	YI4	PO**.*-22NL	•	•	•
1/2" - 12,70	22	4,5"-5,6444	<b>22NL 4.5 W</b>	1,80	2,90	2°	15°	6,20 0/-0,05	YI4	PO**.*-22NL	•	•	•
5/8" -15,875	27	4-6,3500	<b>27NL 4 W</b>	2,00	2,90	2°	15°	6,20 0/-0,05	YI5	PO**.*-27NL	•	•	•

Universell anwendbar für Innen- und Außengewinde / Universally applicable for internal and external threads

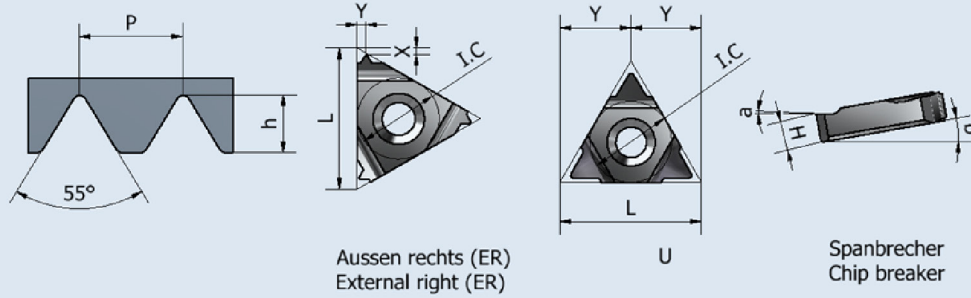
1/2"U- 12,70	22	4,5"-5,6444	<b>22UENR-L 4.5 W</b>	2,30	11,00	2°	10°	4,60 0/-0,05	YI4U	PO**.*-22UNL	•	•	•
1/2"U- 12,70	22	4"-6,3500	<b>22UENR-L 4 W</b>	1,80	11,00	2°	10°	4,60 0/-0,05	YI4U	PO**.*-22UNL	•	•	•
5/8"U- 15,875	27	3,5"-7,2571	<b>27UENR-L 3.5 W</b>	2,10	13,50	2°	10°	6,20 0/-0,05	YI5U	PO**.*-27UNL	•	•	•
5/8"U- 15,875	27	3,25"-7,815	<b>22UENR-L 3.5 W</b>	2,00	13,50	2°	10°	6,20 0/-0,05	YI5U	PO**.*-27UNL	•	•	•
5/8"U- 15,875	27	3"-8,4666	<b>22UENR-L 3 W</b>	2,30	13,50	2°	10°	6,20 0/-0,05	YI5U	PO**.*-27UNL	•	•	•
5/8"U- 15,875	27	2,75"-9,236	<b>27UENR-L 2.75 W</b>	2,40	13,50	2°	10°	6,20 0/-0,05	YI5U	PO**.*-27UNL	•	•	•



# VHM-Gewindedrehplatten, rechts, Außengewinde, BSW Zoll

## Solid carbide thread turning inserts, right, external thread, BSW inch

11-16ER



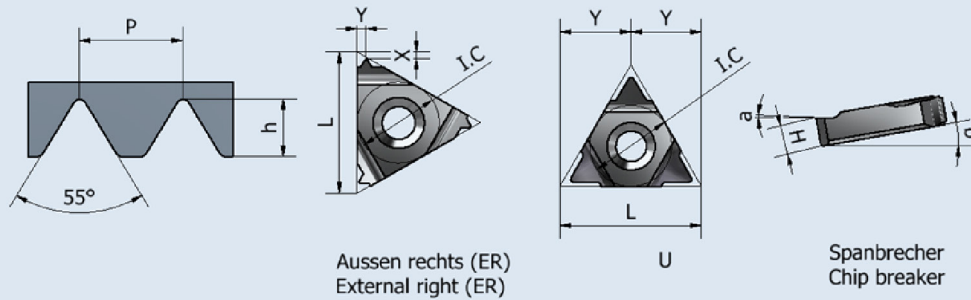
IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
1/4" - 6,35	11	72"-0,3528	<b>11ER 72 W</b>	0,80	0,40	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	60"-0,4233	<b>11ER 60 W</b>	0,80	0,40	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	56"-0,4536	<b>11ER56 W</b>	0,70	0,40	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	48"-0,5292	<b>11ER 48 W</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	40"-0,6350	<b>11ER 40 W</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	36"-0,7056	<b>11ER 36 W</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	32"-0,7938	<b>11ER 32 W</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	28"-0,9071	<b>11ER 28 W</b>	0,60	0,70	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	26"-0,9769	<b>11ER 26 W</b>	0,70	0,80	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	24"-1,0583	<b>11ER 24 W</b>	0,70	0,80	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	22"-1,1545	<b>11ER 22 W</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	20"-1,2700	<b>11ER 20 W</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	19"-1,3368	<b>11ER 19 W</b>	0,80	1,00	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	18"- 1,4111	<b>11ER 18 W</b>	0,80	1,00	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	16"-1,5875	<b>11ER 16 W</b>	0,90	1,10	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
1/4" - 6,35	11	14"-1,8143	<b>11ER 14 W</b>	1,00	1,20	2°	15°	3,00 0/-0,05	---	PO***-11ER	•	•	•
3/8" - 9,525	16	72"-0,3528	<b>16ER 72 W</b>	0,70	0,40	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	60"-0,4233	<b>16ER 60 W</b>	0,70	0,40	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	56"-0,4536	<b>16ER 56 W</b>	0,70	0,40	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	48"-0,5292	<b>16ER 48 W</b>	0,60	0,60	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	40"-0,6350	<b>16ER 40 W</b>	0,60	0,60	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	36"-0,7056	<b>16ER 36 W</b>	0,60	0,60	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	32"-0,7938	<b>16ER 32 W</b>	0,60	0,60	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	28"-0,9071	<b>16ER 28 W</b>	0,60	0,70	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	26"-1,0583	<b>16ER 26 W</b>	0,70	0,80	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•
3/8" - 9,525	16	24"-1,0583	<b>16ER 24W</b>	0,70	0,80	2°	10°	3,40 0/-0,05	YE3	PO***-16ER	•	•	•

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# VHM-Gewindedrehplatten, rechts, Außengewinde, BSW Zoll

## Solid carbide thread turning inserts, right, external thread, BSW inch

16-27ER / 22-27UENR-L



Aussen rechts (ER)  
External right (ER)

Spanbrecher  
Chip breaker

IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
3/8" - 9,525	16	22"-1,1545	<b>16ER 22 W</b>	0,80	0,90	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	20"-1,2700	<b>16ER 20 W</b>	0,80	0,90	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	19"-1,3368	<b>16ER 19 W</b>	0,80	1,00	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	18"-1,4111	<b>16ER 18 W</b>	0,80	1,00	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	16"-1,5875	<b>16ER 16 W</b>	0,90	1,10	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	14"-1,8143	<b>16ER 14 W</b>	1,00	1,20	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	12"-2,1167	<b>16ER 12 W</b>	1,10	1,40	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	11"-2,3091	<b>16ER 11 W</b>	1,10	1,50	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	10"-2,5400	<b>16ER 10 W</b>	1,10	1,50	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	9"-2,8222	<b>16ER 9 W</b>	1,20	1,70	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	8"-3,1750	<b>16ER 8 W</b>	1,20	1,70	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
1/2" - 12,70	22	7"-3,6286	<b>22ER 7 W</b>	1,60	2,30	2°	10°	4,60 0/-0,05	YE4	PO**-***-22ER	•	•	•
1/2" - 12,70	22	6"-4,2333	<b>22ER 6 W</b>	1,60	2,30	2°	10°	4,60 0/-0,05	YE4	PO**-***-22ER	•	•	•
1/2" - 12,70	22	5"-5,0800	<b>22ER 5 W</b>	1,70	2,70	2°	10°	4,60 0/-0,05	YE4	PO**-***-22ER	•	•	•
1/2"U - 12,70	22	4,5"-5,6444	<b>22ER 4.5 W</b>	1,80	2,90	2°	10°	6,20 0/-0,05	YE4	PO**-***-22ER	•	•	•
5/8"U - 15,875	27	4-6,3500	<b>27ER 4 W</b>	2,00	2,90	2°	10°	6,20 0/-0,05	YE5	PO**-***-27ER	•	•	•

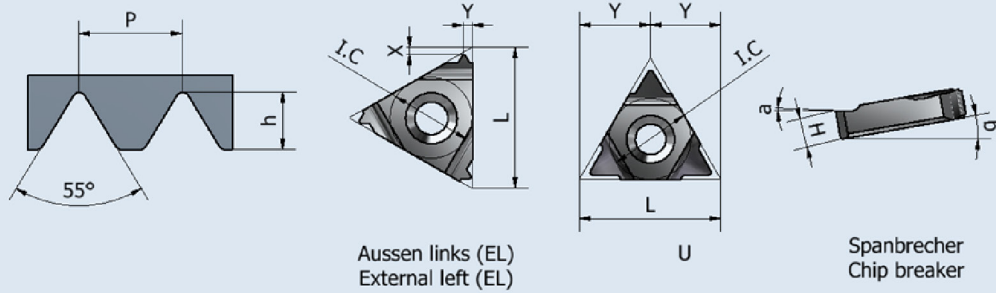
Universell anwendbar für Innen- und Außengewinde / Universally applicable for internal and external threads

1/2"U - 12,70	22	4,5"-5,6444	<b>22UENR-L 4.5 W</b>	2,30	11,00	2°	10°	4,60 0/-0,05	YE4U	PO**-***-22UER	•	•	•
1/2"U - 12,70	22	4"-6,3500	<b>22UENR-L 4 W</b>	1,80	11,00	2°	10°	4,60 0/-0,05	YE4U	PO**-***-22UER	•	•	•
5/8"U - 15,875	27	3,5"-7,2571	<b>27UENR-L 3.5 W</b>	2,10	13,50	2°	10°	6,20 0/-0,05	YE5U	PO**-***-27UER	•	•	•
5/8"U - 15,875	27	3,25"-7,815	<b>27UENR-L 3.5 W</b>	2,00	13,50	2°	10°	6,20 0/-0,05	YE5U	PO**-***-27UER	•	•	•
5/8"U - 15,875	27	3"-8,4666	<b>27UENR-L 3 W</b>	2,30	13,50	2°	10°	6,20 0/-0,05	YE5U	PO**-***-27UER	•	•	•
5/8"U - 15,875	27	2,75"-9,236	<b>27UENR-L 2.75 W</b>	2,40	13,50	2°	10°	6,20 0/-0,05	YE5U	PO**-***-27UER	•	•	•

# VHM-Gewindedrehplatten, links, Außengewinde, BSW Zoll

## Solid carbide thread turning inserts, left, external thread, BSW inch

11-16EL



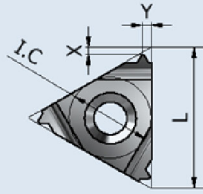
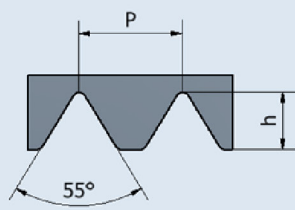
IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
1/4" - 6,35	11	72°-0,3528	<b>11EL 72 W</b>	0,80	0,40	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	60°-0,4233	<b>11EL 60 W</b>	0,80	0,40	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	56°-0,4536	<b>11EL 56 W</b>	0,70	0,40	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	48°-0,5292	<b>11EL 48 W</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	40°-0,6350	<b>11EL 40 W</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	36°-0,7056	<b>11EL 36 W</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	32°-0,7938	<b>11EL 32 W</b>	0,60	0,60	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	28°-0,9071	<b>11EL 28 W</b>	0,60	0,70	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	26°-0,9769	<b>11EL 26 W</b>	0,70	0,80	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	24°-1,0583	<b>11EL 24 W</b>	0,70	0,80	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	22°-1,1545	<b>11EL 22 W</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	20°-1,2700	<b>11EL 20 W</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	19°-1,3368	<b>11EL 19 W</b>	0,80	1,00	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	18°- 1,4111	<b>11EL 18 W</b>	0,80	1,00	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	16°-1,5875	<b>11EL 16 W</b>	0,90	1,10	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
1/4" - 6,35	11	14°-1,8143	<b>11EL 14 W</b>	1,00	1,20	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
3/8" - 9,525	16	72°-0,3528	<b>16EL 72 W</b>	0,70	0,40	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	60°-0,4233	<b>16EL 60 W</b>	0,70	0,40	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	56°-0,4536	<b>16EL 56 W</b>	0,70	0,40	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	48°-0,5292	<b>16EL 48 W</b>	0,60	0,60	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	40°-0,6350	<b>16EL 40 W</b>	0,60	0,60	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	36°-0,7056	<b>16EL 36 W</b>	0,60	0,60	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	32°-0,7938	<b>16EL 32 W</b>	0,60	0,60	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	28°-0,9071	<b>16EL 28 W</b>	0,60	0,70	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	26°-1,0583	<b>16EL 26 W</b>	0,70	0,80	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•
3/8" - 9,525	16	24°-1,0583	<b>16EL 24 W</b>	0,70	0,80	2°	10°	3,40 0/-0,05	Y13	PO***-16EL	•	•	•

Weitere Abmessungen auf Folgeseite »  
Further dimensions on next page »

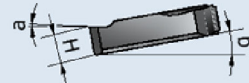
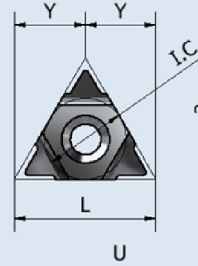
# VHM-Gewindedrehplatten, links, Außengewinde, BSW Zoll

## Solid carbide thread turning inserts, left, external thread, BSW inch

16N-27EL / 22-27UENR-L



Aussen links (EL)  
External left (EL)



Spanbrecher  
Chip breaker

IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
3/8" - 9,525	16	22"-1,1545	<b>16EL 22 W</b>	0,80	0,90	2°	10°	3,40 0/-0,05	YI3	PO**.*-16EL	•	•	•
3/8" - 9,525	16	20"-1,2700	<b>16EL 20 W</b>	0,80	0,90	2°	10°	3,40 0/-0,05	YI3	PO**.*-16EL	•	•	•
3/8" - 9,525	16	19"-1,3368	<b>16EL 19 W</b>	0,80	1,00	2°	10°	3,40 0/-0,05	YI3	PO**.*-16EL	•	•	•
3/8" - 9,525	16	18"-1,4111	<b>16EL 18 W</b>	0,80	1,00	2°	10°	3,40 0/-0,05	YI3	PO**.*-16EL	•	•	•
3/8" - 9,525	16	16"-1,5875	<b>16EL 16 W</b>	0,90	1,10	2°	10°	3,40 0/-0,05	YI3	PO**.*-16EL	•	•	•
3/8" - 9,525	16	14"-1,8143	<b>16EL 14 W</b>	1,00	1,20	2°	10°	3,40 0/-0,05	YI3	PO**.*-16EL	•	•	•
3/8" - 9,525	16	12"-2,1167	<b>16EL 12 W</b>	1,10	1,40	2°	10°	3,40 0/-0,05	YI3	PO**.*-16EL	•	•	•
3/8" - 9,525	16	11"-2,3091	<b>16EL 11 W</b>	1,10	1,50	2°	10°	3,40 0/-0,05	YI3	PO**.*-16EL	•	•	•
3/8" - 9,525	16	10"-2,5400	<b>16EL 10 W</b>	1,10	1,50	2°	10°	3,40 0/-0,05	YI3	PO**.*-16EL	•	•	•
3/8" - 9,525	16	9"-2,8222	<b>16EL 9 W</b>	1,20	1,70	2°	10°	3,40 0/-0,05	YI3	PO**.*-16EL	•	•	•
3/8" - 9,525	16	8"-3,1750	<b>16EL 8 W</b>	1,20	1,70	2°	10°	3,40 0/-0,05	YI3	PO**.*-16EL	•	•	•
1/2" - 12,70	22	7"-3,6286	<b>22EL 7 W</b>	1,60	2,30	2°	10°	4,60 0/-0,05	YI4	PO**.*-22EL	•	•	•
1/2" - 12,70	22	6"-4,2333	<b>22EL 6 W</b>	1,60	2,30	2°	10°	4,60 0/-0,05	YI4	PO**.*-22EL	•	•	•
1/2" - 12,70	22	5"-5,0800	<b>22EL 5 W</b>	1,70	2,70	2°	10°	4,60 0/-0,05	YI4	PO**.*-22EL	•	•	•
1/2"U - 12,70	22	4,5"-5,6444	<b>22EL 4.5 W</b>	1,80	2,90	2°	10°	6,20 0/-0,05	YI4	PO**.*-22EL	•	•	•
5/8"U - 15,875	27	4-6,3500	<b>27EL 4 W</b>	2,00	2,90	2°	10°	6,20 0/-0,05	YI5	PO**.*-27EL	•	•	•

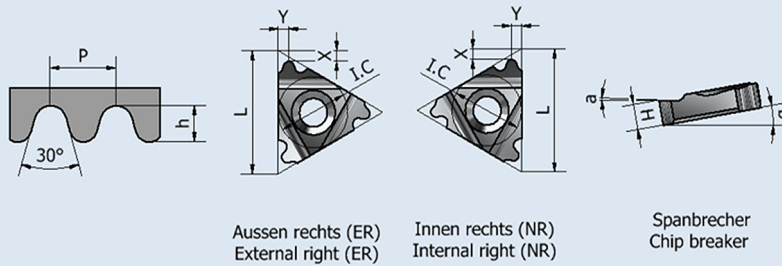
Universell anwendbar für Innen- und Außengewinde / Universally applicable for internal and external threads

1/2"U - 12,70	22	4,5"-5,6444	<b>22UENR-L 4.5 W</b>	2,30	11,00	2°	10°	4,60 0/-0,05	YI4U	PO**.*-22UEL	•	•	•
1/2"U - 12,70	22	4"-6,3500	<b>22UENR-L 4 W</b>	1,80	11,00	2°	10°	4,60 0/-0,05	YI4U	PO**.*-22UEL	•	•	•
5/8"U - 15,875	27	3,5"-7,2571	<b>27UENR-L 3.5 W</b>	2,10	13,50	2°	10°	6,20 0/-0,05	YI5U	PO**.*-27UEL	•	•	•
5/8"U - 15,875	27	3,25"-7,815	<b>27UENR-L 3.5 W</b>	2,00	13,50	2°	10°	6,20 0/-0,05	YI5U	PO**.*-27UEL	•	•	•
5/8"U - 15,875	27	3"-8,4666	<b>27UENR-L 3 W</b>	2,30	13,50	2°	10°	6,20 0/-0,05	YI5U	PO**.*-27UEL	•	•	•
5/8"U - 15,875	27	2,75"-9,236	<b>27UENR-L 2.75 W</b>	2,40	13,50	2°	10°	6,20 0/-0,05	YI5U	PO**.*-27UEL	•	•	•

# VHM-Gewindedrehplatten, rechts, Außen- und Innengewinde rund, DIN 405

## Solid carbide thread turning inserts, right, external and internal thread round, DIN 405

16-27ER / 16-27NR



Aussen rechts (ER)  
External right (ER)

Innen rechts (NR)  
Internal right (NR)

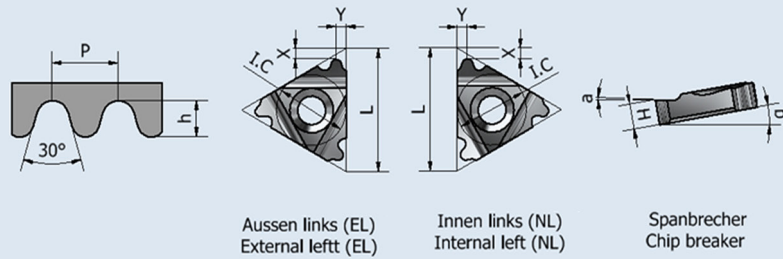
Spanbrecher  
Chip breaker

IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
Außengewinde rechts / External thread right													
3/8" - 9,525	16	10"-2,5400	<b>16ER 10 RD</b>	1,00	1,30	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	8"-3,1750	<b>16ER 8 RD</b>	1,40	1,40	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
3/8" - 9,525	16	6"-4,2333	<b>16ER 6 RD</b>	1,50	1,70	2°	10°	3,40 0/-0,05	YE3	PO**-***-16ER	•	•	•
1/2" - 12,70	22	6"-4,2333	<b>22ER 6 RD</b>	1,50	1,70	2°	10°	4,60 0/-0,05	YE4	PO**-***-22ER	•	•	•
1/2" - 12,70	22	4"-6,3500	<b>22ER 4 RD</b>	2,20	2,30	2°	10°	4,60 0/-0,05	YE4	PO**-***-22ER	•	•	•
5/8" - 15,875	27	4"-6,3500	<b>27ER 4 RD</b>	2,20	2,30	2°	10°	6,20 0/-0,05	YE5	PO**-***-27ER	•	•	•
Innengewinde rechts / Internal thread right													
3/8" - 9,525	16	10"-2,5400	<b>16NR 10 RD</b>	1,00	1,30	2°	15°	3,40 0/-0,05	YE3	PO**-***-16NR	•	•	•
3/8" - 9,525	16	8"-3,1750	<b>16NR 8 RD</b>	1,40	1,40	2°	15°	3,40 0/-0,05	YE3	PO**-***-16NR	•	•	•
3/8" - 9,525	16	6"-4,2333	<b>16NR 6 RD</b>	1,50	1,70	2°	15°	3,40 0/-0,05	YE3	PO**-***-16NR	•	•	•
1/2" - 12,70	22	6"-4,2333	<b>22NR 6 RD</b>	1,50	1,70	2°	15°	4,60 0/-0,05	YE4	PO**-***-22NR	•	•	•
1/2" - 12,70	22	4"-6,3500	<b>22NR 4 RD</b>	2,20	2,30	2°	15°	4,60 0/-0,05	YE4	PO**-***-22NR	•	•	•
5/8" - 15,875	27	4"-6,3500	<b>27NR 4 RD</b>	2,20	2,30	2°	15°	6,20 0/-0,05	YE5	PO**-***-27NR	•	•	•

# VHM-Gewindedrehplatten, links, Außen- und Innengewinde rund, DIN 405

## Solid carbide thread turning inserts, left, external and internal thread round, DIN 405

16-27EL / 16-27NL



Aussen links (EL)  
External leftt (EL)

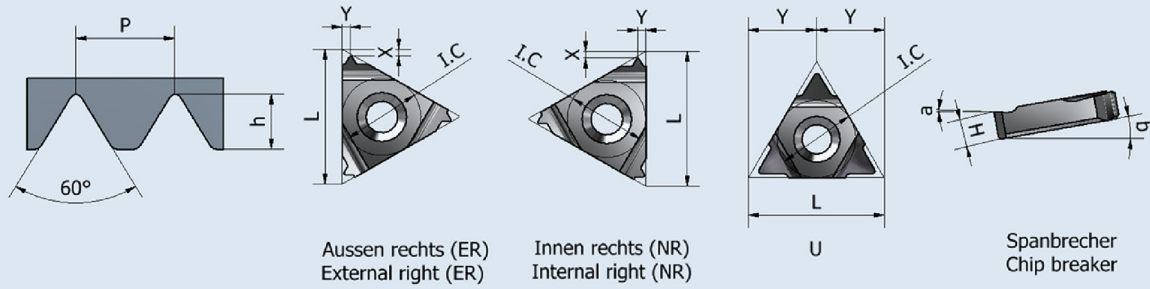
Innen links (NL)  
Internal leftt (NL)

Spanbrecher  
Chip breaker

IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
Außengewinde links / External thread left													
3/8" - 9,525	16	10"-2,5400	<b>16EL 10 RD</b>	1,00	1,30	2°	10°	3,40 0/-0,05	YI3	PO**-***-16EL	•	•	•
3/8" - 9,525	16	8"-3,1750	<b>16EL 8 RD</b>	1,40	1,40	2°	10°	3,40 0/-0,05	YI3	PO**-***-16EL	•	•	•
3/8" - 9,525	16	6"-4,2333	<b>16EL 6 RD</b>	1,50	1,70	2°	10°	3,40 0/-0,05	YI3	PO**-***-16EL	•	•	•
1/2" - 12,70	22	6"-4,2333	<b>22EL 6 RD</b>	1,50	1,70	2°	10°	4,60 0/-0,05	YI4	PO**-***-22EL	•	•	•
1/2" - 12,70	22	4"-6,3500	<b>22EL 4 RD</b>	2,20	2,30	2°	10°	4,60 0/-0,05	YI4	PO**-***-22EL	•	•	•
5/8" - 15,875	27	4"-6,3500	<b>27EL 4 RD</b>	2,20	2,30	2°	10°	6,20 0/-0,05	YI5	PO**-***-27EL	•	•	•
Innengewinde links / Internal thread left													
3/8" - 9,525	16	10"-2,5400	<b>16NL 10 RD</b>	1,00	1,30	2°	15°	3,40 0/-0,05	YI3	PO**-***-16NL	•	•	•
3/8" - 9,525	16	8"-3,1750	<b>16NL 8 RD</b>	1,40	1,40	2°	15°	3,40 0/-0,05	YI3	PO**-***-16NL	•	•	•
3/8" - 9,525	16	6"-4,2333	<b>16NL 6 RD</b>	1,50	1,70	2°	15°	3,40 0/-0,05	YI3	PO**-***-16NL	•	•	•
1/2" - 12,70	22	6"-4,2333	<b>22NL 6 RD</b>	1,50	1,70	2°	15°	4,60 0/-0,05	YI4	PO**-***-22NL	•	•	•
1/2" - 12,70	22	4"-6,3500	<b>22NL 4 RD</b>	2,20	2,30	2°	15°	4,60 0/-0,05	YI4	PO**-***-22NL	•	•	•
5/8" - 15,875	27	4"-6,3500	<b>27NL 4 RD</b>	2,20	2,30	2°	15°	6,20 0/-0,05	YI5	PO**-***-27NL	•	•	•

# VHM-Gewindedrehplatten, rechts, Außen- und Innengewinde, Teilprofil 60°, metrisch - Zoll, Solid carbide thread turning inserts, right, external + internal, partial profile 60°, metric - inch

11-27ER-NR / 22-27UENR-L



Aussen rechts (ER)  
External right (ER)

Innen rechts (NR)  
Internal right (NR)

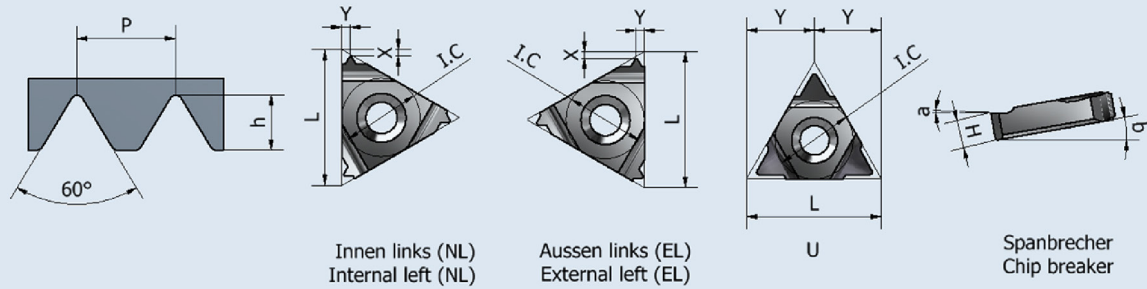
U

Spanbrecher  
Chip breaker

IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
Außengewinde rechts / External thread right													
1/4"-6,350	11	0,5-1,5 48-16TPI	<b>11ER A60</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO**.*-11ER	•	•	•
3/8"-9,525	16	0,5-1,5 48-16TPI	<b>16ER A60</b>	0,80	0,90	2°	10°	3,40 0/-0,05	YE3	PO**.*-16ER	•	•	•
3/8"-9,525	16	1,75-3,0 14-8 TPI	<b>16ER G60</b>	1,20	1,70	2°	10°	3,40 0/-0,05	YE3	PO**.*-16ER	•	•	•
3/8"-9,525	16	0,5-3,0 48-8 TPI	<b>16ER AG60</b>	1,20	1,70	2°	10°	3,40 0/-0,05	YE3	PO**.*-16ER	•	•	•
1/2" - 12,700	22	3,5-5,0 7,5 TPI	<b>22ER N60</b>	1,70	2,50	2°	10°	4,60 0/-0,05	YE4	PO**.*-22ER	•	•	•
5/8"-15,875	27	5,5-6,0 4,5-4 TPI	<b>27ER Q60</b>	2,10	3,10	2°	10°	6,20 0/-0,05	YE5	PO**.*-27ER	•	•	•
1/2"U - 12,700	22	3,5-5,0 7,5 TPI	<b>22UENR-L U60</b>	0,60	11,0	2°	10°	4,60 0/-0,05	YE4U	PO**.*-22UER	•	•	•
5/8"U-15,875	27	5,5-6,0 4,5-4 TPI	<b>27UENR-L U60</b>	1,00	13,5	2°	10°	6,20 0/-0,05	YE5U	PO**.*-27UER	•	•	•
Innengewinde rechts / Internal thread right													
1/4"-6,350	11	0,5-1,5 48-16TPI	<b>11NR A60</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO**.*-11NR	•	•	•
3/8"-9,525	16	0,5-1,5 48-16TPI	<b>16NR A60</b>	0,80	0,90	2°	15°	3,40 0/-0,05	YI3	PO**.*-16NR	•	•	•
3/8"-9,525	16	1,75-3,0 14-8 TPI	<b>16NR G60</b>	1,20	1,70	2°	15°	3,40 0/-0,05	YI3	PO**.*-16NR	•	•	•
3/8"-9,525	16	0,5-3,0 48-8 TPI	<b>16NR AG60</b>	1,20	1,70	2°	15°	3,40 0/-0,05	YI3	PO**.*-16NR	•	•	•
1/2" - 12,700	22	3,5-5,0 7,5 TPI	<b>22NR N60</b>	1,70	2,50	2°	15°	4,60 0/-0,05	YI4	PO**.*-22NR	•	•	•
5/8"-15,875	27	5,5-6,0 4,5-4 TPI	<b>27NR Q60</b>	2,10	3,10	2°	15°	6,20 0/-0,05	YI5	PO**.*-27NR	•	•	•
1/2"U - 12,700	22	3,5-5,0 7,5 TPI	<b>22UENR-L U60</b>	0,60	11,0	2°	10°	4,60 0/-0,05	YI4U	PO**.*-22UNR	•	•	•
5/8"U-15,875	27	5,5-6,0 4,5-4 TPI	<b>27UENR-L U60</b>	1,00	13,5	2°	10°	6,20 0/-0,05	YI5U	PO**.*-27UNR	•	•	•

# VHM-Gewindedrehplatten, links, Außen- und Innengewinde, Teilprofil 60°, metrisch - Zoll, Solid carbide thread turning inserts, left, external + internal, partial profile 60°, metric - inch

11-27EL-NL / 22-27UENR-L

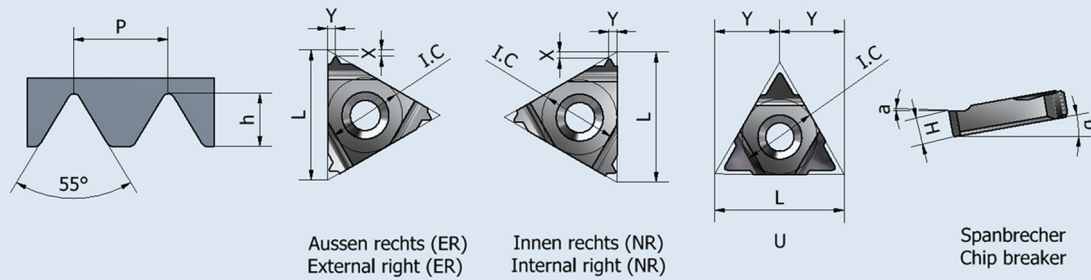


IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
Außengewinde links / External thread left													
1/4"-6,350	11	0,5-1,5 48-16TPI	<b>11EL A60</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO***-11EL	•	•	•
3/8"-9,525	16	0,5-1,5 48-16TPI	<b>16EL A60</b>	0,80	0,90	2°	10°	3,40 0/-0,05	YI3	PO***-16EL	•	•	•
3/8"-9,525	16	1,75-3,0 14-8 TPI	<b>16EL G60</b>	1,20	1,70	2°	10°	3,40 0/-0,05	YI3	PO***-16EL	•	•	•
3/8"-9,525	16	0,5-3,0 48-8 TPI	<b>16EL AG60</b>	1,20	1,70	2°	10°	3,40 0/-0,05	YI3	PO***-16EL	•	•	•
1/2" - 12,700	22	3,5-5,0 7,5 TPI	<b>22EL N60</b>	1,70	2,50	2°	10°	4,60 0/-0,05	YI4	PO***-22EL	•	•	•
5/8"-15,875	27	5,5-6,0 4,5-4 TPI	<b>27EL Q60</b>	2,10	3,10	2°	10°	6,20 0/-0,05	YI5	PO***-27EL	•	•	•
1/2"U - 12,700	22	3,5-5,0 7,5 TPI	<b>22UENR-L U60</b>	0,60	11,0	2°	10°	4,60 0/-0,05	YI4U	PO***-22UEL	•	•	•
5/8"U-15,875	27	5,5-6,0 4,5-4 TPI	<b>27UENR-L U60</b>	1,00	13,5	2°	10°	6,20 0/-0,05	YI5U	PO***-27UEL	•	•	•
Innengewinde links / Internal thread left													
1/4"-6,350	11	0,5-1,5 48-16TPI	<b>11NL A60</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO***-11NL	•	•	•
3/8"-9,525	16	0,5-1,5 48-16TPI	<b>11NL A60</b>	0,80	0,90	2°	15°	3,40 0/-0,05	YE3	PO***-16NL	•	•	•
3/8"-9,525	16	1,75-3,0 14-8 TPI	<b>16NL G60</b>	1,20	1,70	2°	15°	3,40 0/-0,05	YE3	PO***-16NL	•	•	•
3/8"-9,525	16	0,5-3,0 48-8 TPI	<b>16NL AG60</b>	1,20	1,70	2°	15°	3,40 0/-0,05	YE3	PO***-16NL	•	•	•
1/2" - 12,700	22	3,5-5,0 7,5 TPI	<b>22NL N60</b>	1,70	2,50	2°	15°	4,60 0/-0,05	YE4	PO***-22NL	•	•	•
5/8"-15,875	27	5,5-6,0 4,5-4 TPI	<b>27NL Q60</b>	2,10	3,10	2°	15°	6,20 0/-0,05	YE5	PO***-27NL	•	•	•
1/2"U - 12,700	22	3,5-5,0 7,5 TPI	<b>22UENR-L U60</b>	0,60	11,0	2°	10°	4,60 0/-0,05	YE4U	PO***-22UNL	•	•	•
5/8"U-15,875	27	5,5-6,0 4,5-4 TPI	<b>27UENR-L U60</b>	1,00	13,5	2°	10°	6,20 0/-0,05	YE5U	PO***-27UNL	•	•	•



# VHM-Gewindedrehplatten, rechts, Außen- und Innengewinde, Teilprofil 55°, metrisch - Zoll, Solid carbide thread turning inserts, right, external + internal, partial profile 55°, metric - inch

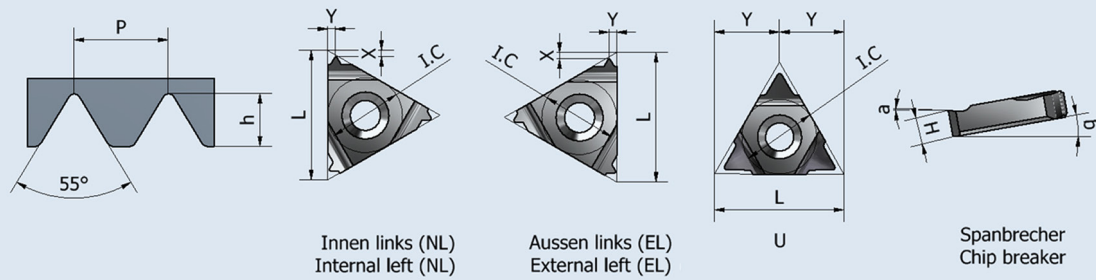
11-27ER-NR / 22-27UENR-L



IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
Außengewinde rechts / External thread right													
1/4"-6,350	11	0,5-1,5 48-16TPI	<b>11ER A55</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO**-**-11ER	•	•	•
3/8"-9,525	16	0,5-1,5 48-16TPI	<b>16ER A55</b>	0,80	0,90	2°	10°	3,40 0/-0,05	YE3	PO**-**-16ER	•	•	•
3/8"-9,525	16	1,75-3,0 14-8 TPI	<b>16ER G55</b>	1,20	1,70	2°	10°	3,40 0/-0,05	YE3	PO**-**-16ER	•	•	•
3/8"-9,525	16	0,5-3,0 48-8 TPI	<b>16ER AG55</b>	1,20	1,70	2°	10°	3,40 0/-0,05	YE3	PO**-**-16ER	•	•	•
1/2" - 12,700	22	3,5-5,0 7,5 TPI	<b>22ER N55</b>	1,70	2,50	2°	10°	4,60 0/-0,05	YE4	PO**-**-22ER	•	•	•
5/8"-15,875	27	5,5-6,0 4,5-4 TPI	<b>27ER Q55</b>	2,00	2,90	2°	10°	6,20 0/-0,05	YE5	PO**-**-27ER	•	•	•
1/2"U - 12,700	22	3,5-5,0 7,5 TPI	<b>22UENR-L U55</b>	0,90	11,0	2°	10°	4,60 0/-0,05	YE4U	PO**-**-22UER	•	•	•
5/8"U-15,875	27	5,5-6,0 4,5-4 TPI	<b>27UENR-L U55</b>	1,20	13,5	2°	10°	6,20 0/-0,05	YE5U	PO**-**-27UER	•	•	•
Innengewinde rechts / Internal thread right													
1/4"-6,350	11	0,5-1,5 48-16TPI	<b>11NR A55</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO**-**-11NR	•	•	•
3/8"-9,525	16	0,5-1,5 48-16TPI	<b>16NR A55</b>	0,80	0,90	2°	15°	3,40 0/-0,05	YI3	PO**-**-16NR	•	•	•
3/8"-9,525	16	1,75-3,0 14-8 TPI	<b>16NR G55</b>	1,20	1,70	2°	15°	3,40 0/-0,05	YI3	PO**-**-16NR	•	•	•
3/8"-9,525	16	0,5-3,0 48-8 TPI	<b>16NR AG55</b>	1,20	1,70	2°	15°	3,40 0/-0,05	YI3	PO**-**-16NR	•	•	•
1/2" - 12,700	22	3,5-5,0 7,5 TPI	<b>22NR N55</b>	1,70	2,50	2°	15°	4,60 0/-0,05	YI4	PO**-**-22NR	•	•	•
5/8"-15,875	27	5,5-6,0 4,5-4 TPI	<b>27NR Q55</b>	2,00	2,90	2°	15°	6,20 0/-0,05	YI5	PO**-**-27NR	•	•	•
1/2"U - 12,700	22	3,5-5,0 7,5 TPI	<b>22UENR-L U55</b>	0,90	11,0	2°	10°	4,60 0/-0,05	YI4U	PO**-**-22UNR	•	•	•
5/8"U-15,875	27	5,5-6,0 4,5-4 TPI	<b>27UENR-L U55</b>	1,20	13,5	2°	10°	6,20 0/-0,05	YI5U	PO**-**-27UNR	•	•	•

# VHM-Gewindedrehplatten, left, Außen- und Innengewinde, Teilprofil 55°, metrisch - Zoll, Solid carbide thread turning inserts, left, external + internal, partial profile 55°, metric - inch

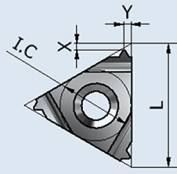
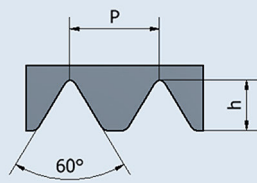
11-27EL-NL / 22-27UENR-L



IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	U-Platte Spacer	Halter Tool holder	blank	ST 2 COATING	SD COATING
Außengewinde links / External thread left													
1/4"-6,350	11	0,5-1,5 48-16TPI	<b>11EL A55</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO**-**-11EL	•	•	•
3/8"-9,525	16	0,5-1,5 48-16TPI	<b>16EL A55</b>	0,80	0,90	2°	10°	3,40 0/-0,05	YI3	PO**-**-16EL	•	•	•
3/8"-9,525	16	1,75-3,0 14-8 TPI	<b>16EL G55</b>	1,20	1,70	2°	10°	3,40 0/-0,05	YI3	PO**-**-16EL	•	•	•
3/8"-9,525	16	0,5-3,0 48-8 TPI	<b>16EL AG55</b>	1,20	1,70	2°	10°	3,40 0/-0,05	YI3	PO**-**-16EL	•	•	•
1/2" - 12,700	22	3,5-5,0 7,5 TPI	<b>22EL N55</b>	1,70	2,50	2°	10°	4,60 0/-0,05	YI4	PO**-**-22EL	•	•	•
5/8"-15,875	27	5,5-6,0 4,5-4 TPI	<b>27EL Q55</b>	2,00	2,90	2°	10°	6,20 0/-0,05	YI5	PO**-**-27EL	•	•	•
1/2"U - 12,700	22	3,5-5,0 7,5 TPI	<b>22UENR-L U55</b>	0,90	11,0	2°	10°	4,60 0/-0,05	YI4U	PO**-**-22UEL	•	•	•
5/8"U-15,875	27	5,5-6,0 4,5-4 TPI	<b>27UENR-L U55</b>	1,20	13,5	2°	10°	6,20 0/-0,05	YI5U	PO**-**-27UEL	•	•	•
Innengewinde links / Internal thread left													
1/4"-6,350	11	0,5-1,5 48-16TPI	<b>11NL A55</b>	0,80	0,90	2°	15°	3,00 0/-0,05	---	PO**-**-11NL	•	•	•
3/8"-9,525	16	0,5-1,5 48-16TPI	<b>11NL A55</b>	0,80	0,90	2°	15°	3,40 0/-0,05	YE3	PO**-**-16NL	•	•	•
3/8"-9,525	16	1,75-3,0 14-8 TPI	<b>16NL G55</b>	1,20	1,70	2°	15°	3,40 0/-0,05	YE3	PO**-**-16NL	•	•	•
3/8"-9,525	16	0,5-3,0 48-8 TPI	<b>16NL AG55</b>	1,20	1,70	2°	15°	3,40 0/-0,05	YE3	PO**-**-16NL	•	•	•
1/2" - 12,700	22	3,5-5,0 7,5 TPI	<b>22NL N55</b>	1,70	2,50	2°	15°	4,60 0/-0,05	YE4	PO**-**-22NL	•	•	•
5/8"-15,875	27	5,5-6,0 4,5-4 TPI	<b>27NL Q55</b>	2,00	2,90	2°	15°	6,20 0/-0,05	YE5	PO**-**-27NL	•	•	•
1/2"U - 12,700	22	3,5-5,0 7,5 TPI	<b>22UENR-L U55</b>	0,90	11,0	2°	10°	4,60 0/-0,05	YE4U	PO**-**-22UNL	•	•	•
5/8"U-15,875	27	5,5-6,0 4,5-4 TPI	<b>27UENR-L U55</b>	1,20	13,5	2°	10°	6,20 0/-0,05	YE5U	PO**-**-27UNL	•	•	•

# VHM-Gewindewirbelplatten, rechts, Innengewinde, UN Zoll und Teilprofil 60° metrisch - Zoll Solid carbide whirling inserts, right, internal thread, UN inch and partial profile 60° metric - inch

16 TBR



Innen rechts (NR)  
Internal right (NR)



Spanbrecher  
Chip breaker

IC Zoll / inch mm	L	Steig. pitch mm	Bestellnr. Order no.	X mm	Y mm	a	b	H mm	h	Halter Tool holder
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Innengewinde UN Zoll / Internal thread UN inch

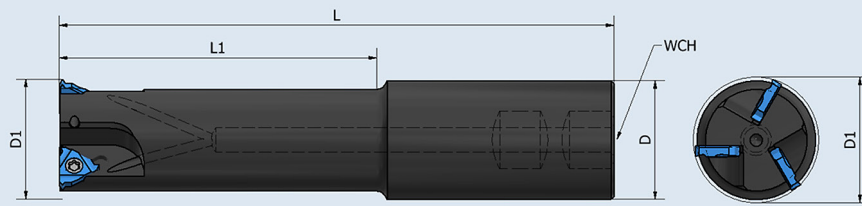
3/8"-9,525	16	18"-1,4111	<b>16TBR NR18 UN</b>	1,1500±0,01	0,7056±0,01	2°	15°	3,40 0/-0,03	0,829	POTBR****.****-16**
3/8"-9,525	16	16"-1,5875	<b>16TBR NR16 UN</b>	1,1500±0,01	0,7934±0,01	2°	15°	3,40 0/-0,03	0,932	POTBR****.****-16**
3/8"-9,525	16	14"-1,8143	<b>16TBR NR14 UN</b>	1,1500±0,01	0,9071±0,01	2°	15°	3,40 0/-0,03	1,065	POTBR****.****-16**
3/8"-9,525	16	12"-2,1167	<b>16TBR NR12 UN</b>	1,1500±0,01	1,0583±0,01	2°	15°	3,40 0/-0,03	1,243	POTBR****.****-16**

Innengewinde Teilprofil 60° metrisch - Zoll / Internal thread partial profile 60° metrisch - inch

3/8"-9,525	16	48"-8"/0,5-3,0	<b>16TBR NR AG60°</b>	1,1500±0,01	1,5875±0,01	2°	15°	3,40 0/-0,03	2,720	POTBR****.****-16**
3/8"-9,525	16	14"-8"/1,75-3,0	<b>16TBR NR G60°</b>	1,1500±0,01	1,5875±0,01	2°	15°	3,40 0/-0,03	2,670	POTBR****.****-16**

## Halter für Gewindewirbelplatten Tool holder for whirling inserts

POTBR

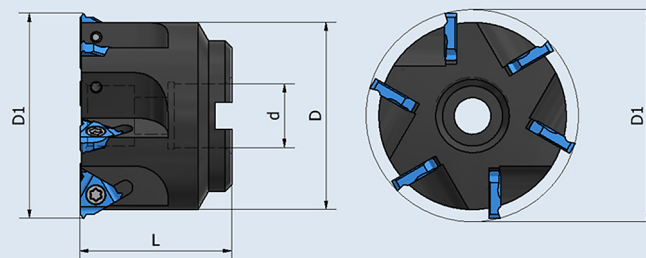


Best.-Nr. / Order no. Halter / Tool holder	Platte insert	Platte insert	L	L1	D	D1 = Ø rotation	Z	WCH	Kern Ø Int	
POTBR0075-720-16-1	1	3-3/8-16TBR	4,5" - 114,300	2,490" - 63,246	0,750" - 19,05	0,720" - 18,288	1	8,000	0,830" - 21,000	*
POTBR0125-1170-16-2	2	3-3/8-16TBR	7" - 177,800	3,750" - 95,250	1,250" - 31,75	1,170" - 29,718	2	8,000	1,250" - 31,750	*
POTBR0150-16-3	3	3-3/8-16TBR	9" - 228,600	6,000" - 152,400	1,500" - 38,10	1,5819" - 40,181	3	8,000	1,700" - 43,180	*
POTBR0150-16-3A	3	3-3/8-16TBR	7" - 177,800	4,000" - 101,600	1,500" - 38,10	1,5819" - 40,181	3	8,000	1,700" - 43,180	*

\* Auf Anfrage / \* On request

## Halter für Gewindewirbelplatten Tool holder for whirling inserts

POTBR

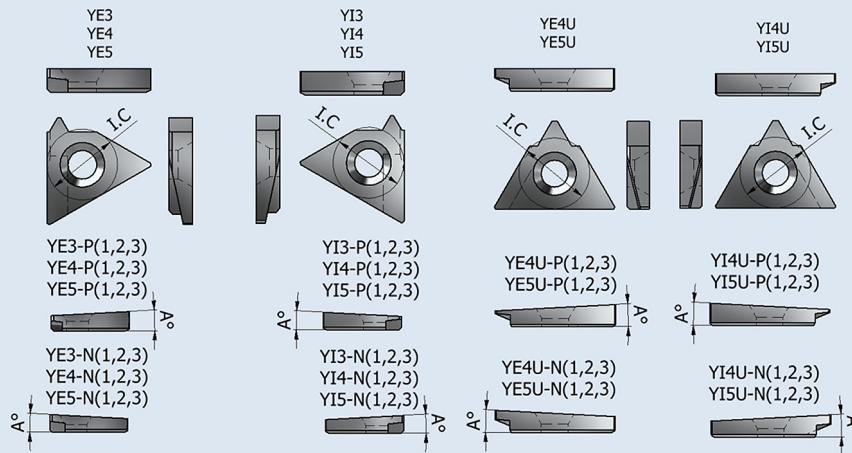


Best.-Nr. / Order no. Halter / Tool holder	Platte insert	Platte insert	L	L1	D	D1 = Ø rotation	Z	Key Slot	Kern Ø Int	
POTBR0075-250-16-6	6	3-3/8-16TBR	1,77" - 44,958	2,2047" - 56,000	0,750" - 19,05	2,5000" - 63,500	6	0,3125	2,756" - 70,000	*
POTBR0075-250-22-5	5	4-1/2-22TBR	1,77" - 44,958	2,2677" - 57,600	0,750" - 19,05	2,5000" - 63,500	5	0,3125	2,756" - 70,000	*
POTBR0075-275-22-5	5	4-1/2-22TBR	1,77" - 44,958	2,5000" - 63,500	0,750" - 19,05	2,7500" - 69,850	5	0,3125	3,000" - 76,200	*
POTBR0075-280-27-4	4	5-5/8-27TBR	2,1654" - 55,00	2,2047" - 56,000	0,750" - 19,05	2,6181" - 66,500	4	0,3125	3,000" - 76,200	*

\* Auf Anfrage / \* On request

# Unterlegplatten für Gewindedrehhalter Spacers for tool holders

YE / YI



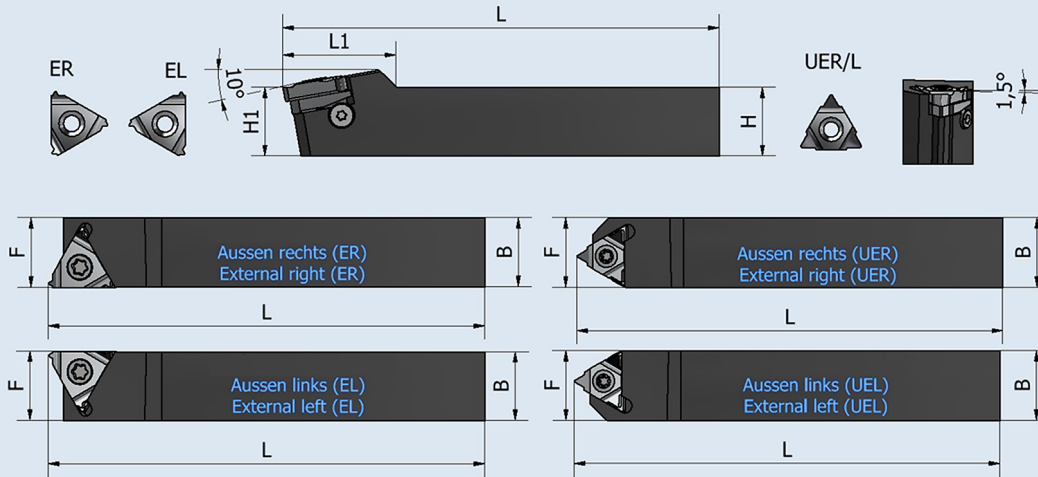
Platte insert	Halter Tool holder	Bestellnr. Order no. 4.5°	Bestellnr. Order no. 3.5°	Bestellnr. Order no. 2.5°	Bestellnr. Order no. 1.5°	Bestellnr. Order no. 0.5°	Bestellnr. Order no. 0°	Bestellnr. Order no. -0.5°	Bestellnr. Order no. -1.5°	
3 - 3/8 - 16	PO**.*-16ER/PO**.*-16NL	YE3-3P	YE3-2P	YE3-1P	YE3	YE3-1N	YE3-1.5N	YE3-2N	YE3-3N	*
3 - 3/8 - 16	PO**.*-16EL/PO**.*-16NR	YI3-3P	YI3-2P	YI3-1P	YI3	YI3-1N	YI3-1.5N	YI3-2N	YI3-3N	*
4 - 1/2 - 22	PO**.*-22ER/PO**.*-22NL	YE4-3P	YE4-2P	YE4-1P	YE4	YE4-1N	YE4-1.5N	YE4-2N	YE4-3N	*
4 - 1/2 - 22	PO**.*-22EL/PO**.*-22NR	YI4-3P	YI4-2P	YI4-1P	YI4	YI4-1N	YI4-1.5N	YI4-2N	YI4-3N	*
5 - 5/8 - 27	PO**.*-27ER/PO**.*-27NL	YE5-3P	YE5-2P	YE5-1P	YE5	YE5-1N	YE5-1.5N	YE5-2N	YE5-3N	*
5 - 5/8 - 27	PO**.*-27EL/PO**.*-27NR	YI5-3P	YI5-2P	YI5-1P	YI5	YI5-1N	YI5-1.5N	YI5-2N	YI5-3N	*
4U - 1/2U - 22U	PO**.*-22UER/PO**.*-22UNL	YE4U-3P	YE4U-2P	YE4U-1P	YE4U	YE4U-1N	YE4U-1.5N	YE4U-2N	YE4U-3N	*
4U - 1/2U - 22U	PO**.*-22UEL/PO**.*-22UNR	YI4U-3P	YI4U-2P	YI4U-1P	YI4U	YI4U-1N	YI4U-1.5N	YI4U-2N	YI4U-3N	*
5U - 5/8U - 27U	PO**.*-27UER/PO**.*-27UNL	YE5U-3P	YE5U-2P	YE5U-1P	YE5U	YE5U-1N	YE5U-1.5N	YE5U-2N	YE5U-3N	*
5U - 5/8U - 27U	PO**.*-27UEL/PO**.*-27UEL	YI5U-3P	YI5U-2P	YI5U-1P	YI5U	YI5U-1N	YI5U-1.5N	YI5U-2N	YI5U-3N	*

\* Auf Anfrage / \* On request

# Plattenhalter zum Außengewindedrehen

## Tool holder for external thread turning

PO 08-32

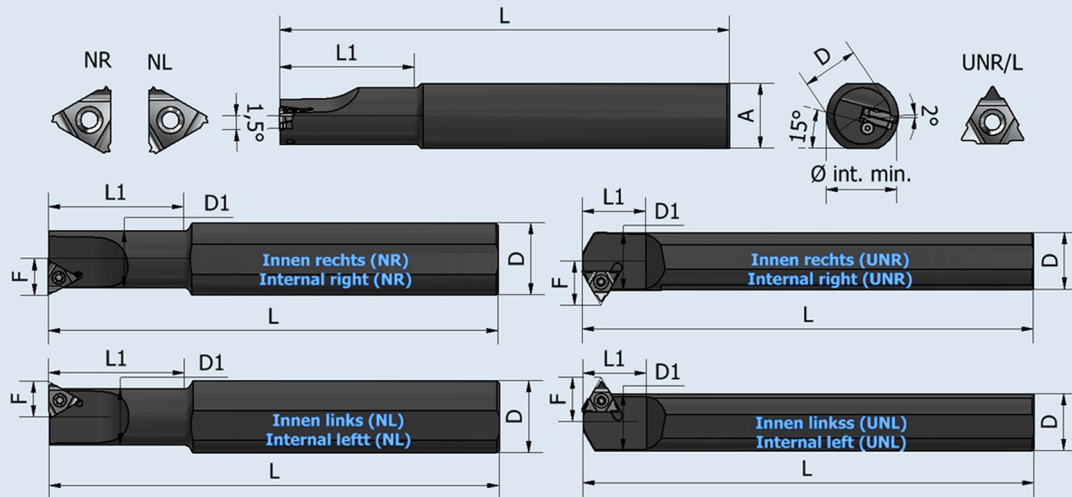


Halter rechts tool holder right Bestellnr. Order no.	Platte rechts insert right	U-Platte Spacer	Halter links tool holder left Bestellnr. Order no.	Platte links insert left	U-Platte Spacer	H=H1 mm	B mm	L mm	L1 mm	F mm
PO 08-08-11ER	2-1/4-11ER	---	PO 08-08-11EL	2-1/4-11EL	---	8	8	80	17,5	11
PO 10-10-11ER	2-1/4-11ER	---	PO 10-10-11EL	2-1/4-11EL	---	10	10	80	17,5	11
PO 12-12-11ER	2-1/4-11ER	---	PO 12-12-11EL	2-1/4-11EL	---	12	12	80	17,5	12
PO 12-12-16ER	3-3/8-16ER	YE3	PO 12-12-16EL	3-3/8-16EL	YI3	12	12	80	22	16
PO 16-16-16ER	3-3/8-16ER	YE3	PO 16-16-16EL	3-3/8-16EL	YI3	16	16	100	25	16
PO 20-20-16ER	3-3/8-16ER	YE3	PO 20-20-16EL	3-3/8-16EL	YI3	20	20	125	30	20
PO 25-25-16ER	3-3/8-16ER	YE3	PO 25-25-16EL	3-3/8-16EL	YI3	25	25	150	30	25
PO 32-32-16ER	3-3/8-16ER	YE3	PO 32-32-16EL	3-3/8-16EL	YI3	32	32	170	30	32
PO 25-25-22ER	4-1/2-22ER	YE4	PO 25-25-22EL	4-1/2-22EL	YI4	25	25	150	36	25
PO 32-32-22ER	4-1/2-22ER	YE4	PO 32-32-22EL	4-1/2-22EL	YI4	32	32	170	36	32
PO 40-40-22ER	4-1/2-22ER	YE4	PO 40-40-22EL	4-1/2-22EL	YI4	40	40	200	36	40
PO 25-25-27ER	5-5/8-27ER	YE5	PO 25-25-27EL	5-5/8-27EL	YI5	25	25	150	36	25
PO 32-32-27ER	5-5/8-27ER	YE5	PO 32-32-27EL	5-5/8-27EL	YI5	32	32	170	40	32
PO 40-40-27ER	5-5/8-27ER	YE5	PO 40-40-27EL	5-5/8-27EL	YI5	40	40	200	40	40
PO 25-25-22UER	4U-1/2U-22UER/L	YE4U	PO 25-25-22UEL	4U-1/2U-22UER/L	YI4U	25	25	150	36	25
PO 25-25-22UER	4U-1/2U-22UER/L	YE4U	PO 25-25-22UEL	4U-1/2U-22UER/L	YI4U	32	32	170	40	32
PO 25-25-22UER	4U-1/2U-22UER/L	YE4U	PO 25-25-22UEL	4U-1/2U-22UER/L	YI4U	25	25	150	36	25
PO 32-32-27UER	5U-5/8U-27UER/L	YE5U	PO 32-32-27UEL	5U-5/8U-27UER/L	YI5U	32	32	170	40	32
PO 32-32-27UER	5U-5/8U-27UER/L	YE5U	PO 32-32-27UEL	5U-5/8U-27UER/L	YI5U	40	40	200	40	40

# Plattenhalter zum Innengewindedrehen

## Tool holder for internal thread turning

PO 10-50



Halter rechts tool holder right Bestellnr. Order no.	Platte rechts insert right	U-Platte Spacer	Halter links tool holder left Bestellnr. Order no.	Platte links insert left	U-Platte Spacer	A mm	L mm	L1 mm	D mm	D1 mm	F mm	Kern Ø min. Int.
PO 10-10-11NR	2-1/4-11NR	---	PO 10-10-11NL	2-1/4-11NL	---	9	100	---	10	10	7,4	13
PO 12-10-11NR	2-1/4-11NR	---	PO 12-10-11NL	2-1/4-11NL	---	10	120	25	12	10	7,4	13
PO 20-13-11NR	2-1/4-11NR	---	PO 20-13-11NL	2-1/4-11NL	---	18	130	32	20	13	8,9	16
PO 16-13-16NR	3-3/8-16NR	---	PO 16-13-16NL	3-3/8-16NL	---	15	150	32	16	13	10,2	17
PO 20-16-16NR	3-3/8-16NR	---	PO 20-16-16NL	3-3/8-16NL	---	18	150	40	20	16	11,7	20
PO 20-20-16NR	3-3/8-16NR	YI3	PO 20-20-16NL	3-3/8-16NL	YE3	18	180	---	20	20	13,7	24
PO 25-25-16NR	3-3/8-16NR	YI3	PO 25-25-16NL	3-3/8-16NL	YE3	23	200	---	25	25	16,2	29
PO 32-25-16NR	3-3/8-16NR	YI3	PO 32-25-16NL	3-3/8-16NL	YE3	29	200	60	32	25	16,2	29
PO 32-32-16NR	3-3/8-16NR	YI3	PO 32-32-16NL	3-3/8-16NL	YE3	29	200	---	32	32	19,7	36
PO 40-40-16NR	3-3/8-16NR	YI3	PO 40-40-16NL	3-3/8-16NL	YE3	36	300	---	40	40	23,7	44
PO 20-20-22NR	4-1/2-22NR	YI4	PO 20-20-22NL	4-1/2-22NL	YE4	18	180	---	20	20	15,6	27
PO 25-25-22NR	4-1/2-22NR	YI4	PO 25-25-22NL	4-1/2-22NL	YE4	23	200	---	25	25	18,1	31
PO 32-32-22NR	4-1/2-22NR	YI4	PO 32-25-22NL	4-1/2-22NL	YE4	29	250	60	32	25	18,1	31
PO 32-25-22NR	4-1/2-22NR	YI4	PO 32-32-22NL	4-1/2-22NL	YE4	29	250	---	32	32	21,6	38
PO 40-40-22NR	4-1/2-22NR	YI4	PO 40-40-22NL	4-1/2-22NL	YE4	36	300	---	40	40	25,6	46
PO 32-32-27NR	5-5/8-27NR	YI5	PO 32-32-27NL	5-5/8-27NL	YE5	29	250	---	32	32	22,6	40
PO 40-40-27NR	5-5/8-27NR	YI5	PO 40-40-27NL	5-5/8-27NL	YE5	36	300	---	40	40	26,6	48
PO 32-32-22UNR	4U-1/2U-22UNR/L	YI4U	PO 32-32-22UNL	4U-1/2U-22UNR/L	YE4U	29	250	---	32	32	24,4	42
PO 40-40-22UNR	4U-1/2U-22UNR/L	YI4U	PO 40-40-22UNL	4U-1/2U-22UNR/L	YE4U	3	300	---	40	40	28,1	49
PO 32-32-27UNR	4U-1/2U-27UNR/L	YI5U	PO 32-32-27UNL	4U-1/2U-27UNR/L	YE5U	29	250	---	32	32	25,8	42
PO 40-40-27UNR	5U-5/8U-27UNR/L	YI5U	PO 40-40-27UNL	5U-5/8U-27UNR/L	YE5U	36	300	---	40	40	29,4	50
PO 50-50-27UNR	5U-5/8U-27UNR/L	YI5U	PO 50-50-27UNL	5U-5/8U-27UNR/L	YE5U	45	350	---	50	50	34,3	60





# Hochharte Schneidstoffe

Als Hochharte Schneidstoffe bezeichnet man Schneidstoffe, die in der Härte wesentlich höher liegen als Hartmetalle und Schneidkeramiken. Diese sind als monokristalline oder polykristalline Diamantschneidstoffe und als kubisches Bornitrid bekannt.

Hochharte Diamant- und CBN-Schneidstoffe zeichnen sich besonders durch ihre hohe Verschleißfestigkeit, große Prozesssicherheit und langen Standzeiten aus. Damit für die vielfältigen Bearbeitungsaufgaben die optimalen Schneidstoffe eingesetzt werden können, stehen eine Vielzahl von hochharten Schneidstoffsorten zur Verfügung. Bei den polykristallinen Diamantschneidstoffen beginnen diese von Verbundmatrix-Sorten (PKD- und CBN-Sorten) bis hin zu 100% Diamantstrukturen (CVD). Bei den monokristallinen Sorten sind dies immer 100% Diamantstrukturen. Die Schneidkanten von Diamantwerkzeugen, insbesondere 100%ige Diamantschneidstoffe, lassen sich nur noch mit modernster Lasertechnologie bearbeiten. Die Schneiden und auch die notwendigen Spanleitstufen können so mit genauester Qualität und Formgenauigkeit hergestellt werden.

**PKD**

## Polykristalliner Diamant

Der polykristalline Diamant ist ein synthetisch hergestellter Diamantschneidstoff, der der Härte von monokristallinem Diamant (Naturdiamant) sehr nahe kommt. Seine hohe Härte ermöglicht es unter anderem, besonders abrasive Werkstoffe zu bearbeiten und standzuhalten. PKD ist ein extrem fester Schneidstoff, dessen ungerichtete Diamantkristalle im Hochdruck-Hochtemperaturverfahren durch Sintern bei hohen Drücken und Temperaturen verbunden werden.

**CVD**

## Polykristalliner Diamant (Chemical Vapor Deposition)

CVD-Diamant ist eine Dickschichtabscheidung, die über das CVD-Verfahren (chemical vapour deposition) gewonnen wird. Das grundlegende Verfahren ist das gleiche wie bei der CVD-Dünnschichtabscheidung, der Diamantbeschichtung. Während bei der Diamantbeschichtung auf ein Substrat, dem HM-Werkzeug oder der HM-WSP, direkt nur wenige  $\mu\text{m}$  beschichtet werden, sind bei der CVD-Dickschichtabscheidung Schichtdicken von 0,2 mm bis zu 1,0 mm möglich. Die CVD-Segmente werden auf HM-Trägerwerkzeugen oder HM-Schneidplatten weiterverarbeitet.

**MKD**

## Monokristalliner Diamant

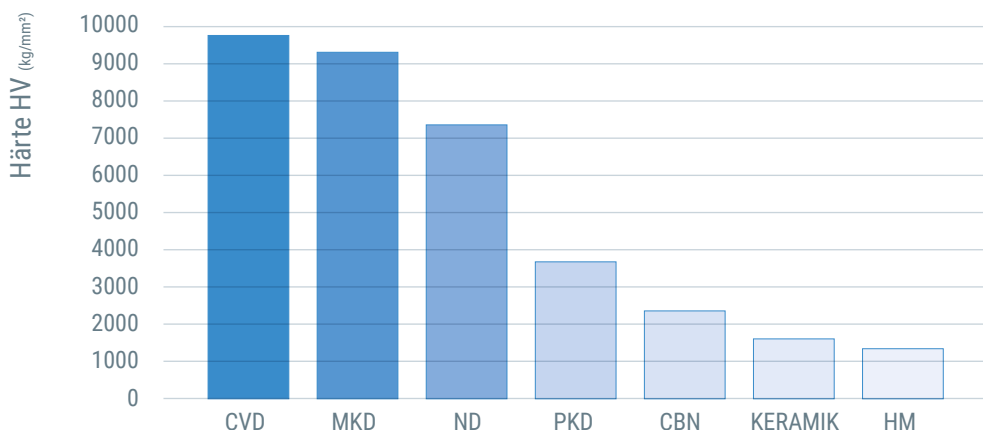
Als monokristalliner Diamant wird sowohl der Naturdiamant (ND) bezeichnet als auch der synthetisch hergestellte Diamant (MKD). Durch seine Wachstumsform und Gitterstruktur besitzt er eine sehr hohe Härte. Da der monokristalline Diamant durch keine Bindephase an der Schneidkante unterbrochen wird, eignet er sich sehr gut zum Erzielen von hochpräzisen Oberflächen (Glanzbearbeitung) und hochgenauen Bauteilgeometrien.

**CBN**

## Kubisches Bornitrid

Ebenso wie PKD wird auch CBN für die Bestückung von Zerspanungswerkzeugen eingesetzt. Der Herstellungsprozess von CBN - polykristallines kubisches Bornitrid - auch als PKB oder PCBN bezeichnet, zum Schneidenrohling läuft in ähnlicher Form wie bei PKD ab. Dabei wird statt Graphit Bornitrid umgewandelt. CBN ist ein besonders harter Schneidstoff, dessen Härte nur von Diamant übertroffen wird. Im Gegensatz zu Diamant ist CBN für die Bearbeitung harter Eisen- bzw. Stahlwerkstoffe geeignet, für die entsprechenden unterschiedlichen CBN-Sorten abgestimmt werden müssen.

## Härtevergleich hochharter Schneidstoffe



# High hardness cutting materials

High-hardness cutting materials are cutting materials that are much harder than tungsten carbides and cutting ceramics. These are known as monocrystalline or polycrystalline diamond cutting materials and cubic boron nitride.

High-hardness diamond and CBN cutting materials are particularly characterized by their high wear resistance, high process reliability and long tool life. To ensure that the optimum cutting materials can be used for the wide range of machining tasks, a large number of high-hardness cutting material grades are available. For polycrystalline diamond cutting materials, these start from composite matrix grades (PCD and CBN grades) up to 100% diamond structures (CVD). For monocrystalline grades, these are always 100% diamond structures. The cutting edges of diamond tools, especially 100% diamond cutting materials, can now only be machined using the latest laser technology. The cutting edges and also the necessary chip grooves can thus be produced with the most precise quality and shape accuracy.

## PCD

### Polycrystalline diamond

Polycrystalline diamond is a synthetically produced diamond cutting material that comes very close to the hardness of monocrystalline diamond (natural diamond). Its high hardness makes it possible, among other things, to machine and withstand particularly abrasive materials. PCD is an extremely strong cutting material whose non-directional diamond crystals are bonded in a high-pressure, high-temperature process by sintering at high pressures and temperatures.

## CVD

### Polycrystalline diamond (Chemical Vapor Deposition)

CVD diamond is a thick film deposition obtained via the chemical vapor deposition (CVD) process. The basic process is the same as for CVD thin film deposition, diamond coating. While diamond deposition directly coats only a few  $\mu\text{m}$  on a substrate, the tungsten carbide tool or tungsten carbide inser, CVD thick film deposition allows coating thicknesses from 0.2 mm up to 1.0 mm. The CVD segments are further processed on tungsten carbide carrier tools or tungsten carbide cutting inserts.

## MCD

### Monocrystalline diamond

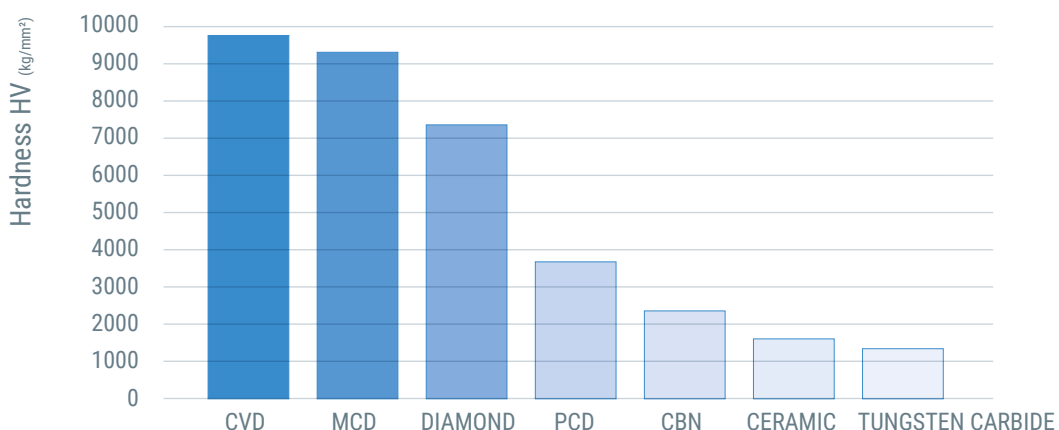
Both natural diamond (ND) and synthetically produced diamond (MCD) are referred to as monocrystalline diamond. Due to its growth form and lattice structure, it has a very high hardness. Since monocrystalline diamond is not interrupted by any bonding phase at the cutting edge, it is very suitable for achieving high-precision surfaces (polishing) and high-precision component geometries.

## CBN

### Cubic boron nitride

Like PCD, CBN is also used for the assembly of cutting tools. The manufacturing process of CBN - polycrystalline cubic boron nitride - also referred to as PCB or PCBN, to the cutting blank takes place in a similar way to PCD. In this process, boron nitride is converted instead of graphite. CBN is a particularly hard cutting material whose hardness is only surpassed by diamond. In contrast to diamond, CBN is suitable for machining hard iron or steel materials, for which the corresponding different CBN grades must be matched.

## Hardness comparison of high-hardness cutting materials



## Schnittwertempfehlungen für PKD-Schaftfräser

### Cutting parameter recommendations for PCD end mills

PKD  
PCD

Werkstoff Material		Schnittgeschw. Cutting speed Vc (m/min)	Vorschub / Zahn Feed / tooth fz (mm/Zahn/tooth)	Schnitttiefe Cutting depth ap (mm)	Kühlung Coolant
NE-METALLE / NON-FERROUS METALS	Alu / Aluminum < 6% Si	200 - 6000	0,05 - 0,30	0,05 - 3,00	Emulsion / MMS
	Alu / Aluminum < 12% Si	200 - 4000	0,05 - 0,25	0,05 - 3,00	Emulsion / MMS
	Alu / Aluminum > 12% Si	200 - 2000	0,05 - 0,20	0,05 - 3,00	Emulsion / MMS
	Kupfer / Copper	250 - 3000	0,03 - 0,30	0,05 - 1,50	Emulsion / MMS
	Messing / Brass	250 - 1400	0,03 - 0,30	0,05 - 1,50	Emulsion / MMS
	Magnesium / Magnesium	300 - 5000	0,05 - 0,50	0,05 - 3,50	Emulsion / MMS
	Gold, Silber / Gold, Silver	100 - 900	0,05 - 0,30	0,02 - 1,50	Emulsion / MMS
	Platin / Platinum	100 - 900	0,05 - 0,30	0,02 - 1,50	Emulsion / MMS
	Titan / Titanium	60 - 180	0,01 - 0,15	0,02 - 0,80	Emulsion / MMS
KUNSTSTOFFE / PLASTICS	Graphit / Graphite	150 - 2500	0,05 - 0,40	0,10 - 3,00	Trocken, Luft / Dry, Air
	Kunststoffe / Plastics	200 - 3000	0,05 - 0,40	0,10 - 3,00	Trocken, Luft / Dry, Air
	Duroplast / Thermoset	100 - 2500	0,05 - 0,30	0,05 - 1,00	Emulsion / MMS
	Composites / Composites	150 - 800	0,05 - 0,40	0,10 - 1,50	Emulsion / MMS
	Acryl / Acrylic	100 - 1200	0,01 - 0,25	0,05 - 0,80	Emulsion / MMS
	Laminate / Laminates	100 - 1200	0,02 - 0,50	0,05 - 1,50	Trocken, Luft / Dry, Air

## Schnittwertempfehlungen für CVD-Schaftfräser

### Cutting parameter recommendations for CVD end mills

CVD  
CVD

Werkstoff Material		Schnittgeschw. Cutting speed Vc (m/min)	Vorschub / Zahn Feed / tooth fz (mm/Zahn/tooth)	Schnitttiefe Cutting depth ap (mm)	Kühlung Coolant
NE-METALLE NON-FERROUS METALS	Aluminium / Aluminum	100 - 3000	0,05 - 0,40	0,05 - 3,00	Emulsion / MMS
	Kupfer / Copper	250 - 1400	0,03 - 0,30	0,10 - 1,50	Emulsion / MMS
	Messing / Brass	250 - 1400	0,03 - 0,30	0,10 - 1,50	Emulsion / MMS
	Gold, Silber / Gold, Silver	100 - 1000	0,05 - 0,30	0,02 - 1,50	Emulsion / MMS
	Platin / Platinum	100 - 1000	0,05 - 0,30	0,02 - 1,50	Emulsion / MMS
KUNSTSTOFFE / PLASTICS	Graphit / Graphite	250 - 1500	0,05 - 0,40	0,10 - 3,00	Trocken, Luft / Dry, Air
	GFK, CFK / GRP, CFRP	200 - 1000	0,05 - 0,40	0,10 - 3,00	Trocken, Luft / Dry, Air
	AFK Kunststoffe / Fibre reinforced plastic	150 - 1000	0,05 - 0,40	0,10 - 3,00	Trocken, Luft / Dry, Air
	Composites / Composites	150 - 800	0,05 - 0,40	0,10 - 1,50	MMS / Trocken, Luft / Dry, Air
	Acryl / Acrylic	100 - 1000	0,05 - 0,30	0,05 - 0,80	MMS / Trocken, Luft / Dry, Air
	Laminate / Laminates	100 - 1200	0,02 - 0,50	0,05 - 1,50	Trocken, Luft / Dry, Air

## Schnittwertempfehlungen für MKD-Schaftfräser Cutting parameter recommendations for MCD end mills

MKD  
MCD

Werkstoff Material		Schnittgeschw. Cutting speed Vc (m/min)	Vorschub / Zahn Feed / tooth fz (mm/Zahn/tooth)	Schnitttiefe Cutting depth ap (mm)	Kühlung Coolant
NE-METALLE NON-FERROUS METALS	Alu / Aluminum < 6% Si	150 - 1000	0,01 - 0,10	0,01 - 1,50	Emulsion / MMS
	Kupfer / Copper	100 - 600	0,01 - 0,40	0,01 - 1,00	Emulsion / MMS
	CuZn, CuSn	100 - 500	0,02 - 0,40	0,01 - 0,80	Emulsion / MMS
	Gold, Silber / Gold, Silver	100 - 600	0,02 - 0,30	0,01 - 0,30	Emulsion / MMS
	Platin / Platinum	80 - 400	0,01 - 0,25	0,01 - 0,20	Emulsion / MMS
KUNSTSTOFFE PLASTICS	Composites / Composites	50 - 400	0,04 - 0,40	0,01 - 0,20	MMS / Trocken, Luft / Dry, Air
	Acryl / Acrylic	100 - 1200	0,05 - 0,50	0,01 - 0,30	MMS / Trocken, Luft / Dry, Air
	PC	80 - 500	0,05 - 0,50	0,01 - 0,25	MMS / Trocken, Luft / Dry, Air
	Laminate / Laminates	70 - 400	0,04 - 0,30	0,01 - 0,20	MMS / Trocken, Luft / Dry, Air

## Schnittwertempfehlungen für CBN-Schaftfräser Cutting parameter recommendations for CBN end mills

CBN  
CBN

Werkstoff Material		Schnittgeschw. Cutting speed Vc (m/min)	Vorschub / Zahn Feed / tooth fz (mm/Zahn/tooth)	Schnitttiefe Cutting depth ap (mm)	Kühlung Coolant
GEHÄRTETE MAT. HARDENED MAT.	HRC >42	300 - 1000	0,01 - 0,20	0,01 - 0,15	Trocken, Luft / Dry, Air
	HRC >52	150 - 900	0,01 - 0,20	0,01 - 0,12	Trocken, Luft / Dry, Air
	HRC >60	80 - 800	0,005 - 0,20	0,01 - 0,10	Trocken, Luft / Dry, Air
	HSS	120 - 300	0,01 - 0,10	0,01 - 0,08	Trocken, Luft / Dry, Air
GUSS CAST IRON	Guss / Cast iron	500 - 2000	0,05 - 0,20	0,01 - 0,25	Trocken, Luft / Dry, Air
	GG / GGG	500 - 2000	0,05 - 0,25	0,01 - 0,25	Trocken, Luft / Dry, Air
	Gusslegierungen Cast alloys	300 - 2000	0,05 - 0,20	0,01 - 0,30	Trocken, Luft / Dry, Air
LEGIERUNGEN ALLOYS	Gesinterte Werkstoffe Sintered materials	150 - 450	0,05 - 0,20	0,10 - 0,50	Trocken, Luft / Dry, Air
	Superlegierungen Superalloys	100 - 500	0,01 - 0,10	0,05 - 0,15	Trocken, Luft / Dry, Air
	Cr	400 - 1600	0,02 - 0,20	0,05 - 0,30	Trocken, Luft / Dry, Air
	Ni / Co	30 - 350	0,02 - 0,20	0,05 - 0,30	Trocken, Luft / Dry, Air

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